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LETTER REGARDING THE ENCLOSED ISSUANCE OF A PERMIT TO NAVAL AIR STATION FOR PERMIT TN2 17 002 2600 IN ACCORDANCE WITH TENNESSEE HAZARDOUS WASTE MANAGEMENT ACT MILLINGTON SUPPACT TN
9/15/1986
TENNESSEE DEPARTMENT OF ENVIRONMENTAL CONSERVATION

TENNESSEE DEPARTMENT OF HEALTH AND ENVIRONMENT
CUSTOMS HOUSE
701 BROADWAY
NASHVILLE, TENNESSEE 37219-5403

September 15, 1986

Captain Peter Reber
Naval Air Station Memphis
Navy Road
Millington, Tennessee 38054-5000

RE: Issuance of a permit to Naval Air Station Memphis, TN2 17 002 2600

Dear Capt. Reber:

Enclosed is the owner's and operator's copy of the permit authorizing the storage of hazardous waste at Naval Air Station Memphis, TN2 17 002 2600. Issuance of this permit is in accordance with the "Tennessee Hazardous Waste Management Act". The permit became effective immediately upon signature on September 15, 1986.

A copy of the applicable regulations currently in effect at the time of permit issuance is enclosed. The permit shall be complied with throughout the life of the permit unless the permittee or the Department successfully modifies the permit in accordance with Rule 1200-1-11-.07(9)

If there are any questions regarding the permit please feel free to call or write.

Sincerely,

Leslie Wayne Gregory

Leslie Wayne Gregory
Permits and Quality Assurance
Division of Solid Waste Management

cc: Paul Patterson - Memphis Field Office
Betty Willis - EPA Region IV

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

Hazardous Waste Management Program
4th Floor, Customs House
701 Broadway
Nashville, Tennessee 37219-5403
(615) 741-3424

PERMIT

Permittee: U. S. Naval Air Station Memphis
Installation Identification Number: TN2 17 002 2600
Permit Number: TN2 17 002 2600

Pursuant to the Tennessee Hazardous Waste Management Act, as amended (Tennessee Code Annotated 68-46-101 et seq.), and regulations promulgated thereunder by the Tennessee Department of Health and Environment (THDE) and the Tennessee Solid Waste Disposal Control Board titled the "Rules Governing Hazardous Waste Management in Tennessee" Chapter 1200-1-11, a permit is issued to Naval Air Station, Memphis (hereinafter called the Permittee), to operate a hazardous waste container storage facility for the management of hazardous waste, located in Millington, Tennessee, on Millington-Arlington Road at latitude 35° 20' 04" N and longitude 89° 52' 44" W. The facility will be allowed to store a maximum quantity of 17,160 gallons of hazardous waste in Department of Transportation (DOT) approved containers.

Except for the section entitled "Solid Waste Management Units", this permit, in conjunction with the Hazardous Waste Permit to be issued by the U.S. Environmental Protection Agency (regarding waste minimization and Solid Waste Management Unit Releases), constitutes the RCRA permit for this facility. The section entitled "Solid Waste Management Units" in this permit is authorized by TCA 68-46-108(h).

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 Rules 1200-1-11-.01 through .09, 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 permit application and modification by subsequent amendments (hereinafter referred to as the application) is accurate and that the facility will be constructed and operated 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 (other than revised regulations, guidance, or test methods) and 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 15, 1986, and shall remain in effect until September 15, 1996, unless revoked and reissued, or terminated, or continued.

Tom Tiesler

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

Permittee: U.S. Naval Air Station Memphis
Identification Number: TN2 17 002 2600

STANDARD CONDITIONS

A. EFFECT OF PERMIT

The Permittee is allowed to store hazardous waste in accordance with the conditions of this permit. Any storage of hazardous waste not authorized in this permit is prohibited. Compliance with this permit constitutes compliance, for the purposes of enforcement, with the Tennessee Hazardous Waste Management Act. 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 6(a), 7, and 15(c) of Chapter 423 of the State of Tennessee Public Acts of 1983 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 the "Rules Governing Hazardous Waste Management in Tennessee" (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 constitutent(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 constitutents that are reaction by-products.

Hazardous constitutents also include radionuclides from waste not excluded by Rule 1200-1-11.02(1)(d)1(iv).

3. "Solid Waste Management Unit" includes any discernable units that have ever accumulated, treated, stored, or disposed ofwastes (irrespective of whether the units were intended for waste management). Such units may include but are not limited to, any landfill, surface impoundment, waste pile, land treatment unit, incinerator, injection well, tank (including storage, treatment, and accumulation tanks), container storage unit, recycling unit, and wastewater treatment units. The definition also includes areas contaminated by routine, deliberate, or systematic releases from process components.

4. "Release" includes any spilling, leaking, pumping, pouring, emitting, emptying, discharging, injecting, escaping, leaking, dumping, or disposing into the environment of any hazardous constituents.

5. "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 facility (in areas not affected by the facility).

6. "Corrective action" may include corrective action as provided by Rule 1200-1-11-.06(6)(k) and/or remedial activities for any media unless otherwise defined by the Commissioner.

D. **DUTIES AND REQUIREMENTS**

1. Duty to Comply: The Permittee must 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 to Reapply: If the Permittee wishes to continue an activity regulated by this permit after the expiration date of this permit, the Permittee must apply for and obtain a new permit, in accordance with subparagraph (2)(e) and paragraph (9) of Rule 1200-1-11-.07.

3. Continuation of Expiring Permit: When a Permittee has made timely and sufficient application for a new permit, the expiring permit does not expire until the application has been finally determined by the Commissioner or, in case the application is denied, (or the terms of the new permit limited), until the last day for seeking review of the Commissioner or Board's order, or a later date fixed by order of the reviewing court.

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.

5. 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.

6. Proper Operation 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 back-up or auxiliary facilities or similar systems only when necessary to achieve compliance with the conditions of the permit.

7. 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.

8. 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.

9. 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, to:

   (a) Enter, at reasonable times, upon the Permittee's premises where a regulated facility 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 facilities, 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 assuring 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 facility is in operation.

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

E. CONFIDENTIAL INFORMATION

The Permittee may claim confidential any information required to be submitted by this permit in accordance with Rule 1200-1-11-.07(1)(h).

F. DOCUMENTS TO BE MAINTAINED AT FACILITY SITE

The Permittee shall maintain at the 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 as required by Rule 1200-1-11-.06(2)(d) 2 and this permit.

2. Personnel training documents and records as required by Rule 1200-1-11-.06(2)(g) 4 and this permit except as Rule 1200-1-11-.06(2)(g)5 provides otherwise.

3. Contingency plan as required by Rule 1200-1-11-.06(4) and this permit.

4. Closure plan as required by Rule 1200-1-11-.06(7) and this permit.

5. Cost estimate for facility closure as required by Rule 1200-1-11-.06(8)(c) and (e) (if applicable) and this permit.

6. Operating record as required by Rule 1200-1-11-.06(5)(d) and this permit.

7. Inspection records as required by Rule 1200-1-11-.06(2)(f) 4 and this permit.

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).

GENERAL FACILITY CONDITIONS

A. DESIGN AND OPERATION OF FACILITY

The Permittee shall, within the terms of the proposed schedule as described in Condition M of this section, construct the facility as specified in Attachment 7 and operate and maintain the facility in a manner which will minimize the possibility of a fire, explosion, or any unplanned sudden or non-sudden release of hazardous waste constituents to air, soil, or surface water which could threaten public health or environment.

B. REQUIRED NOTICES

1. Anticipated Waste Receipt: The Permittee shall notify the Commissioner in writing at least four weeks in advance of the date the Permittee expects to receive hazardous waste from a foreign source. Notice of subsequent shipments of the same waste from the same foreign source is not required. (See Rule 1200-1-11-.06(2)(c)1.)

2. Acceptance of Other Generators' Waste: When the Permittee is to receive hazardous waste from an off-site source (except where the Permittee is also the generator), he must inform the generator in writing that he has the appropriate permit(s) for, and will accept, the waste the generator is shipping. The Permittee must keep a copy of this written notice as part of the operating record. (See Rule 1200-1-11-.06(2)(c)2.)

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 facility.

4. Anticipated Noncompliance: The Permittee shall give advance notice to the Commissioner of any planned changes in the permitted facility or activity which may result in noncompliance with permit requirements.

   For a new hazardous waste management facility the Permittee may not commence storage of hazardous waste; and for a facility being modified the Permittee may not store hazardous waste in the modified portion of the facility; 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 facility has been constructed or modified in compliance with the permit; and

   (b) (i) The Commissioner has inspected the modified or newly constructed facility and finds it is in compliance with the conditions of the permit; or

   (ii) Within 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 storage of hazardous waste.

5. Transfers: This permit is not transferable to any person except after notice to the Commissioner. Before transferring ownership or operation of the facility 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 as may be necessary under the Act. (See Rule 1200-1-11-.06(2)(c)3.)

C. SAMPLING, ANALYSIS, AND MONITORING

1. General Waste Analysis: The Permittee shall comply with all requirements set forth under Rule 1200-1-11-.06(2)(d),(2)(h)3, and (9)(h).

   (a) The Permittee shall follow the procedures described in the attached Waste Analysis Plan, Attachment 1.

   (b) The Permittee shall inspect and analysis (if necessary) all standing liquid in the storage area prior to its release from the storage facility; any and all hazardous waste collected shall be contained for proper management.

   (c) Waste analysis shall be performed at least annually, as proposed by the Permittee, or whenever there is reason to believe that the waste has changed prior to the planned annual review.

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, Standard Methods of Wastewater Analysis (EPA-600/4-79-020) or the methods as specified in the attached Waste Analysis Plan, Attachment 1.

D. SECURITY

The Permittee shall comply with the security provisions of Rule 1200-1-11-.06(2)(e) 2 and 3.

E. GENERAL INSPECTION REQUIREMENTS

1. Schedule: The Permittee shall conduct inspections as required by Rule 1200-1-11-.06(2)(f) and follow the inspection schedule shown in Attachment 2.

2. Remedies: The Permittee shall remedy any deterioration or malfunction discovered by an inspection as required by Rule 1200-1-11-.06(2)(f)3.

3. Inspection Records: Records of inspections shall be kept as required by Rule 1200-1-11-.06(2)(f)4.

4. Other Requirements: The Permittee shall comply with the additional requirements of Rule 1200-1-11-.06 (9)(e).

5. The Permittee shall inspect the hazardous waste loading/unloading areas on a daily basis for spills or releases when the areas are in use.

F. **PERSONNEL TRAINING**

The Permittee shall conduct personnel training as required by Rule 1200-1-11-.06(2)(g). This training program shall at least conform to the attached training outline, job titles and their description, Attachment 3. The Permittee shall maintain training documents and records as required by Rule 1200-1-11-.06(2)(g)4 and 5.

G. **GENERAL REQUIREMENTS FOR IGNITABLE, REACTIVE, OR INCOMPATIBLE WASTE**

The Permittee shall comply with the requirements of Rule 1200-1-11-.06(2)(h) and Rule 1200-1-11.06(9)(g) and (9)(h). The Permittee must prevent the accidental ignition or reaction of ignitable, reactive or incompatible waste. The Permittee shall not accept hazardous waste which is reactive.

H. **PREPAREDNESS AND PREVENTION**

1. Required Equipment: At a minimum, the Permittee shall equip the facility with the equipment required by Rule 1200-1-11-.06(3)(c) and the equipment listed in the contingency plan, Attachment 4.

2. Testing and Maintenance of Equipment: The Permittee shall test and maintain the equipment specified in the previous permit condition as necessary to assure its proper operation in time of emergency as required by Rule 1200-1-11-.06(3)(d).

3. Access to Communications or Alarm System: The Permittee shall maintain access to the communications or alarm system as required by Rule 1200-1-11-.06(3)(e).

4. Required Aisle Space: At a minimum, the Permittee shall maintain aisle space as required by Rule 1200-1-11-.06(3)(f) and as illustrated by Attachment 5.

5. Arrangements with Local Authorities: The Permittee shall attempt to make arrangements with State and local authorities as required by Rule 1200-1-11-.06(3)(g). If State or local officials refuse to enter into preparedness and prevention arrangements with the Permittee, the Permittee must document this refusal in the operating record.

I. CONTINGENCY PLAN

1. Implementation of Plan: The Permittee shall immediately carry out the provisions of the contingency plan, Attachment 4 and follow the emergency procedures described by Rule 1200-1-11-.06(4)(g) whenever there is a fire, explosion, or release of hazardous waste or constituents which threatens or could threaten human health or the environment.

2. Copies of Plan: The Permittee shall comply with the requirements of Rule 1200-1-11-.06(4)(d).

3. Amendments to Plan: As required by Rule 1200-1-11-.06(4)(e), the Permittee shall review and immediately amend the contingency plan, if necessary, and in accordance with Rule 1200-1-11-.07(9).

4. Emergency Coordinator: The Permittee shall comply with the requirements of Rule 1200-1-11-.06(4)(f), concerning the emergency coordinator.

J. MANIFEST SYSTEM

The Permittee shall comply with the manifest handling requirements of Rule 1200-1-11-.06(5)(b).

K. RECORDKEEPING AND REPORTING

1. Operating Record: The Permittee shall maintain a written operating record at the facility in accordance with Rule 1200-1-11-.06(5)(d)1,2(i),(ii),(iii),(iv),(v),(vii), (viii) and (ix).

2. Monitoring Record:

   (a) The Permittee shall retain records of monitoring information, including: all calibration and maintenance records and all original strip chart recordings for continuous monitoring instrumentation; copies of all reports required by this permit; the certification required by Rule 1200-1-11-.06(5)(d)2(ix); 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. The Permittee shall (if applicable) maintain records from all groundwater monitoring wells and associated groundwater surface elevations for the active life of the facility, and for disposal facilities, the post-closure care period as well. 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 individuals(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: 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 facility which could threaten the environment or human health outside the facility.

   (iii) The description of the occurrence and its cause which 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 facility, where this is applicable; and

      (VII) Estimated quantity and disposition of recovered material that resulted from the incident.

   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 previously required to be reported, at the time monitoring reports are submitted. The reports shall contain the information listed in (3) above.

5. Manifest Discrepancy Report: If a significant discrepancy in a manifest is discovered, the Permittee must attempt to reconcile the discrepancy. If not resolved within fifteen days, the Permittee must submit a report (including a copy of the manifest) to the Commissioner. (See Rule 1200-1-11-.06(5)(c)). 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 must be submitted to the Commissioner within 15 days of receipt of unmanifested waste, as required by Rule 1200-1-11-.06(5)(g).

7. Hazardous Waste Received: 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 a hazardous waste. The Permittee may 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 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 by this permit and Rule 1200-1-11-.06(5)(d).

8. Availability, Retention and Disposition of Records: The Permittee shall comply with all requirements set forth under Rule 1200-1-11-.06(5)(e).

9. Annual Report: The Permittee shall comply with the annual report requirements of Rule 1200-1-11-.06(5)(f). 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 must submit to the Commissioner the annual report.

10. Additional Reports: The Permittee shall comply with all requirements set forth under Rule 1200-1-11-.06(5)(h).

11. 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 the permit

L. CLOSURE

1. Performance Standard: The Permittee shall close the facility as required by Rule 1200-1-11-.06(7)(b) and (c)1, and (9)(i) and in accordance with the closure plan, Attachment 6.

2. Amendment to Closure Plan: The Permittee shall amend the closure plan in accordance with Rule 1200-1-11-.06(7)(c)2 whenever necessary.

3. Notification of Closure: The Permittee shall notify the Commissioner at least 180 days prior to the date he expects to begin closure in accordance with Rule 1200-1-11-.06(7)(c)3.

4. Time Allowed For Closure: After receiving the final volume of hazardous waste, the Permittee shall remove from the site all hazardous waste in accordance with Rule 1200-1-11-.06(7)(d)1 and the schedule specified in the closure plan, Attachment 6. After receiving the final volume of hazardous waste, the Permittee shall complete closure activities in accordance with Rule 1200-1-11-.06(7)(d)2 and the schedule specified in the closure plan, Attachment 6.

5. Disposal or Decontamination of Equipment: The Permittee shall decontaminate the facility and dispose of any contaminated materials, residue or soil as required by Rule 1200-1-11-.06(7)(e) and the closure plan, Attachment 6.

6. Certification of Closure: The Permittee shall certify that the facility has been closed in accordance with Rule 1200-1-11-.06(7)(f) by submitting to the Commissioner a certification by both the Permittee and an independent registered professional engineer. The required certification of closure must be submitted within 30 days of completing closure activities or within 30 days of completing closure activities or within 180 days of the date closure activities began, whichever is later.

M. COMPLIANCE SCHEDULE

Reports on compliance or non-compliance with interim and final requirements contained in any compliance schedule of this permit (or any progress reports regarding such) shall be submitted no later than 14 days following each schedule date specified below:

a. On the effective date of this permit (September 15, 1986), the permittee may begin construction of the new storage pad describe in Attachment 7 of this permit. Construction of the new storage pad shall be completed within 16 months of the authorized start of construction. Construction must begin no later than March 1, 1987.

b. In accordance with Attachment 8 of this permit, partial closure for the storage unit in existence on the date of this permit is issued shall begin within 6 months of the effective date of this permit and shall be completed within 120 days.

c. Once certification and inspection of construction described in Condition D. 12. (b) of the Standard Conditions is completed, container storage shall begin in the new storage unit and final closure (in accordance with Attachment 8 of this permit) shall begin for the existing storage unit.

d. In accordance with Attachment 8 of this permit, final closure for the existing storage unit shall be completed within 180 days.

e. Within 22 months of the effective date of this permit, the Permittee shall submit, by certified mail or hand deliver, a letter signed by the Permittee and an independent (Tennessee) registered professional engineer stating that the existing storage unit has been finally closed in compliance with the conditions of this permit.

SPECIFIC CONDITIONS

FOR

STORAGE IN CONTAINERS

A. **WASTE IDENTIFICATION**

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

1. Wastes as listed in Attachment 9.

2. The Permittee may store a maximum of 17,160 gallons of hazardous waste.

   For the purpose of this permit condition, all containers will be assumed to be full when conducting compliance monitoring inspections, unless otherwise demonstrated by the owner or operator during the inspection.

B. **CONDITION OF CONTAINERS**

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 as required by Rule 1200-1-11-.06(9)(b).

C. **COMPATIBILITY OF WASTE WITH CONTAINERS**

The Permittee shall assure that the ability of the container to contain the waste is not impaired as required by Rule 1200-1-11-.06(9)(c).

D. **MANAGEMENT OF CONTAINERS**

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 is not to be opened, handled or stored in a manner which may rupture the container or cause it to leak as required by Rule 1200-1-11-.06(9)(d). All containers shall be placed on pallets.

E. **CONTAINMENT**

The Permittee shall (construct and) maintain the containment system in accordance with the requirements of Rule 1200-1-11-.06(9)(f) and as specified in the attached plans and specifications, Attachment 7. All spilled or leaked waste and accumulated precipitation must be removed from the sump or collection area or spill separator in as timely a manner as is necessary to prevent loss from the secondary containment system.

F. **SPECIAL REQUIREMENTS FOR IGNITABLE OR REACTIVE WASTE**

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

G. **SPECIAL REQUIREMENTS FOR INCOMPATIBLE WASTES**

The Permittee shall:

1. Not place incompatible wastes, or incompatible wastes and materials into the same container;

2. Not place hazardous waste in an unwashed container that previously held in an incompatible waste or material; and

3. Separate containers holding a hazardous waste that in incompatible with any waste or other material stored nearby in accordance with Rule 1200-1-11-.06(9)(h)3 and as indicated in Attachment 7.

SOLID WASTE MANAGEMENT UNITS

A. ASSESSMENT OF NEED FOR CORRECTIVE ACTION

1. The Permittee shall provide to the Commissioner a report which identify and characterize all solid waste management units currently or previously located at the facility.

   In preparing this report, the permittee will review all existing sources of information and develop new information related to solid waste management practices and releases at the facility and also shall fully investigate the facility property to determine the existence of any additional solid waste management units. This report must include, at a minimum, the following information for each unit:

   a) Type of unit;

   b) Location of each unit on a topographic map of appropriate scale;

   c) General dimensions and capacities;

   d) Function of unit;

   e) Dates that the unit was operated;

   f) Description of the wastes that were placed in the unit, their reaction products, and their hazardous constituents (per Appendix .02/E of Rule 1200-1-11-.02 and related guidance);

   g) Either -- a description of any known, suspected, or presumed releases or spills of hazardous waste or hazardous constituents (per Appendix .02/E) which includes any existing data and analyses of groundwater, soil, surface water, and air quality;

   h) Or -- a description of technical studies and results and other information which convincingly demonstrates that a release has not occurred or demonstrates that a release is highly improbable.

   i) Or -- an indication that waste character or release in not known. Determination of waste character and release will be accomplished as a part of the solid waste management investigation outlined in A.2. below.

2. The Permittee shall prepare, as necessary, any determinations required under A.1. above and prepare a solid waste management unit investigation plan and a proposed schedule for implementation and completion for each solid waste management unit identified through A.1. above which is known, suspected, or presumed to have releases of hazardous waste or hazardous constituents to the environment.

   Each solid waste management unit investigation plan shall address, characterize, and define at least the following:

   a) Schedules;

   b) Methods and specific actions as necessary to determine whether a prior or continuing release of hazardous waste or hazardous constituents has occurred and/or to characterize the nature and extent of releases;

   c) Pathways of contaminant transport (i.e., air, soil, surface water or groundwater);

   d) Current and future human and biotic receptors; and,

   e) The technical approach to be used in evaluating information,determining effects on human health and the environment, and deciding whether corrective action is needed.

3. The Permittee shall implement the solid waste management unit investigation plan(s) in accordance with the schedules contained in each plan upon approval by the Commissioner. The results of the investigation(s) shall be presented in a separate report for each unit or comprehensive report for all units and provide information that includes, but is not limited to:

   a) Documentation and data used for implementing the investigation plan; and,

   b) Comprehensive discussions of findings and conclusions regarding releases, pathways, effects of current and future receptors, and the need for corrective action.

4. The Commissioner shall review the report(s) on the investigation plan(s) and notify the Permittee of the need for further investigative actions and/or the need for corrective action.

5. As specified by the Commissioner, the Permittee shall submit to the Commissioner a plan which includes the corrective action to be taken at each unit. The proposed corrective action plan shall be submitted in accordance with a schedule to be determined by the Commissioner. The corrective action plan must include a description of the corrective measures to be taken including related operations and maintenance, and a schedule of implementation and completion. The plan also shall describe and quantify the expected resulting short-term and long-term changes in

contaminant levels, and migration or plume patterns and expected changes in human health and environmental effects.

6. If at any time it is determined that the solid waste management unit investigation plan(s) or report(s) required under this permit no longer satisfies the requirements of Rule 1200-1-11-.06 or this permit for prior or continuing releases of hazardous waste or hazardous constituents from solid waste management units, the Permittee must submit an amended plan or report to the Commissioner with ninety (90) days of such determination.

7. Throughout the term of this permit, the Permittee shall immediately initiate responses appropriate under conditions A.1. through A.6. of this section when becoming aware of any other solid waste management units and/or releases not already being addressed under those conditions.

B. SCHEDULES OF COMPLIANCE

1. The Permittee shall submit the items required by conditions A.1. and A.2., and the associated documentation to the Commissioner within 180 days of the effective date of this permit.

2. All plans and schedules shall be subject to approval by the Commissioner prior to implementation. The permittee shall revise all submittals as specified by the Commissioner.

3. If the time shown in a plan for completing any interim activity is more than one year, the schedule shall specify interim dates for the submission of reports of progress toward satisfaction of the interim requirements.

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

C. PERMIT MODIFICATION

The Permittee shall apply for a permit modification pursuant to Rule 1200-1-11-.07(9)(a) to incorporate the corrective action plan(s) developed under condition A.5. of this section.

ATTACHMENT 1

WASTE ANALYSIS PLAN

Before the Permittee stores any hazardous waste, he must obtain a detailed chemical and physical analysis of a representative sample of the waste. At a minimum, this analysis must contain all of the information which must be known to store the waste in accordance with the requirements of subparagraph (2)(d) of Rule 1200-1-11-.06 and this permit. The analysis may include data developed under Rule 1200-1-11-.02, and existing published or documented data on the hazardous waste or on hazardous waste generated from similar processes. Material Safety Data Sheets from vendors of raw materials that become waste may be used in lieu of laboratory analyses for portions of the information which must be known about the waste.

Unused materials in unopened containers will not be laboratory tested unless container markings have been destroyed. Characteristics of these materials are known from published data [e.g., Hazardous Material Information System (HMIS) microfiche files]. Partially used material will be analyzed to establish whether material in a container is that represented by the container markings.

The analysis must be repeated at least annually to ensure that it is accurate and up to date, or when the owner or operator is notified, or has reason to believe, that the process or operation generating the hazardous waste has changed.

Analysis Parameters and Rationale:

Waste analysis is used to characterize solid and hazardous wastes to:

1. Determine which waste streams are hazardous wastes and determine hazardous characteristics;

2. Meet the requirements of waste disposal vendors for waste profile data;

3. Collect sufficient information to determine waste incompatibilities, container specifications, and shipping name; and

4. Meet certain state and federal regulatory requirements.

Table C-2 is a list of known hazardous wastes produced at the NAS Memphis showing analytical parameters and rationale for each.

TABLE C-2
WASTE ANALYSIS PROTOCOL

WASTE	PARAMETER(S)	COMMENT
Ammonium hydroxide	pH	Solution has a pH>12.5 and is corrosive.
Battery Acid	pH EP Toxicity (Pb)	Solution has a pH<2.0 and is corrosive; solutions may contain a toxic level of lead.
Cleaning solvents	Flash point, xylene, toluene, methyl ethyl ketone, methyl isobutyl ketone	These paint cleaners have flash points between 0 F and 110 F and are ignitable; they may contain the listed wastes xylene, methyl isobutyl ketone (F003) or toluene and methyl ethyl ketone (F005).
Carbon removing compound	pH Methylene chloride	This material has a pH<2.0 and may contain the listed waste methylene chloride (F001).
Chromic acid (Alodine)	pH EP Toxicity (Cr)	This waste is acidic (corrosive), and contains chrome, (D007).
Chromium crystals	EP Toxicity (Cr)	Contains chrome (D007), and is an oxidizer (D001).
Developers (film) and fixers	EP Toxicity (Ag)	Film developing and fixing chemicals contain silver and are toxic. (Exempt is silver is reclaimed).
Dry cleaning solvent (PD-680)	Flash point	This solvent (PD-680) has a flash point ranging from 80°F to 145°F.
Ethylene dichloride	Ethylene dichloride	Listed waste (U077) and is flammable (D001).
Hydraulic fluid, contaminated (Skydrol)	EP Toxicity (Cd)	This fluid fails EP Toxicity for cadmium (D006).

TABLE C-2
WASTE ANALYSIS PROTOCOL

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Ammonium hydroxide	pH	Solution has a pH>12.5 and is corrosive.
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Chromic acid (Alodine)	pH EP Toxicity (Cr)	This waste is acidic (corrosive), and contains chrome, (D007).
Chromium crystals	EP Toxicity (Cr)	Contains chrome (D007), and is an oxidizer (D001).
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Hydraulic fluid, contaminated (Skydrol)	EP Toxicity (Cd)	This fluid fails EP Toxicity for cadmium (D006).

Test Analysis Methods:

Table C-3 identifies the test methods to be employed in the analysis plan. An asterisk indicates that the test method is from EPA Publication SW-846 or Rule 1200-1-11-.02.

The laboratory employed to obtain analytical data must certify its use of the procedures in Table C-3 and must be able to provide, on request, documentation of acceptable QA/QC procedures. Acceptable documentation may include compliance with the Quality Control section of each SW-846 procedure, certification under a state or federal public drinking water act for equivalent parameters, and/or the performance and reporting of replicates and percent recovery data.

TABLE C-3
TEST METHODS

PARAMETER	PROCEDURE	REFERENCE
pH	Electrometric	*Method 5.2
Flash Point	Pensky-Martens closed cup test	ASTM D-93-80
EP Toxicity	EP Toxicity leachate	*Methods 7.2-7.5
Cadmium	Atomic absorption	*Method 8.53
Chromium	Atomic absorption	*Method 8.54
Lead	Atomic absorption	*Method 8.56
Silver	Atomic absorption	*Method 8.60
Mercury	Atomic absorption	*Method 8.57
Xylene	GC/PID	*Method 8.02
Toluene	GC/PID	*Method 8.02
Methyl ethyl ketone	GC/FID	*Method 8.02
Methyl isobutyl ketone	GC/FID	*Method 8.02
Trichloroethane	GC/HSD	*Method 8.01
Trichloroethylene	GC/HSD	*Method 8.01
Methylene chloride	GC/HSD	*Method 8.01

TABLE C-3 (continued)
TEST METHODS

PARAMETER	PROCEDURE	REFERENCE
Trichlorotri-fluoroethane	GC/HSD	*Method 8.01
Ethylene dichloride	GC/HSD	*Method 8.01

Sampling Methods:

Many waste streams are heterogeneous; therefore, care must be taken to obtain a representative sample. In sampling wastes, consideration should be given to the uniformity of the waste in a container and to daily variations in production which may cause the waste to vary. Table C-4 is a summary of waste sampling methods for different types of wastes. Liquids and sludges are the most common forms of hazardous waste at the NAS Memphis. However, occasionally, other forms shown on Table C-4 may be encountered. Recommended sampling access points for different waste containers and soil are listed in Table C-5. Recommended numbers of samples to be taken for different types of wastes and soil are given in Table C-6.

For all hazardous wastes that are placed in containers ranging in capacity from 5 gallons to 85 gallons, the sampling method employed is a Coliwasa sampler. This device collects liquid throughout the depth of liquid in a drum, assuring a representative sample. Instructions for drum sampling are presented in Table C-7. For all wastes except mixed paint wastes, a single sample (top to bottom) will be taken from a container, unless the waste is heterogeneous and/or contains one or more layers. In these cases, multiple samples should be taken. Samples from multiple containers of the same waste will be composited for analysis (except for heterogeneous or layered wastes). Samples to be analyzed for volatile organics should be grab samples and should not be composited.

Paint waste containers are sampled by obtaining a composite sample from three grab samples at the top, middle, and bottom of the container. Samples from multiple containers of mixed paint waste are not composited.

TABLE C-4
SAMPLERS RECOMMENDED FOR VARIOUS TYPES OF WASTE

WASTE TYPE	RECOMMENDED SAMPLER (1)	LIMITATIONS
Liquids, sludges, and slurries in drums, vacuum trucks, barrels, and similar containers	Coliwasa	Not for containers 1.5m (5 ft.) deep.
	a) Plastic	Not for wastes containing ketones, nitrobenzene, dimethylformamide, mesityl oxide, or tetrahydrofuran.
	b) Glass	Not for wastes containing hydrofluoric acid and concentrated alkali solutions.
Powdered or granular solids in bags, drums, barrels, and similar containers	a) Grain sampler	Limited application for sampling moist and sticky solids with a diameter 0.6 cm. (1/4 in.).
	b) Sampling trier	May incur difficulty in retaining core sample of very dry granular materials during sampling.
Dry sludges deeper than 8cm (3 in.)	a) Soil auger	Does not collect undisturbed core sample.
	b) Veihmeyer sampler	Difficult to use on stony, rocky, or very wet soil.
Wastes in storage tanks	Weighted bottle sampler	May be difficult to use on very viscose liquids.

(1) Glass sampler and sample container must be used when organics are to be determined.

TABLE C-5
SAMPLING POINTS RECOMMENDED FOR MOST WASTE CONTAINERS

CONTAINER TYPE	SAMPLING POINT
Drum, bung on one end	Withdraw sample through the bung opening.
Drum, bung on side	Lay drum on side with bung up. Withdraw sample through the bung opening.
Barrel, fiber drum, buckets, sacks, bags	Withdraw samples through the top of barrels, fiber drums, buckets, and similar containers. Withdraw samples through fill openings of bags and sacks. Withdraw samples through the center of the containers and to different points diagonally opposite the point of entry.
Vacuum truck and similar containers	Withdraw sample through open hatch. Sample all other hatches.
Soil	Divide the surface area into an imaginary grid. (The number of grids is determined by the desired number of samples to be collected which, when combined, should give a representative sample of the wastes). Sample each grid.

TABLE C-6
NUMBER OF SAMPLES TO BE COLLECTED

CASE NO.	INFORMATION DESIRED	WASTE TYPE	CONTAINER TYPE	NUMBER OF SAMPLES TO BE COLLECTED
1	Average concentration	Liquid	Drum, vacuum truck, and similar containers	1 collected with Coliwasa
2	Average concentration	Solid (Powder or granular)	Bag, drum, bin, sack	1 composite sample of several samples collected at different sampling areas
3	Average concentration	Soil	----------	1 composite sample of several samples collected at different sampling areas
4	Concentration range	Liquid	Drum, vacuum truck, storage tank	3 to 10 separate samples, each from a different depth of the liquid
5	Concentration range	Solid (powder or granular)	Bag, drum, bin	3 to 5 samples from different sampling points
6	Concentration range	Soil	----------	3 to 20 separate samples from different sampling areas
7	Average concentration for legal evidence	All types	All containers	3 identical samples or 1 composite sample divided into 3 identical samples if homogeneous
8	Average concentration	Liquid	Storage tank	Same as Case #2
9	Concentration range	Liquid	Storage tank	Same as Case #4

TABLE C-7
PROCEDURE FOR SAMPLING WASTE IN DRUMS

1. Choose the plastic or glass Coliwasa for the liquid waste to be sampled referring to Table C-4.

2. Make sure that the sampler is clean.

3. Check to make sure the sampler is functioning properly. Adjust the locking mechanism if necessary to make sure the neoprene rubber stopper provides a tight closure.

4. Wear necessary protective clothing and gear and observe required sampling precautions.

5. Put the sampler in the open position by placing the stopper rod handle in the Tee-position and pushing the rod down until the handle sits against against the sampler's locking block.

6. Slowly lower the sampler into the liquid waste. (Lower the sampler at a rate that permits the levels of the the liquid inside and outside the sampler tube to remain about the same. If the level of the liquid in the sampler tube is lower than that outside the sampler, the sampling rate is too fast and will result in a nonrepresentative sample).

7. When the sampler stopper hits the bottom of the waste container, push the sampler tube downward against the stopper to close the sampler. Lock the sampler in the closed position by turning the Tee handle until it is upright and one end rests tightly on the locking block.

8. Slowly withdraw the sampler from the waste container with one hand while wiping the sampler tube with a disposable cloth or rag with the other hand.

9. Carefully discharge the sample into a suitable sample container by slowly opening the sampler. This is done by slowly pulling the lower end of the Tee handle away from the locking block while the lower end of the sampler is positioned in a sample container.

10. Cap the sample container; attach label and seal; record in field log book; and complete sample analysis request sheet.

11. Unscrew the Tee handle of the sampler and disengage the locking block. Clean sampler on site or store the contaminated parts of the sampler in a plastic storage tube for subsequent cleaning. Store used rags in plastic bags for subsequent disposal.

12. Deliver the sample to the laboratory for analysis.

Strict chain of custody will be maintained for all samples. Each person who handles the sample will, upon receipt, sign and date the identification tag. Section One of EPA Publication SW-846 must be followed to ensure adequate chain-of-custody.
The sample container will be compatible with the waste. Except for some solvents and oils, a plastic (1 quart) bottle is best. Corrosive samples will not be placed in metal containers.

Only all-cargo aircraft, trucks, UPS, or other nonpassenger vehicles will be used to ship hazardous waste samples to laboratories. EPA procedures (SW-846) for sample preservation must be followed and EPA and DOT regulations for transporting hazardous materials/wastes must be met.

C-2(e) Frequency of Analysis:

Frequency of analysis is indicated in Table C-8. Since unused and partially used materials are generated at unpredictable frequencies, the waste analysis plan specifies "as generated" for the frequency of analysis of these types of wastes.

All other wastes should be analyzed either annually or whenever there is a change in the process generating the wastes. Since the painting/cleaning and repairing activities generating these wastes do not change significantly, only a change in products used, or process, is likely to alter the characteristics of the waste.

TABLE C-8
FREQUENCY OF ANALYSIS

WASTE	ANALYSIS	FREQUENCY
Unused and partially used material wastes	Per Table C-2	As generated*
Paint wastes	EP Toxicity Flash point	Annually or on product change
Sludges and slurries	Per Table C-2 for type of material generating waste	Annually

* Unused materials in unopened containers will not be analyzed unless outside container markings have been destroyed. Characteristics will be determined from HMIS. The frequency of analyses for other wastes is annually or on product change.

C-3 Additional Requirements for Ignitable, Reactive, and Incompatible Wastes

No reactive wastes are generated or stored at NAS Memphis.

Ignitable wastes are identified by reference to the HMIS, vendor Material Safety Data Sheets, and by direct testing, if necessary. Analytical procedure used is per Table C-3.

Table C-9 identifies incompatible materials stored at NAS Memphis. The Table was prepared from Hatayama, H.K., et. al., "A Method for Determining the Compatibility of Hazardous Waste," California DHA, April, 1980 (EPA Pub. 600/2-80-076) and data from the HMIS. (NOTE: Some entries on this Table are applicable only to raw material storage in warehouses, not to the hazardous waste storage facility. Some entries are precautionary only).

TABLE C-9
INCOMPATIBILITY CHART

The mixing of any item identified in Column A with a Column B item in the same group may cause a chemical reaction, fire, or explosive, or generate toxic fumes.

A	B
GROUP 1 Alkaline sludges Ammonia solutions Battery acid Sodium hydroxide Sodium hydroxide sludges	Chromium crystals Acid sludges Alodine Carbon removing compound Conversion coating sludge Nitric acid Paint remover Sulfuric acid
GROUP 2 Asbestos Pesticides	Oil All solvents All flammable solvents
GROUP 3 Alcohols Water	Any concentrated Group 1A or 1B waste
GROUP 4 Alcohols Trichloroethane Trichloroethylene Trichlorotrifluoroethane Ethylene dichloride Methylene chloride	Any Group 1A waste Any concentrated Group 1B waste

ATTACHMENT 2

INSPECTION PROCEDURES

TABLE C-9 (con't)
INCOMPATIBILITY CHART

A	B
GROUP 5	
Cyanides and cyanide solutions	Group 1B wastes
GROUP 6	
Chromic acid (Alodine)	Concentrated mineral acids
Chromic acid sludges	Group 2B wastes
Nitric acid	Group 5A wastes
All oxidizers	All flammable and combustible wastes
Chromium crystals	

F-2 INSPECTION SCHEDULES

F-2(a) General Inspection Requirements:

The hazardous waste storage building will be routinely inspected, as are all parts of the facility, for structural deterioration, unauthorized discharges, fire hazards, safety problems, equipment malfunctions, and security problems. These general inspections are performed by the Fire Department inspector (at least quarterly), the Hazardous Waste Coordinator (weekly), and the Safety Officer (at least quarterly). Specific inspection requirements are detailed below.

F-2(a)(1) Frequency of Inspections:

Table F-1 shows the frequency of inspection for each item.

F-2(a)(2) Specific Inspection Requirements:

All inspections shown on Table F-1 will be conducted by the Hazardous Waste Coordinator or his delegate and documented on the appropriate inspection log. The log sheets contain spaces for the inspector's name, date and time of inspection, and a Comments Column for recording observations, recommending repairs, and listing specific information. The inspector will be required to follow up on unacceptable notations with the date and nature of corrective actions. The inspection log is maintained by the Hazardous Waste Coordinator and all logs are retained for at least three years.

TABLE F-1

HAZARDOUS WASTE
INSPECTION SCHEDULE

ITEM	PROBLEM	FREQUENCY
I. SAFETY AND EMERGENCY EQUIPMENT		
Fire extinguishers	Need recharging	Monthly/after use
Eye wash station/shower	Adequate pressure, leaks	Weekly
Fire blankets	Stock level of 1	Weekly/after use
Absorbent (loose and pads)	Stock level of 50 lbs.	Monthly/after use
Portable pump	Power, maintenance, operability	Monthly
Recovery drums	Integrity; stock level of 2	Monthly
Eyeglasses/face shields	Clean; stock level of 2	Monthly
Breathing apparatus (self-contained)	Air/valves/clean; spare cylinders, stock level-1	Monthly/after use
Cartridge respirators	Spent cartridge, seals; stock level of 1	Monthly/after use
Chemical protection suit	Tears, clean; stock level of 1	Monthly/after use
Rubber (nitrile) gloves	Clean; stock level of 2 pair	Monthly/after use
Neoprene aprons	Clean; stock level of 2	Monthly/after use
Safety boots	Clean; stock level of 1 pair	Monthly/after use
First aid kit	Completeness	Monthly/after use
Fire alarm	Not working	Monthly/after use
Telephone	Operability	Monthly
Fire fighting water supply	Hydrant operability; flow of at least 600 gpm	Annually
II. SECURITY SYSTEM		
Building walls (interior & exterior)	Evidence of deterioration	Weekly
Doors	Locks ok, intact, corrosion	Weekly
Fencing between storage bay	Evidence of deterioration	Weekly

TABLE F-1 (continued)

HAZARDOUS WASTE
INSPECTION SCHEDULE

ITEM	PROBLEM	FREQUENCY
III. STRUCTURAL EQUIPMENT (BUILDING)		
Storage bays	Leaks, spills	Weekly
Curbing	Leaks, deterioration	Weekly
Base (foundation)	Cracks, deterioration	Weekly
Ramps	Cracks, deterioration	Weekly
Loading ramps/docks	Evidence of leaks or deterioration	Before & after use; daily when in use
IV. CONTAINER STORAGE AREA		
Segregation plan followed	Incompatibles stored together	Weekly
Segregation area signs	Proper sign	Weekly
Container placement	Aisle space, stack height	Weekly
Container lids	Lids open	Weekly
DOT labels	Correct labels and markings	Weekly
HW labels	Correct information, present	Weekly
Containers	Leaks, dents, corrosion	Weekly
Pallets	Damaged	Weekly
Warning signs	Intact	Weekly
V. MONITORING EQUIPMENT (not applicable)		
VI. TANK INSPECTIONS (not applicable)		
VII. WASTE PILE INSPECTIONS (not applicable)		

ATTACHMENT 3

PERSONNEL TRAINING

Outline of The Training Program

Hazardous waste handling personnel at NAS Memphis must successfully complete a training program that teaches them to perform their duties in a way that ensures compliance with the Hazardous Waste Management Plan and regulations. Personnel should be trained before assignment to a position that includes duties involving hazardous waste and may not work unsupervised until they have completed the training. Additionally, personnel with duties that involve hazardous waste must take part in an annual review of the initial training.

General Training:
The general training program was developed by the U.S. Navy and is normally conducted as a four-day course. The course syllabus is shown in Table H-1. Courses covering the same material with durations of two or three days are authorized at NAS Memphis. The following station personnel are required to receive this training: hazardous waste facility laboratory technicians, hazardous waste handler (fork lift operators) that move hazardous waste, the Hazardous Waste Coordinator, safety officer, generator level hazardous waste coordinators and all full time waste handlers.

Training for Personnel Working at the Storage Facility:
On-the-job training for non-permanently assigned personnel involved in loading/unloading hazardous wastes for the hazardous waste storage building will be conducted by the Hazardous Waste Coordinator. Laborers who load and unload wastes are not assigned permanently to that task, rather they are assigned on an "as needed" basis. These laborers will be familiarized with emergency procedures, emergency equipment, emergency systems and hazards associated with the particular wastes about to be handled prior to handling of the wastes. This training will be documented and kept on file by the Hazardous Waste Coordinator. In addition, no waste is loaded or unloaded except under the direct and close supervision of the Hazardous Waste Coordinator. The close supervision and immediate availability provided will ensure that these functions are performed in compliance with applicable regulations [i.e., Rule 1200-1-11-.06(2)(g)2].

The on-station training director is the Station Hazardous Waste Coordinator. The Hazardous Waste Coordinator must have a BS degree in environmental engineering or a related field of study or, alternatively, have acquired skills through related studies and/or experience. The Hazardous Waste Coordinator must also successfully complete the training program described in Table H-1. The Civilian Personnel Officer will assist in development and presentation of training courses.

Training for Emergency Response

The Hazardous Waste Coordinator is primarily responsible for coordinating response to emergencies. He is responsible for personally instructing other personnel (such as loading crews) in response to emergencies.

The instruction provided will include:

* Emergency communications and alarm systems;
* Procedures for response to liquid spills;
* Power failure response procedures;

* Evacuation routes and procedures;
* Response to fires and explosions; and
* Decontamination procedures.

Training for Hazardous Materials Certifier

The person who has responsibility for certifying shipments of hazardous waste on the Hazardous Waste Manifest will attend the Navy training program, Transportation and Storage of Hazardous Materials, or other appropriate DOT courses.

Training for the Hazardous Waste Coordinator is supplemented by seminars and conferences involving hazardous waste management and Navy training documents.

Fire fighting personnel may have to respond to emergencies at the facility. All fire fighting personnel at the Station receive extensive fire fighting training equivalent to NFPA requirements and continuing training on a monthly basis.

POSITION TITLE: Hazardous Waste Coordinator

RESPONSIBILITIES:

- Coordinator under delegation from Public Works Officer for all hazardous waste activities;
- Liaison with hazardous waste generating units;
- Obtain all necessary permits, licenses, and liaison with federal, state, and local environmental regulatory agencies;
- Initiate purchase of emergency equipment, waste handling equipment, and reference materials;
- Acquire analytical tests of solid wastes and provide liaison with contract laboratory;
- Supervise disposal of hazardous wastes and provide liaison with disposal vendor;
- Coordinate hazardous waste storage facility in accordance with the hazardous waste management plan and appropriate regulations and permit conditions;
- Maintain SPCC plan and Hazardous Waste Contingency Plan; upgrade or modify plan as required; review plan after incidents;
- Train Station personnel in proper handling and storage of hazardous waste;
- Maintain operating log, performs inspections, and schedule maintenance; and
- Supervise on-Station movement of hazardous waste.

POSITION TITLE: Hazardous Waste Handler

RESPONSIBILITIES:

- Move hazardous waste containers under supervision of Hazardous Waste Coordinator;
- Notify Emergency Coordinator in the event of an emergency; and
- Accept instructions of Hazardous Waste Coordinator.

POSITION TITLE: Fire Chief

RESPONSIBILITIES:

The Fire Chief is responsible for maintaining a 24-hour fire fighting team, all fire fighting equipment, and training for fire responders on the Station.

The Station Fire Department will respond to hazardous waste incidents to provide fire protection services. (See Contingency Plan.)

POSITION TITLE: Generator Hazardous Waste Coordinator

RESPONSIBILITIES:

- Maintain inspection records at generating work centers;
- Provide for proper labeling of containers; and
- Maintain storage areas in conformance with HWMP.

POSITION TITLE: Safety Officer

RESPONSIBILITIES:

- Inspect all safety equipment for applicability, conditions, and efficiency;
- Perform safety audits to ensure safe operation of facility and compliance with OSHA standards, ANSI standards, and Navy requirements;
- Recommend facility modifications when required to increase safe handling procedures; and
- Other duties related to hazardous waste.

TABLE H-1

COURSE SYLLABUS
HAZARDOUS WASTE FACILITY OPERATORS' COURSE

INTRODUCTION
- A. Clean Water Act
- B. Clean Air Act
- C. Transportation Safety Act
- D. Occupational Safety and Health Act (OSHA)
- E. Toxic Substances Control ACt (TSCA)
- F. Resource Conservation and Recovery Act (RCRA)
- G. Comprehensive Environmental Response, Compensation, and Liability Act (SUPERFUND)
- H. State Regulations
- I. Local Regulations

KEY ELEMENTS OF RCRA
- A. Definition of a Hazardous Waste
- B. Manifest System for Tracking Hazardous Waste from Cradle to Grave
- C. Standards for Generators and Transporters
- D. Permits for Treatment, Storage, and Disposal Facilities
- E. Requirements for State Programs
- F. Requirements for Waste Analysis, Facility Inspection, Personnel Training, Emergency and Contingency, and Closure Plans

NAVY DIRECTIVES AND POLICY
- A. OPNAVNOTE 6240 of February 1980
- B. OPNAVINST 5090.1
- C. OPNAVINST 5100.23
- D. OPNAVINST 5100.19

RESPONSIBILITIES
- A. Commanding Officer
- B. Supply Officer
- C. Supervisory Personnel
- D. Hazardous Material/Waste Coordinator

HM/HW IDENTIFICATION, SOURCES
- A. Definitions
- B. Hazardous Waste Inventory
- C. HW Found in Significant Quantities
- D. Significantly Hazardous Substances
- E. Bulk Waste
- F. HMTA
- G. Overhaul and Decomissioning
- H. PCBs
- I. NRP

TABLE H-1, continued
COURSE SYLLABUS
HAZARDOUS WASTE FACILITY OPERATORS' COURSE

J. Ordnance Waste
K. Consolidated Hazardous Item List (CHIL)
L. Hazardous Material Information Systems (HMIS)
M. Hazardous Material Safety Data Sheets
N. Chemical Hazardous Response Information System (CHRIS)
O. OHMTADS
P. CHEMTREC - (800-424-9300)

COLLECTING, HANDLING, AND STORAGE PROCEDURES
A. Introduction/General
B. Proper Collection, Handling, SToring
C. Waste Generation Locations
D. Prevention of Spills
E. Solvents (including organic solvents)
F. Plastics (problems in case of fire)
G. Metals
H. Significantly Toxic Metals
I. Asbestos
J. Safety Practices and Protective Clothing
K. Fire Classifications

LABELING AND CONTAINERIZATION
A. Department of Transportation Labels
B. CHIL Label
C. HW Labels
D. Types of Containers

FACILITIES AND SERVICES DIVISION RESPONSIBILITY
A. Types of Treatment Systems
B. Disposal Systems
C. Manifest Systems

SPILL PREVENTION, CONTROL, AND COUNTERMEASURES (SPCC)

SPILL CONTINGENCY PLANNING
A. Definition of SPCC/Spill Contingency Plan
B. Responsibilities
C. Objectives of Plan
D. Spill Clean-Up Materials (small scale)
E. Spill Response Contacts
F. Spill Response Actions (small and large scale)
G. Knowledge of Spilled Material
H. Booms, Skimmers, Pumps, Dredging
I. Examples of Good vs Poor Response Actions
J. U.S. Navy Discharge Restrictions
K. Communications in an Emergency

ON-SITE TRAINING PROCEDURES

ATTACHMENT 4

CONTINGENCY PLAN

G-1 Overview

This Contingency Plan presents procedures and equipment maintained by the Naval Air Station - Memphis, Millington, TN to respond to hazardous situations related to the generation and storage of hazardous wastes.

Responses to emergencies involving hazardous wastes will be supervised by an Emergency Coordinator. The Emergency Coordinator will have the ultimate authority and responsibility for the following:

1. Determining if the emergency involves a spill of a reportable quantity of material (per 40 CFR 117).
2. Assessing the immediate threat to the environment or human health.
3. Determining when to initiate notification procedures to other agencies.
4. Ensuring that proper clean-up equipment and procedures are available.
5. Providing assistance, personnel, and equipment to generators for spill response.

Specific individuals responsible for emergency response are identified in this plan. Specific methods of response to spills, fires, and flood emergencies involving hazardous waste are given. Emergency and protective equipment is also described.

G-2 General Information

The Naval Air Station hazardous waste storage facility is owned and operated by the U.S. Navy.

The Naval Air Station (NAS) is located on Navy Road east of the City of Millington, Tennessee. Figure 1 is a regional map showing the location of the NAS. Figure 2 shows the location of the NAS relative to the City of Millington. Figure 3 depicts the location of the proposed building site.

Hazardous waste temporary storage areas are located throughout the Station.

G-3 Emergency Coordinators

In an emergency, contact the emergency coordinators listed below (primary first, then alternate):

Primary	Alternate
J. F. Conroy, CDR, CEC, USN	R. S. Barr, LT, CEC, USN
Public Works Officer	Assistant Public Works Officer
Office Tel: 872-5207	Office Tel: 872-5207
Home Tel: 388-1378	Home Tel: 872-2591
Home Address:	Home Address:
4970 Ridge Park Drive	501 Elrod Loop, NAS Memphis
Memphis, Tn 38128	Millington, TN 38053

The individuals listed as Emergency Coordinators have authority to commit necessary NAS Memphis resources and have been trained in emergency response. Their authority to commit resources is delegated from the Commanding Officer.

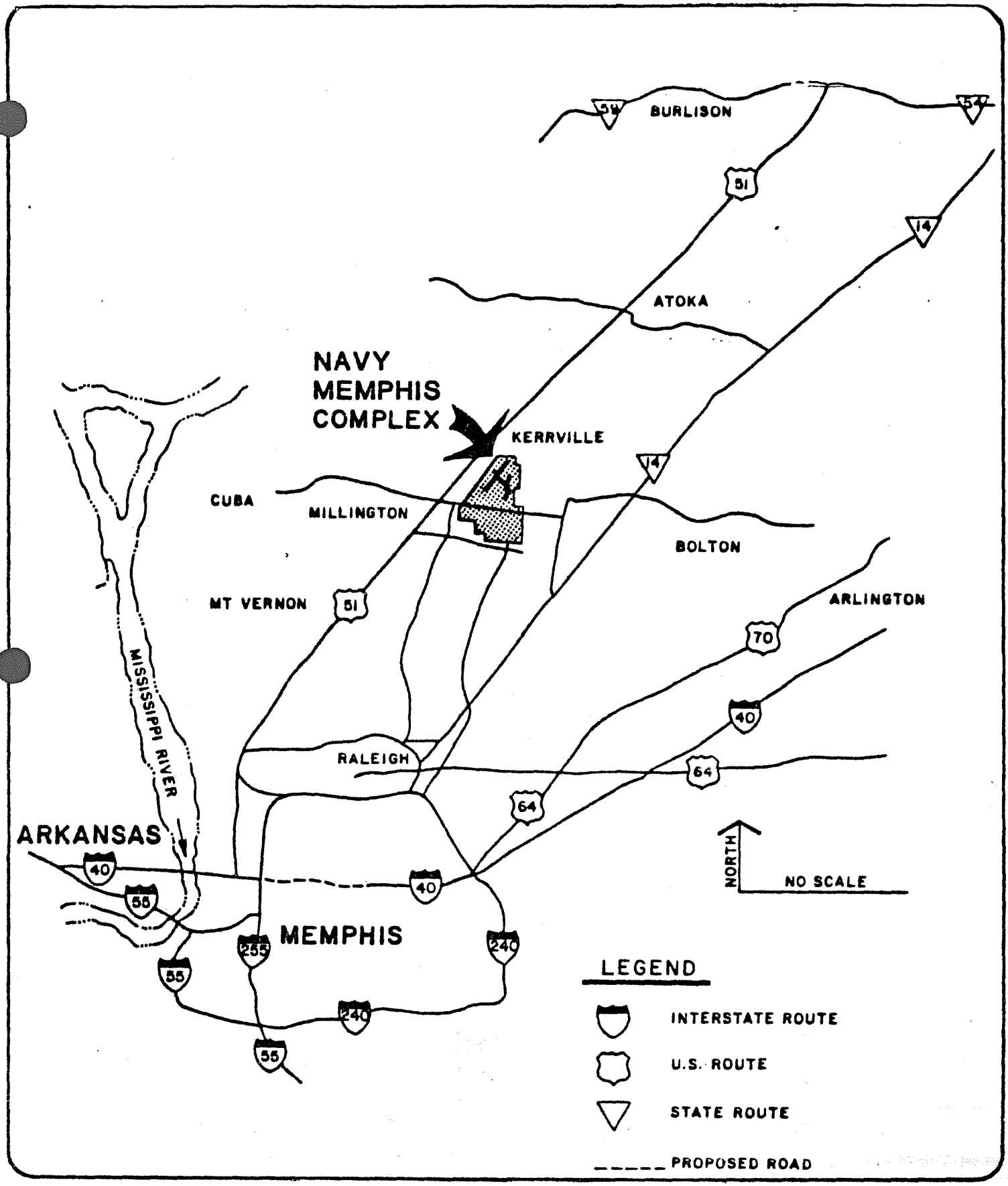


FIGURE 1

REGIONAL MAP
NAS MEMPHIS

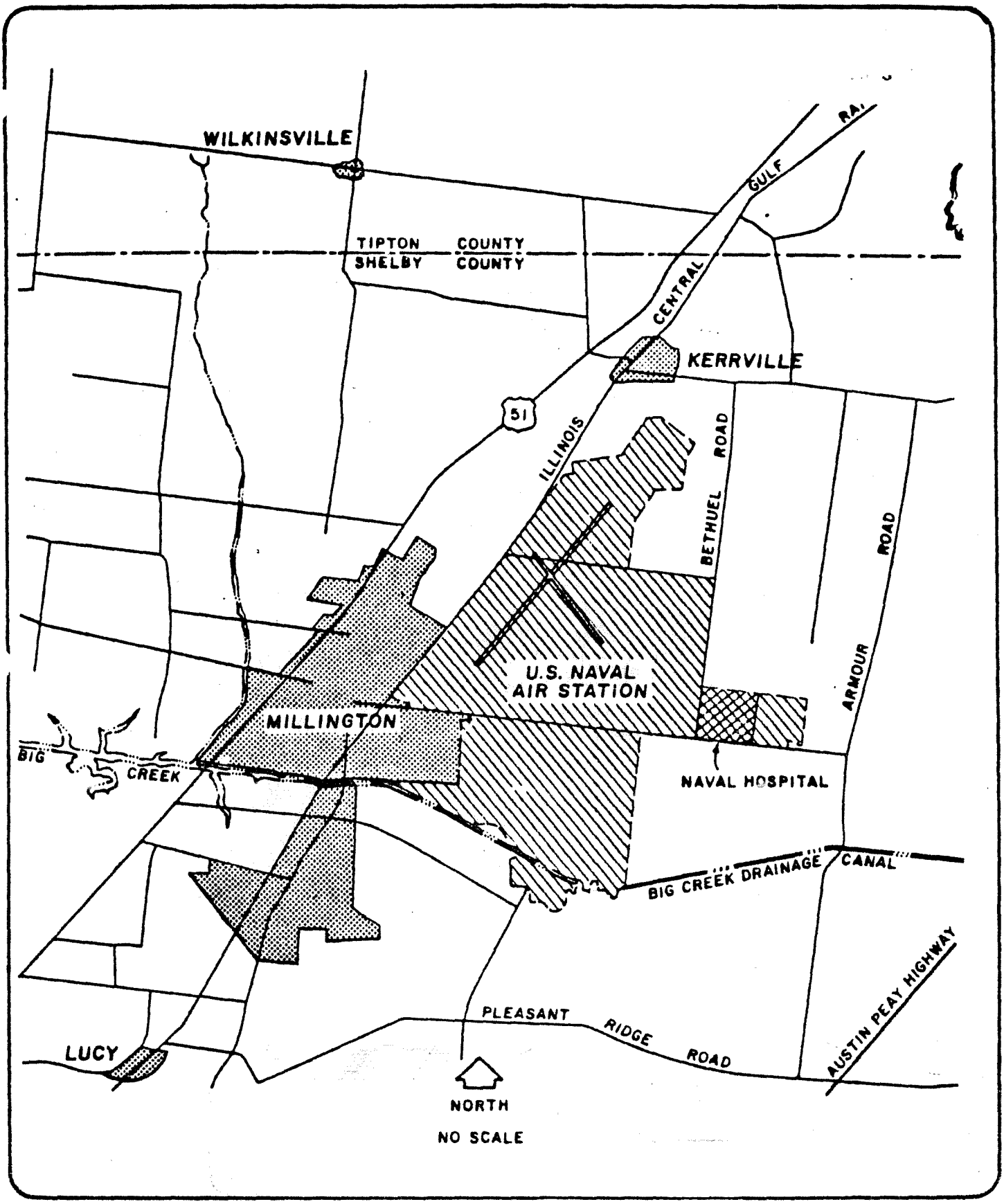


FIGURE 2

VICINITY MAP

NAS MEMPHIS

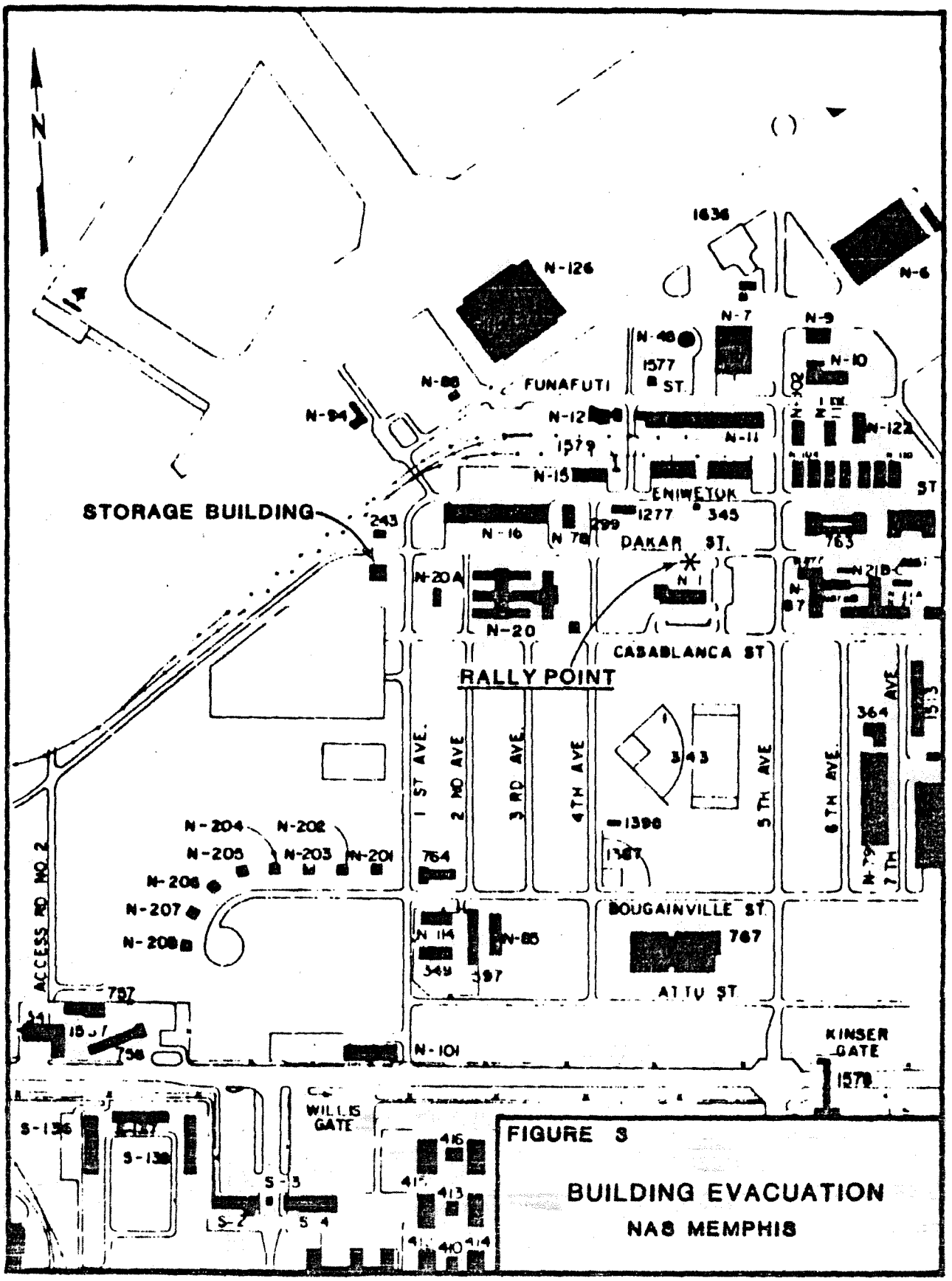


FIGURE 3

BUILDING EVACUATION
NAS MEMPHIS

G-4 Implementation Criteria

The Contingency Plan must be implemented under the following circumstances:

1. Fire/Explosion
   a. Fire causes release of toxic fumes;
   b. Fire spread beyond area of ignition;
   c. Fire threatens off-site areas;
   d. Fire fighting agents result in contaminated runoff; or
   e. Imminent threat of explosion.
2. Spills/Leaks
   a. Fire hazard exists due to spilled material;
   b. Toxic fume hazard exists;
   c. Groundwater may be threatened;
   d. Spill threatens property other than hazardous waste storage building; or
   e. Spill threatens navigable water.
3. Destructive Weather
   a. Destructive weather threatens storage building; or
   b. Potential for surface water contamination.

G-5 Emergency Response Procedures

G-5(a) Notification:

In the event of a potential emergency situation involving hazardous waste, the Emergency Coordinator must be notified by the discoverer. The Emergency Coordinator will make federal, state, local, and Navy required official notificatons, if necessary, after assessing the situation. The Emergency Coordinator will also notify the NAS Security Office, Fire Department, and hospital, as necessary. Other emergency response organizations with telephone numbers are listed in Table 1.

TABLE 1

EMERGENCY ORGANIZATIONS

EMERGENCY	ORGANIZATION	TELEPHONE*
Injury/Chemical Exposure	Naval Hospital	872-5801
	Poison Control Ctr.	528-6048
	Ambulance	872-5444
Fire/Explosion	NAS Fire Department	872-5333
Hazardous Material Spill	NAS Fire Department	872-5333
	TN Emergency Operations Center	800/342-1328
	TN Dept. of Public Health (Memphis)	529-6877
	Southern Division Naval Facilities Engineering Command	803/743-5510 (AV) 563-5510
Spill in Waterway	Nat'l. Response Ctr.	800/424-8802
	EPA Region IV	404/881-4062
	Coast Guard (Memphis)	529-3941
Natural Disaster	NAS Security	872-5533
	Civil Defense	528-2780

* All area codes are 901 unless otherwise specified.

G-5(b) Identifying Type of Waste:

The Emergency Coordinator will determine the types of waste involved, or threatened, in the emergency by reference to the area storage log. If the containers can be approached safely, this identification will be made from the labels on the containers. Appendix I lists all hazardous wastes generated at the Navy Memphis Complex and potentially stored at the facility.

G-5(c) Assessment:

The Emergency Coordinator will determine whether the emergency poses a major threat sufficient to activate the Contingency Plan. Appendix II presents limited general guidance for assessing hazards associated with fires and spills of specific hazardous wastes used at the NAS.

G-6 Control Procedures

Potential emergency incidents may be classified under one of the following: (1) fire/explosion, (2) spills/leaks, or (3) flood/hurricane. Appendix II gives limited guidance for controlling fires and spills of hazardous waste used at the Station. Additional guidance relating to fires, spills, and floods is contained in the following paragraphs.

G-6(a) Fire/Explosion:

The hazardous waste storage area has one class 80B fire extinguisher mounted not more than 60 inches from the ground. The lab area has one class 5B extinguisher. In the event of a small fire, the extinguishers should be used. Instructions for use are mounted on the fire extinguishers.

Notify the Emergency Coordinator. If the fire cannot be extinguished with these extinguishers, the Station Fire Department

should be telephoned. Notify the Fire Department dispatcher that a fire has been seen in a hazardous waste storage area.

All storage areas are easily accessed from paved drives which are kept clear at all times.

The Station Fire Department will initiate immediate response as follows:

1. Ensure that all personnel have evacuated the storage building. Give first aid to injured personnel.
2. Evacuate any loading/unloading vehicles if they are present.
3. If the Fire Commander orders a limited evacuation, the Emergency Coordinator will request Station Security to evacuate all personnel within a 1,000-foot radius of the area.
4. Fire Department will conduct fire extinguishing efforts.
5. An "all-clear" signal will be given when the Fire Commander and the Emergency Coordinator agree that the emergency is over.

G-6(b) Spills/Leaks:

The most probable emergencies involving spills or leaks of hazardous waste from containers are:

1. Spills caused by accidents during loading of waste at generating units;
2. Spills as a results of a vehicular accident during movement of waste;
3. Spills caused by accidents during unloading operations at the storage building; or

4. Leaks from stored containers that are large enough to require implementation of the Contingency Plan.

All loading, transfer, and unloading operations are conducted under the close and direct supervision of the Hazardous Waste Coordinator. This employee is trained in emergency response. Therefore, a trained and qualified person will always be immediately available under the most probable spill scenarios.

In the event of a spill or leak from one or more containers, the discoverer will notify the Emergency Coordinator. The Emergency Coordinator will make an immediate assessment of the degree of hazard posed by the spill. This assessment will include the type of material spilled, location of the spill, quantity spilled or likely to spill before containment is achieved, direction of spill and associated vapors if any, potential for injury, and the threat of fire or explosion. Based on this assessment, the Emergency Coordinator will initiate one or more of the following actions:

1. Direct the Station Fire Department to mobilize and stand by at the site of the spill for fire protection.
2. Request Public Works personnel to handle spill under his supervision.
3. Notify an outside spill response vendor with whom a prearranged contract has been written.

The area impacted by the spill will be evacuated for a distance of 50 feet in all directions. It is not probable that any spill or leak from a container will require greater evacuation.

If the Emergency Coordinator determines that Station personnel can handle the spill, employees will be directed to bring liquid spill absorbent material, 85-gallon recovery drums, and personal protective equipment to the spill locations. These personnel, instructed in safety procedures and use of emergency equipment, will attempt to contain the spill with absorbent and load solidified material into recovery drums.

The Emergency Coordinator will initiate all required notifications for the spill of a reportable quantity of a hazardous substance (one pound unless a higher quantity has been specified in 40 CFR 117) or hazardous waste.

If the Emergency Coordinator determines that on-base efforts are insufficient, or if navigable waters adjacent to the Base are threatened, he will notify a spill response contractor and the appropriate Naval authorities.

The Emergency Coordinator will initiate all notifications required by that plan. These notifications include the reporting of a spill of a reportable quantity of any hazardous material and reports to the appropriate authorities. The procedures to be followed in the event of a spill include:

1. Locate injured personnel, if any, and notify the Naval Hospital to mobilize ambulances and medical personnel.
2. Evacuate area within 50-foot radius and alert downwind employees.
3. Dispatch emergency personnel and associated response equipment to site of spill.
4. Monitor progress to determine whether off-site contractor should be mobilized.
5. Clean-up personnel must use personal protective equipment (gloves, suits, breathing apparatus).

6. Remove leaking drum to a recovery drum.
7. Use absorbent material to contain and solidify liquid.
8. Place all solidified spill material and contaminated spill debris in drums.

After the immediate emergency, the Emergency Coordinator must assess whether unprotected soils have been contaminated and arrange for the removal and containerization of contaminated soils to protect groundwater supplies from contamination. (It is unlikely that sufficient material can spill at one time to pose an immediate threat to groundwater.) The Emergency Coordinator must also ensure that all emergency equipment and safety equipment is cleaned, decontaminated, and re-stored for immediate use. Stock of absorbent and recovery drums must be checked and replenished if necessary.

G-6(c) Destructive Weather:
The elevation of the hazardous waste storage areas and the drainage of the surrounding area are such that flooding of the building is unlikely to occur. In the event of severe destructive weather, hazardous waste storage areas will be secured as required by the Station Disaster Plan.

G-6(d) Post Emergency Actions:
After an immediate emergency, the Emergency Coordinator must take action as described below for incidents contained within the storage building and for those escaping the storage building.
G-6(d)(1) Incidents Contained Within Storage Building:
Each spill or leak will be corrected immediately upon discovery. A portable suction pump will be used to collect spilled material for containment and recontainerization. Any liquids remaining after use of the pump will be absorbed and the absorbent will be combined with the pumped liquid. The pump will be rinsed with

tap water after each use, and the rinse water will be added to the collected liquid.

Each bay has an individual containment curb to contain all spills and leaks. If a spill occurs or a container leaks, the collected liquid can be identified by the label on the leaking or spilled container. If the label has been destroyed, then a visual determination will be used. If the material cannot be readily and correctly identified a sample of the spilled material will be collected and analyzed in accordance with the test methods described in the Waste Analysis Plan.

All spilled material and clean-up material will be drummed in an appropriate DOT approved container and stored for proper disposal.

Under the direction of the Emergency Coordinator, trained employees wearing rubber gloves, rubber boots and protective coveralls will wash each contaminated bay and wipe down walls of the storage building with water containing an ionic surfactant. All washings will be drummed for disposal as hazardous waste. The walls will be wiped with rinse water and the bay will then be rinsed with clean fresh water. The rinse waters will be drummed and a representative sample will be analyzed for each hazardous characteristic; i.e., ignitability, corrosivity, reactivity, EP Toxicity, and the applicable constituents of concern. If the rinse waters fail the analytical test, they will be disposed of as hazardous waste, and a second rinsing of the floor will be initiated. The floor will be repeatedly rinsed until the rinse waters pass the characteristic tests. Clean rinse waters will be transported to a sanitary sewer for disposal.

G-6(d)(2) Materials Escaping the Storage Building:

Representative samples of soil will be collected along both edges of the drive at the loading/unloading area at the storage building.

Samples of the top six inches of soil will be collected at five foot intervals along each side of the drive. All samples from the same side of the drive will be combined into one composite. Each of the two resulting composite samples will be analyzed for the four hazardous characteristics and the applicable constituents of concern.

If either sample fails any characteristic test, the Emergency Coordinator will establish a sampling grid that will encompass the driveway edge and any suspected contaminated areas topographically downslope. Discrete samples will be taken at each grid intersection and each sample will be analyzed for the hazardous characteristics. The results of the analyses will define the extent of soil contamination. An area extending five feet beyond the limits of contamination will be excavated to a depth of six inches. Contaminated soil will be transported to a commercial hazardous waste disposal facility and the excavation will be backfilled with uncontaminated material.

Excavation equipment will be decontaminated prior to backfilling of the excavation. The Emergency Coordinator will supervise decontamination. Heavy equipment will be driven to the interior of the excavation and will be manually cleaned of soil residues with hand scrapers, shovels, scrub brushes and brooms. After cleaning, vehicles will be driven from the excavation, and cleaning residue will be manually shoveled into drums for disposal as hazardous waste. Shovels will be cleaned using the hand tools, which will be discarded into drums containing residue for disposal.

G-7 Prevention of Recurrence of Fires, Explosions, or Releases

The Emergency Coordinator may order the temporary removal of containers of waste from storage area after an emergency until the area is safe and no recurrence can be expected.

G-7(a) Storage and Treatment of Released Material:
The Emergency Coordinator will order all spilled material, clean-up debris, and contaminated soil to be containerized and stored for later disposal.

G-7(b) Incompatible Wastes:
The Emergency Coordinator will ensure that released material incompatible with other wastes is segregated during temporary storage and that incompatible wastes are not accidentally mixed during clean-up.

G-7(c) Post Emergency Equipment Maintenance:
After an emergency event, all emergency equipment will be cleaned so that it is fit for use or it will be replaced. Before operations are resumed, an inspection of all safety equipment will be conducted. The Regional Administrator and state authorities will be notified that post-emergency equipment maintenance has been performed and operations will be resumed.

G-8 Emergency and Protective Equipment

Materials and equipment stored and necessary for safe emergency response at the storage building are listed in Table 2a. Support response materials and equipment at NAS Memphis are listed in Table 2. Personal protective equipment is stored at the HW storage areas, the Safety Offices, and the Fire Station.

Recovery drums and absorbent material are stored at the drum storage areas.

The Fire Department maintains its equipment at the fire station.

Emergency equipment, primarily fire extinguishers and absorbent material, must be located at all temporary waste collection staging areas. Employees must be trained in the use of this equipment in case of a hazardous waste emergency.

Each generator will maintain a supply of an absorbent material stored adjacent to the accumulation areas. The Emergency

TABLE 2A

MATERIALS AND EQUIPMENT FOR SAFE EMERGENCY RESPONSE AT HAZARDOUS WASTE STORAGE BUILDING

MATERIAL/ EQUIPMENT	QUANTITY	FUNCTION	CAPABILITY
Telephone	1	Obtain assistance	On and off-base contact with emergency response agencies
Fire Extinguishers	2	Fire protection	Extinguish small fires
Fire Alarm	1	Obtain assistance	Direct contact with NAS Fire Department
Fire Hydrants	2	Fire protection	Water supply at adequate volume and pressure
Absorbent	50 lbs.	Spill clean up	Absorb contents of largest container in storage
Eye wash/shower	1	Decontamination	Decontaminate personnel assigned to storage building
Fire Blankets	1	Fire protection	Personnel egress in fire
Portable Pump	1	Spill clean up	Suction spilled material to containment; transfer material from leaking container
Recovery Drums	2	Spill/ leak containment	Contain spilled/ contaminated material or leaking drums
Eye Glasses/ Face Shields	2	Personal protection	Protect eyes, face

TABLE 2A, continued

MATERIALS AND EQUIPMENT FOR SAFE EMERGENCY RESPONSE AT HAZARDOUS WASTE STORAGE BUILDING

MATERIAL/ EQUIPMENT	QUANTITY	FUNCTION	CAPABILITY
Self-contained breathing apparatus	1	Personal protection	Respiratory protection
Cartridge Respirators	1	Personal protection	Respiratory protection
Chemical protection suit	1	Personal protection	Body protection
Rubber (nitrile) gloves	2 pairs	Personal protection	Hand protection
Neoprene aprons	2	Personal protection	Skin protection
Safety Boots	1 pair	Personal protection	Foot protection
First Aid Kit	1	First Aid	Minor treatment

TABLE 2

RESPONSE SUPPORT
MATERIALS AND EQUIPMENT FOR SAFE EMERGENCY RESPONSE

MATERIAL/ EQUIPMENT	QUANTITY	FUNCTION	CAPABILITY
Truck	One	Transport of absorbent	Allows solidification agent to be brought to site of spill.
Pumper trucks	3	Fire fighting	1-1000 gal. 2-750 gal. Light water and foam capability.
85-gallon recovery drums	Fifteen	Spill response	Use to overpack leaking 55-gal. drums and for containerizing spilled material and spill debris.
Absorbent	2,000 lbs.	Spill response	Use to solidify and contain spills/leaks from containers. Do not use on unneutralized acids or caustics
Forklifts	One	Drum removal	Use to move drums of waste that are leaking.
Excavators	Two	Spill clean-up	Use to remove contaminated soil after spill.

Coordinator must have access to a 2,000-pound forklift and flatbed truck for emergency removal of hazardous waste.

Protective personal equipment, first aid kits, and fire extinguishers are also located at all generating sites throughout the facility. Specific personal protection equipment provided to employees handling hazardous waste include:

1. Neoprene gloves
2. Nitrile gloves
3. Safety boots
4. Rubber aprons
5. Safety glasses
6. Cartridge respirators
7. Chemical resistant suits (Tyvek)

Also available are self-contained breathing apparatus (SCBA) and complete chemical suits.

G-9 Distribution and Coordination

Copies of the Contingency Plan will be sent to, and coordinated with, the Naval Hospital, Station Fire Department, Station Safety Office, and Station Security Officer. A copy of the plan will be kept at Public Works. A copy will also be sent to the City of Memphis HAZMAT React Team.

G-10 Evacuation Plan

The Emergency Coordinator and the Station Fire Chief are responsible for determining whether evacuations are necessary in the event of an emergency. However, it is unlikely that an evacuation of the entire Station will be necessary under any emergencies.

Communications in the event of an emergency are maintained on the

Station telephone system. A telephone will be located in the Hazardous Waste Storage Building. The proposed Hazardous Waste Storage Building will also be equipped with a fire alarm call box linked directly to the Station Fire Department. The signal for evacuation is voice instruction from the Fire Commander and/or Station Security. The "all-clear" is also voice instruction.

If the Emergency Coordinator determines that evacuation of the storage building or adjacent buildings is necessary, Station Security will notify occupants and instruct them to leave the immediate vicinity and rally at the north side of Building N-1 (east on Dakar Street) as shown on Figure 3 of this plan.

Re-entry to the area will be allowed only when the Emergency Coordinator gives an "all-clear" instruction.

G-11 Required Reports

In addition to the verbal notifications to be initiated by the Emergency Coordinator, written follow-up reports will be prepared. All emergencies which require the implementation of the Contingency Plan will be reported in writing within 15 days to TDPH and the Administrator, EPA Region IV. The report will detail name of the facility, date, time, and type of accident; type and quantity of material involved; extent of injuries; an assessment of the impact on human health and the environment; and the quantity and disposition of material released. An example form is included as Appendix III.

After an emergency, the Emergency Coordinator will review the Contingency Plan for effectiveness and make changes as are appropriate. The plan will also be reviewed when Emergency Coordinators, emergency equipment, or the Hazardous Waste Management Plan are altered.

APPENDIX I

WASTE ANALYSIS PROTOCOL

WASTE	PARAMETER(S)	COMMENT
Ammonium hydroxide	pH	Solution has a pH >12.5 and is corrosive
Battery acid	pH EP Toxicity (Pb)	Solution has a pH <2.0 and is corrosive; solutions may contain a toxic level of lead.
Cleaning solvents (nonchlorinated)	Flash point, xylene, toluene, methyl ethyl ketone, methyl isobutyl ketone	These paint cleaners have flash points between 0°F and 110°F and are ignitable; they may contain the listed wastes xylene, methyl isobutyl ketone (F003) or toluene and methyl ethyl ketone (F005).
Carbon removing compound	pH Methylene chloride	This material has a pH <2.0 and may contain the listed waste methylene chloride (F001).
Chromic acid (Alodine)	pH EP Toxicity (Cr)	This waste is acidic (corrosive), and contains Cr, (D007).
Chromium crystals	EP Toxicity (Cr)	Contains Cr (D007), and is an oxidizer (D001).
Developers (film) and fixers	EP Toxicity (Ag)	Film developing and fixing chemicals contain silver and are toxic. (Exempt if silver is reclaimed.)
Dry cleaning solvent (PD-680)	Flash point	This solvent (PD-680) has a flash point ranging from 80°F to 145°F.
Ethylene dichloride	Ethylene dichloride	Listed waste (U077) and is flammable (D001).
Hydraulic fluid, contaminated (Skydrol)	EP Toxicity (Cd)	This fluid fails EP Toxicity for cadmium (D006).

APPENDIX I **(continued)**
WASTE ANALYSIS PROTOCOL

WASTE	PARAMETER(S)	COMMENT
Liquid dye	Flash point	This NDT solution has a flash point <140°F and is ignitable.
Mixed paint wastes and thinners	Flash point, EP Toxicity (Pb, Cr)	Paint wastes are toxic for lead and chromium and may be ignitable.
Paint remover	pH Methylene chloride	Paint removing (stripping) compounds are acidic with pH <2.0. Compound also contains the listed waste methylene chloride (F001).
Paints and paint sludges	Flash point, EP Toxicity (Pb, Cr)	Most paint materials are solvent-based with flash points varying from 40°F to 140°F and are ignitable. Some paints contain lead and chromium.
Sodium hydroxide (descaling compound)	pH	Material has a pH >12.5 and is corrosive.
Toluene	Flash point	Material is a listed waste (F005) and is ignitable; flash point <140°F.
Trichloroethane	Trichloroethane	Material is a listed waste (F001) for toxicity..
Trichlorotrifluoro-ethane (Freon)	Freon	Material is a listed waste (F002) for toxicity.
Xylene	Flash point	Xylene has a flash point of 84°F; it is also a listed waste (F003) for ignitability.

APPENDIX II

EMERGENCY RESPONSE INFORMATION

Ammonium Hydroxide

Fire: May react violently with water. Use dry chemical, CO_2 or foam. Keep containers cool. Fire may produce irritating fumes.

Spill: Do not touch material. Take up with sand or other absorbent material. Contact with skin and eyes should be avoided. Do not inhale fumes.

Chromic Acid (Alodine)

Fire: May react violently with water. Use dry chemical, CO_2 or foam. Some of these materials may burn but not ignite readily.

Spill: Do not touch material. Use personal protective clothing. Use sand or other non-combustible absorbent material. Wear self-contained breathing apparatus.

Chromium Crystals

Fire: Vapors from fire are toxic. May burn rapidly. May ignite other combustible materials. Reaction with fuels may be violent. Use self-contained breathing apparatus and full protective clothing. Use dry chemical or CO_2, water spray. Keep containers cool.

Spill: Inhalation of dust poisonous. Keep combustibles away from spilled material. With clean shovel place material into clean, dry container and cover.

Carbon Removing Compound (Methylene Chloride)

Fire: Vapors from fire are toxic. Use self-contained breathing apparatus. Use dry chemical, foam, or CO_2. Does not ignite easily.

Spill: Do not touch spilled material. Soak up with absorbent material or allow to evaporate.

Ethylene Dichloride

Fire: Will ignite and burn easily. Vapor explosion hazard possible. Container explosion hazard possible. Use dry chemical, CO_2, water or foam.

Spill: Vapors may cause dizziness. Contain source of heat or sparks. Soak up with non-combustible absorbent material.

APPENDIX II (continued)
EMERGENCY RESPONSE INFORMATION

Freon (Trichlorotrifluoroethane)

Fire: Vapors from fire are toxic. Use self-contained breathing apparatus. Use dry chemical, foam, or CO_2. Does not ignite easily.

Spill: Do not touch spilled material. Soak up with absorbent material or allow to evaporate.

Hydraulic Fluid (Skydrol)

Fire: Will ignite and burn easily. Vapors from fire are toxic. Wear self-contained breathing apparatus and full protective clothing. Use dry chemical, CO_2, water spray or foam.

Spill: Take up with sand or other noncombustible absorbent material.

Mixed Solvents

Fire: Will ignite and burn easily. Vapor explosion hazard possible. Container explosion hazard possible. Use dry chemical, CO_2, water or foam.

Spill: Vapors may cause dizziness. Contain sources of heat or sparks. Soak up with non-combustible absorbent material.

Methyl Ethyl Ketone

Fire: Will ignite and burn easily. Vapor explosion hazard possible. Container explosion hazard possible. Use dry chemical, CO_2, water or foam.

Spill: Vapors may cause dizziness. Contain sources of heat or sparks. Soak up with non-combustible absorbent material.

Methyl Isobutyl Ketone

Fire: Will ignite and burn easily. Vapor explosion hazard possible. Container explosion hazard possible. Use dry chemical, CO_2, water or foam.

Spill: Vapors may cause dizziness. Contain sources of heat or sparks. Soak up with non-combustible absorbent material.

APPENDIX II (continued)

EMERGENCY RESPONSE INFORMATION

Mixed Chlorinated Solvents

Fire: Vapors from fire are toxic. Use self-contained breathing apparatus. Use dry chemical, foam, or CO_2. Does not ignite easily.

Spill: Do not touch spilled material. Soak up with absorbent material or allow to evaporate.

P-D-680 Type I (Dry Cleaning Solvent)

Fire: Will ignite and burn easily. Vapor explosion hazard possible. Container explosion hazard possible. Use dry chemical, CO_2, water or foam.

Spill: Vapors may cause dizziness. Contain sources of heat or sparks. Soak up with non-combustible absorbent material.

Paint Wastes

Fire: Use dry chemical, CO_2, or water. Will burn. Vapor explosive possible in confined spaces.

Spill: Remove sources or sparks. Soak up with non-combustible absorbent material.

Paint Thinners

Fire: Will ignite and burn easily. Vapor explosion hazard possible. Container explosion hazard possible. Use dry chemical, CO_2, water or foam.

Spill: Vapors may cause dizziness. Contain sources of heat or sparks. Soak up with non-combustible absorbent material.

Paint Stripper

Fire: May react with water. Use dry chemical, foam, or CO_2. Vapors from fire are toxic. Wear self-contained breathing apparatus.

Spill: Do not touch spilled material. Contact causes burns to eyes and skin. Soak up with earth, sand, or inorganic absorbent material.

APPENDIX II (continued)
EMERGENCY RESPONSE INFORMATION

Sodium Hydroxide

Fire: May burn but not easily ignited. Vapors from fire may be toxic. Wear full protective clothing and self-contained breathing apparatus. Use dry chemical, CO_2, water spray or foam.

Spill: Do not touch material. Wear full protective clothing and self-contained breathing apparatus. Soak up with non-combustible absorbent material.

Toluene

Fire: Will ignite and burn easily. Vapor explosion hazard possible. Container explosion hazard possible. Use dry chemical, CO_2, water or foam.

Spill: Vapors may cause dizziness. Contain source of heat or sparks. Soak up with non-combustible absorbent material.

Trichloroethane

Fire: Vapors from fire are toxic. Use self-contained breathing apparatus. Use dry chemical, foam or CO_2. Does not ignite easily.

Spill: Do not touch spilled material. Soak up with absorbent material or allow to evaporate.

Xylene

Fire: May be ignited by heat, sparks, or flames. Container explosion hazard possible. Vapor explosion hazard possible. Vapors may flash back to source of ignition. Wear full protective clothing and self-contained breathing apparatus. Use dry chemical, CO_2, water spray or foam.

Spill: Do not touch material. Wear full protective clothing and self-contained breathing apparatus. Soak up with non-combustible absorbent material.

APPENDIX III

REPORTING FOR EMERGENCY EVENTS
TO NATIONAL RESPONSE CENTER
and
FEDERAL/STATE AGENCIES

Name, address, and phone number of reporter

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:
U.S. EPA, Region IV
Regional Administrator
345 Courtland Street
Atlanta, GA 30365

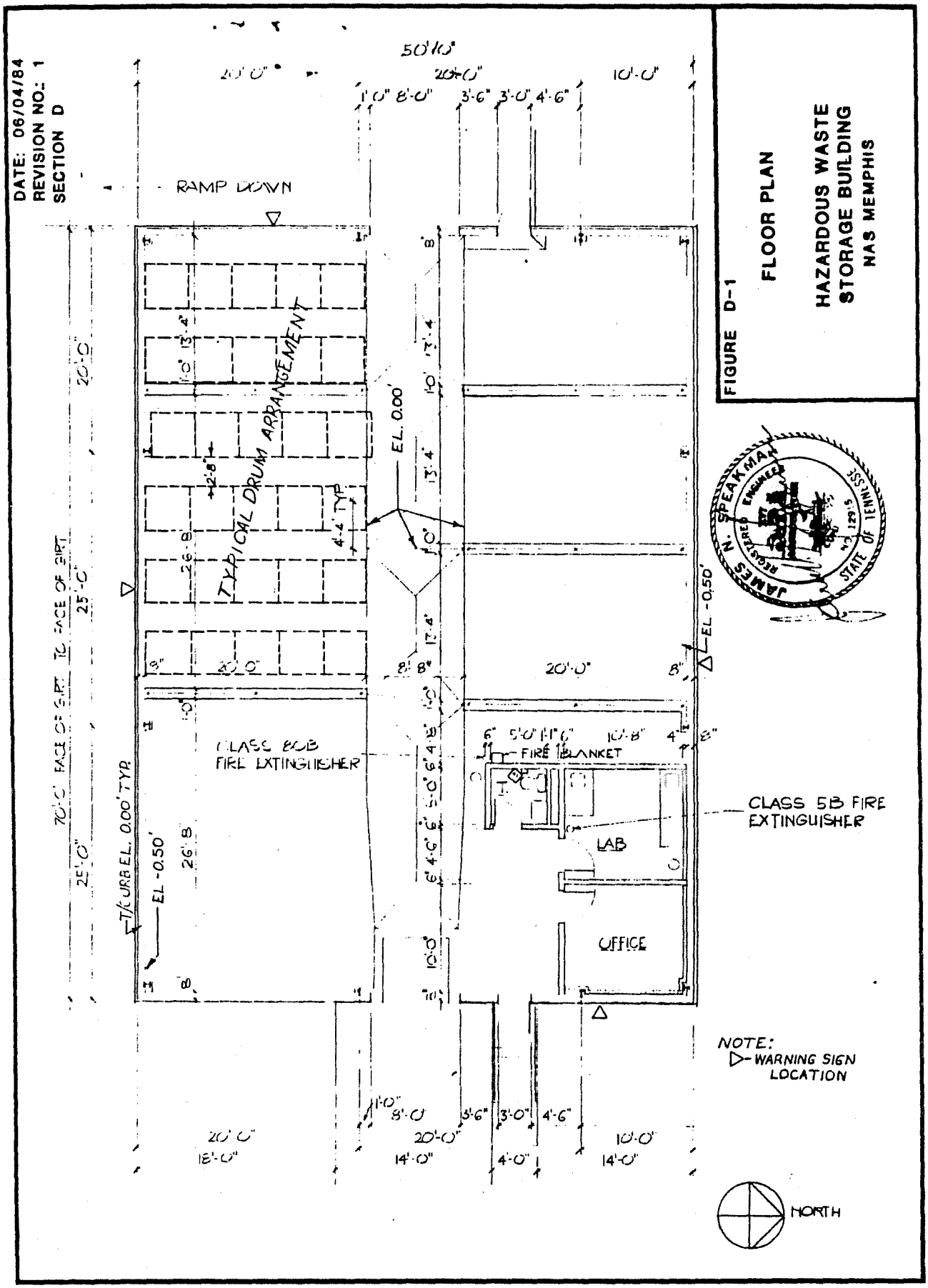
Division of Solid Waste Management
TN Department of Public Health
701 Broadway, Customs House 4th Floor
Nashville, TN 37219-5403

Telephone to:
National Response Center
800-424-8802

TN Emergency Operations Center
800-342-1328

ATTACHMENT 5

AISLE SPACE


DATE: 06/04/84
REVISION NO.: 1
SECTION D
FIGURE D-1
FLOOR PLAN
HAZARDOUS WASTE
STORAGE BUILDING
NAS MEMPHIS
RAMP DOWN
TYPICAL DRUM ARRANGEMENT
EL. 0.00
EL. -0.50'
CLASS BCB
FIRE EXTINGUISHER
FIRE BLANKET
CLASS 5B FIRE
EXTINGUISHER
LAB
OFFICE
70'-0" FACE OF SIPT TO FACE OF SIPT
T/CURB EL. 0.00' TYP.
NOTE:
WARNING SIGN
LOCATION
NORTH
JAMES N. SPEAKMAN
REGISTERED ENGINEER
STATE OF TENNESSEE

ATTACHMENT 6

CLOSURE PLAN

Closure Plan

1.(a) This closure plan will:

* ensure that the hazardous waste storage facility will require no further maintenance and controls;

* eliminate threats to human health and the environment; and

* avoid escape of hazardous wastes, hazardous waste constituents, leachate, contaminated rainfall, and waste decomposition products to the surface or groundwaters or the atmosphere.

The storage facility design provides for containment of all internal spills or leaks, and the NAS Memphis Contingency Plan required the immediate removal of contaminated soil in the event of a spill or leak during loading, unloading or transfer to the storage building. Those preventive measures minimize the extent of decontamination at closure.

1.(b) Final Closure Activities:
Because of the design and operation of the storage facility, final closure will include transportation of the final inventory of waste to a commercial disposal facility, washdown of the storage building and removal of any residual contaminated soil in the loading/unloading area.

1.(c) Maximum Waste Inventory:
The maximum inventory of wastes in storage at any time during the operating life of the facility will be 17,160 gallons (equivalent to 312 55-gallon drums).

1.(d) Inventory Removal and Decontamination:
The final inventory of wastes will be removed form the storage building and transported to a commercial hazardous waste disposal facility. All drums will be sealed and labeled prior to shipment. The drums will be loaded by forklift.

After the final inventory of waste has been removed, the Hazardous Waste Coordinator will inspect the building and have all loose items, i.e., papers, pallets, or empty containers removed and packaged for disposal as hazardous wastes. The owner or operator and a Tennessee registered professional engineer will certify the building is ready for decontamination.

Under the direction of the Hazardous Waste Coordinator, trained employees wearing rubber gloves, rubber boots and protective coveralls will scrape, brush and wipe down the walls and scrape, brush and wash the floor, aisles, curbs and loading area of the storage building with water containing an ionic surfactant until the surfaces are free of any material adhering to them. Care will be used to ensure that joints, gouges, etc. are thoroughly cleaned. All wash waters will be drummed for disposal as hazardous waste. These areas will then be rinsed twice with clean fresh water. Waters from the second rinse will be sampled and tested for the characteristics of hazardous waste and for applicable constituents of concern from TN Rule 1200-1-11-.02, Appendix .02/D. If results indicate that the rinse water contained more than de minimis concentrations of the constituents of concern and/or fail one or more characteristic tests, then an additional rinse will be performed and rinse

waters tested as above. (For purposes of closure, de minimis will be considered to be any hazardous constituent in a concentration below 0.010 mg/l). The floor will be repeatedly rinsed until rinse waters are non-hazardous. Clean rinse waters will be transported to the sanitary sewer for disposal.

Each bay will be decontaminated individually. Once the decontamination process for the storage facility is completed, the Hazardous Waste Coordinator and a Tennessee registered professional engineer will visually inspect the storage building, review the test results of each bay, and if all criteria described above have been met, the owner of operator and a Tennessee registered professional engineer will certify the facility to be decontaminated.

Soil samples will be collected from an unoccupied area at least one mile from the storage building with no known history of hazardous waste operations. These samples will be tested for the four hazardous waste characteristics and applicable constituents of concern (per Rule 1200-1-11-.02, Appendix .02/D). The results of these tests will be used as background data for determining when soil contamination has been cleaned up. All sampling methods and test methods will be as specified in the Waste Analysis Plan.

Representative samples of soil will be collected along both edges of the drive at the loading/unloading area at the storage building.

Samples of the top six inches of soil will be collected at five foot intervals along each side of the drive. All samples from the same side of the drive will be combined into one composite. Each of the two resulting samples will be analyzed for the four characteristics of hazardous waste and applicable constituents of concern from Rule 1200-1-11-.02. Appendix .02/D.

If either sample fails the characteristic test or contains constituents of concern concentrations significantly higher than the background, the Hazardous Waste Coordinator will establish a sampling grid that will encompass the driveway edge and an area topographically downslope for a distance of 50 feet. (For purposes of the closure plan, concentrations of constituents of concern more that 15% above background or higher than 0.01 mg/kg, whichever is greater, will be considered significant). Because of the number of variables, the sampling grid and the total number of samples will be coordinated with the Tennessee DHE Commissioner at the time the requirement for further sampling occurs. Discrete samples will be taken at each grid intersection and each sample will be analyzed for the hazardous characteristic and/or constituent of concern found to be significant in the first sampling. The results of these analyses will be used to define the extent of soil contamination. An area extending five feet beyond the limits of contaminated soil will be transported to a commercial hazardous waste disposal facility and the excavation will be backfilled with uncontaminated material.

Two and one-half inch diameter holes will be bored at five foot intervals along all floor joints and cracks. Samples of the top six inches of soil beneath these joints and cracks will be collected. All samples from each crack will be kept separate. All samples from the same floor joint will be combined into one composite sample. All samples will be analyzed for the four hazardous characteristics and applicable constituents of concern. If any sample fails the

analytical test, additional samples will be analyzed to determine the extent of contamination. The Tennessee DHE Commissioner will be consulted to determine an acceptable sampling grid and total number of samples. Once the extent of the contaminated area is established, the concrete floor and contaminated soil will be removed for disposal as a hazardous waste at a commercial hazardous waste disposal facility. Any excavation will be backfilled with uncontaminated material.

Excavation equipment will be decontaminated prior to backfilling of the excavation. The Hazardous Waste Coordinator will supervise decontamination. Heavy equipment will be driven to the interior of the excavation and will be manually cleaned of soil residues with hand scrapers, shovels, scrub brushes, and brooms. After cleaning, vehicles will be driven from the excavation, and cleaning residue will be manually shoveled into drums for disposal as hazardous waste. Shovels will be cleaned using the hand tools, which will be discarded into drums containing residue for disposal.

1.(e) Schedule for Closure:
Within 90 days after receipt of the final volume of hazardous wastes, final closure activities will be initiated. The Tennessee DHE Commissioner will be notified by NAS Memphis 180 days prior to expected date of closure. The proposed schedule for closure is shown in Figure I-1. Closure will be completed within 180 days.

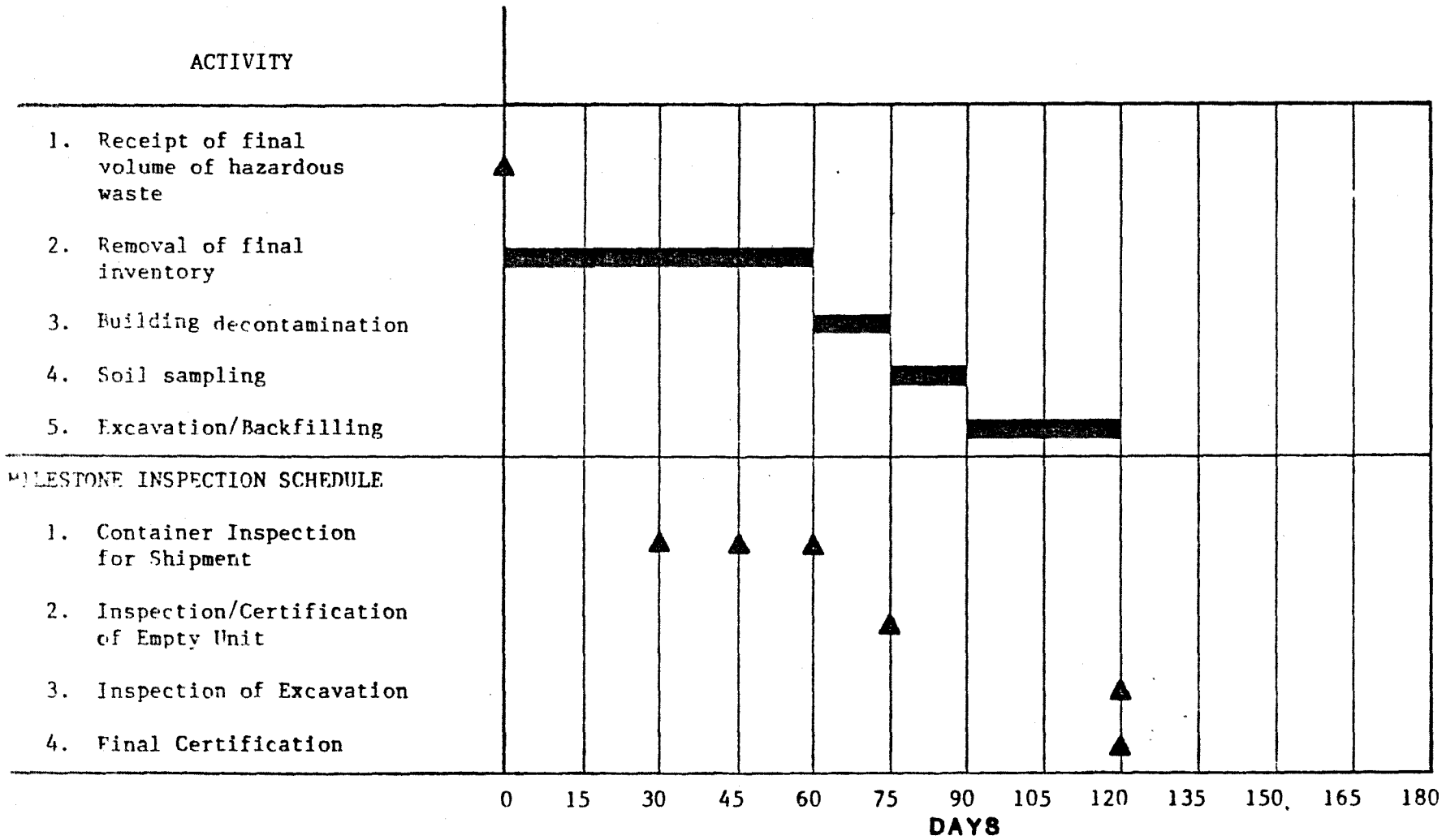
An independent Tennessee registered professional engineer will certify each phase of closure as follows:

1. Initial inspection of containers readied for shipment

2. Facility decontamination ; visual and record inspection to insure each bay and the entire facility has been decontaminated according to the approved procedures

3. Any necessary soil excavation and replacement; visual and record inspection to insure removal of contaminated soil, visual inspection of equipment decontamination

4. Final inspection and certification to the Tennessee and federal authorities.



NOTE: USEPA Regional Administrator and Tennessee DHE Commissioner will be notified 180 days prior to expected date of closure.

FIGURE I-1

CLOSURE SCHEDULE
STORAGE BUILDING
NAS MEMPHIS

ATTACHMENT 7

NEW CONTAINER STORAGE FACILITY

D-1 Container Storage

1.(a) Container Storage Facility

NAS Memphis is designing a new hazardous waste container storage building to serve the entire Station. This section details design and management of the planned storage building. The engineering drawings and specifications of the building are certified by a Tennessee registered professional engineer and are in full compliance with U.S. Navy building codes. The structure will be constructed when the RCRA permit is issued by USEPA and the State of Tennessee. The storage building will be located on the north side of the Station at the northwest fringe of the developed area.

A 3,500 square foot building is planned. It will be divided into six storage bays and each bay will have separate spill containment structures. This design will allow maximum flexibility in segregating incompatible wastes. The building is designed for a maximum inventory of 312 palletized 85 or 55 gallon drums, including aisle space allowance. Three bays are designed for a maximum of 40 drums each and two for 80 drums each. The storage bay at the northwest corner will accommodate 32 drums without interfering with access to the rear personnel door. The container storage bays occupy 2,133 square feet.

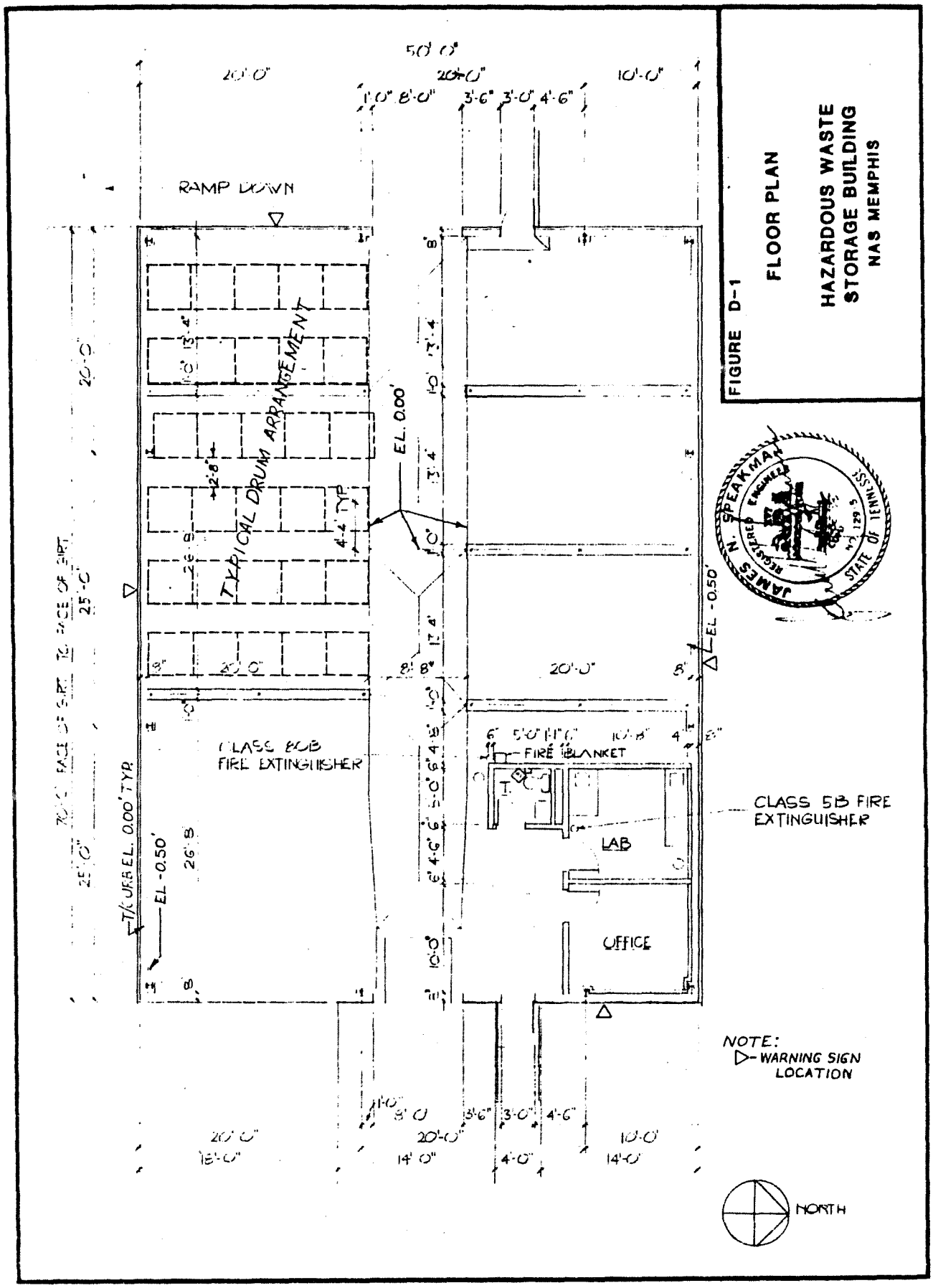
The building has a maximum capacity of 78 pallets. With four drums per pallet, without stacking, the maximum capacity for 55 or 85 gallon drums is 312. However, the building will also house wastes stored in other container sizes, including 1 gallon, 5 gallon, and 30 gallon sizes. Figure D-1 is a plan view of the building. Figure D-2 is a cross-sectional view. Table D-1 presents the dimensions and capacity of each bay.

The building design incorporates a pre-engineered enclosed metal building over a continuous concrete slab. Expansion joints have been purposefully placed at high points in the floor slab. The expansion joints will minimize floor cracks. With the joints at the high point of the slab, spilled materials will flow away from rather than accumulate at these joints. The joints will be filled with an epoxy sealant. Routine inspection procedures will identify any cracks or deterioration of joint filler; cracks will be filled with epoxy sealant. These construction and management procedures will preclude contamination of soil underneath the floor slab.

The curbs separating the storage bay will be part of the monolithic floor slab and will measure from zero up to six inches in height by 12" width (see Figure D-1) and will withstand normal impacts.

1.(b)

In order to accommodate the variability in quantities of wastes, no bay will be dedicated to a specific type of waste. Rather, a flexible container management system will be implemented to allow maximum utilization of storage space, while prohibiting the placement of incompatible wastes in the same storage bay.


50'-0"
20'-0"
20'-0"
10'-0"
1'-0" 8'-0" 3'-6" 3'-0" 4'-6"
RAMP DOWN
TYPICAL DRUM ARRANGEMENT
EL. 0.00'
EL. -0.50'
CLASS B/C
FIRE EXTINGUISHER
FIRE BLANKET
CLASS 5B FIRE
EXTINGUISHER
LAB
OFFICE
NOTE:
▷- WARNING SIGN
LOCATION
NORTH
FIGURE D-1
FLOOR PLAN
HAZARDOUS WASTE
STORAGE BUILDING
NAS MEMPHIS
JAMES N. SPEAKMAN
REGISTERED ENGINEER
STATE OF TENNESSEE

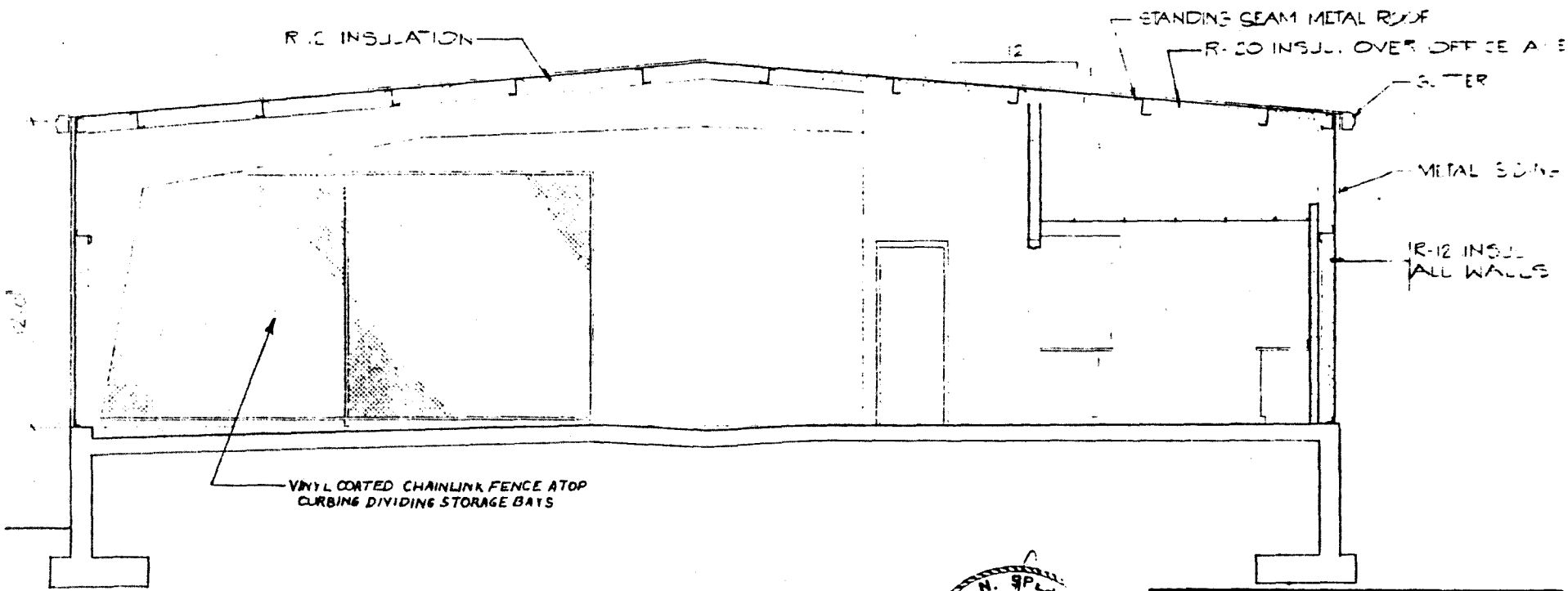


FIGURE D-2

HAZARDOUS WASTE STORAGE BUILDING SECTION

NAS MEMPHIS

TABLE D-1

STORAGE AND CONTAINMENT CAPACITIES
CONTAINER STORAGE BUILDING

COMPONENT	FLOOR DIMENSIONS	CAPACITY		CONTAINMENT				
		DRUMS	GALLONS[1]	REQUIRED	CONFIGURATION	DEPTH	CAPACITY CU FT [FORMULA]	CAPACITY GALLONS
Large Bay	26'-8"x20'-0"	80	4400	440	Wedge	6"	133 [1/2(26.67x20x0.5)]	997
Small Bay	13'-4"x20'-0"	40	2200	220	Wedge	6"	67 [1/2(13.33x20x0.5)]	499
Small Bay W/Door	13'-4"x20'-0"	32[2]	1760	176	Wedge	6"	67 [1/2(13.33x20x0.5)]	499
Center Aisle	63'-0"x8'-8"	4[3]	220	55	Four (4) Troughs	2"	8.5[4] [1/3(8.67x8.67x0.17) +1/2(6x8.67x0.17)]	64[4]

NOTES:
1 - Based on 55-gallon drums
2 - Provides clear space for egress
3 - Only one pallet of drums will be allowed in aisle during movement of drums; at no time will aisles be used for storage.
4 - Capacity of smallest catchment area

These specific management practices will be implemented by the Hazardous Waste Coordinator:

EMPTYING OF A BAY

- Remove all containers from bay
- Inspect the bay. If any liquid is present, remove it by sump pump, wash down bay floor, and remove rinsewater. The removed liquids will be analyzed, identified, containerized and labeled for proper disposal.
- Remove sign(s) from bay fence.

PLACING CONTAINERS IN EMPTY BAY

- Place containers in bay assuring adequate aisle space.
- Attach appropriate sign inside bay.

PLACING CONTAINERS IN OCCUPIED BAY

- Determine compatibility of received waste with that already present, using the compatibility table from 46 CFR 28728 appearing in Table C-9, Attachment 1, of this permit, supplemented by the information in the NFPA Fire Protection Guide on Hazardous Materials.
- Place containers in a bay containing compatible material and assure adequate aisle space.
- If the received waste is of a different general classification than indicated by the sign in the bay, attach an additional sign identifying the received waste type.

When chlorinated wastes are received, the Hazardous Waste Coordinator will ensure that all aluminum and galvanized materials are removed from the bay receiving that waste.

The Hazardous Waste Coordinator will have a sufficient number of signs identifying each type of waste to allow adequate waste type identification.

2. <u>Secondary Containment:</u>

2.(a)
The floor of the container storage area is constructed of concrete designed for a uniform live load of 500 pounds per square foot and a 10,000 pound forklift axle load. Each bay is surrounded by a curb on 3 sides (see Figure D-1). Within each bay, the floor is sloped toward the rear curb. The sloped floor, bounded by curbs, forms a wedge-shaped containment, isolating any leaked or spilled liquids within one storage bay. Table D-1 presents the relationship between storage capacity and containment volume in each bay. All drums will be stored on pallets to prevent contact with standing liquids.

The center aisle will contain four shallow inverted pyramid catchments, separated near the center of the building (see Figure D-1). Table D-1 presents the containment volume provided by the aisle catchments. Only one pallet of

four drums will be moved along the aisle, thus prohibiting incompatible wastes in that area.

2.(b)
Each spill or leak will be corrected immediately upon discovery. A portable suction pump will be used to collect spilled material for containment for recontainerization. Any liquids remaining after use of the pump will be absorbed and the absorbent will be combined with the pumped liquid. The pump will be rinsed with tap water after each use, and the rinse water will be added to the collected liquid.

Each bay has an individual containment curb to contain all spills and leaks. If a spill occurs or a container leaks, the collected liquid can be identified by the label on the leaking or spilled container. If the label has been destroyed, then a visual determination will be used. If the material cannot be readily and correctly identified a sample of the spilled material will be analyzed in accordance with the test methods described in Attachment 1 of this permit.

ATTACHMENT 8

CLOSURE PLAN

EXISTING CONTAINER STORAGE UNIT

CLOSURE PLAN FOR THE

HAZARDOUS WASTE STORAGE FACILITY NEAR THE AIMD

NAVAL AIR STATION MEMPHIS

MILLINGTON, TENNESSEE

This closure plan was developed to ensure that the interim status container storage facility near the AIMD at Naval Air Station (NAS) Memphis, Millington, Tennessee will not require further maintenance and controls to prevent environmental contamination. It minimizes or eliminates threats to human health and the environment. It ensures that escape of hazardous waste, hazardous waste constituents, leachate, contaminated rainfall, or waste decomposition products to soil, ground water, surface waters or atmosphere will not occur. The container storage facility which is located near Building N-12 consists of a 70' by 45' storage yard and an adjacent quonset building. This site was identified on the original Part A Hazardous Waste Permit Application submitted to the EPA and the Tennessee Department of Health and Environment (TDHE). This facility will be replaced by the proposed container storage facility described in the Permit. Upon occupancy of the new permitted container storage facility, all hazardous waste in storage at this interim status facility will either be moved to the new building or transported off-site to an approved treatment, storage, or disposal facility.

PARTIAL CLOSURE

NAS Memphis plans to discontinue the use of the quonset building prior to final closure of the interim status facility. The initiation of closure activities is expected to be 6 months after issuance of the permit for the new container storage facility. The procedures for inventory removal, disposal and decontamination of equipment described for final closure will be followed to close the unit.

FINAL CLOSURE

NAS Memphis expects to close the interim status facility upon occupancy of the new permitted container storage facility. Procedures for final closure, including clean-up and decontamination procedures are described below.

MAXIMUM INVENTORY

The maximum permitted inventory of water stored at this site during its operational life is 3,850 gallons (seventy 55- gallon drums) of hazardous waste.

INVENTORY REMOVAL, DISPOSAL, AND DECONTAMINATION OF EQUIPMENT

Decontamination of Quonset Building

After the final inventory of wastes has been removed from the quonset building, the Hazardous Waste Coordinator will inspect the site and have all loose items, i.e., papers, pallets, or empty containers, removed and packaged for disposal as hazardous waste.

Under the direction of the Hazardous Waste Coordinator, trained employees wearing rubber gloves, rubber boots, and protective coveralls will scrape and brush the concrete pad to remove any material adhering to it. This material will be containerized for disposal as a hazardous waste. The pad shall then be washed with an ionic surfactant and rinsed three times with clean, fresh water. The waste and rinse waters will be contained, collected, and drummed for disposal as hazardous waste.

The third rinse will be collected and separately contained and drummed. A sample will be taken from the third rinse and analyzed for the characteristics of hazardous waste and for total organic halogens (TOX). If results indicate that the rinse water contained more than 25 mg/l of TOX and/or failed one or more characteristic tests, then an additional rinse will be performed and rinse waters tested as above. The wash-rinse will be performed and rinse waters tested as above. The wash-rinse procedure will be repeated until the rinse waters are non-hazardous. All rinse and wash waters will be drummed and disposed of as hazardous waste.

A minimum of three samples of the top six inches of soil will be collected at the location of cracks of joints in the concrete pad. In addition, a composite soil sample will be collected from an unoccupied area at least one mile from the storage facility to be used as background data for determining soil contamination. The three samples and the background sample will be analyzed for the characteristics of hazardous waste and for the following constituents: xylene, toluene, methyl ethyl ketone, methyl isobutyl ketone, methylene chloride, ethylene dichloride, trichloroethane, trichlorotrifluoroethane (freon), formaldehyde, and methanol. If any sample fails the characteristic test or contains constituents of concern significantly higher than the background, the Hazardous Waste Coordinator will establish a sampling grid to determine the extent of contamination. (For purposes of the closure plan, concentrations of constituents of concern more than 15% above background or higher than 0.01 mg/kg, whichever is greater, will be considered significant). An area extending five feet beyond the limits of contamination will be excavated to a depth of six inches. Contaminated soil will be transported to a commercial hazardous waste disposal facility and the excavation will be backfilled with uncontaminated material.

Decontamination of Storage Yard

After the final inventory of wastes has been removed from the storage yard, the Hazardous Waste Coordinator will inspect the site and have all loose items, i.e., papers, pallets, or empty containers, removed and packaged for disposal and hazardous waste.

Under the direction of the Hazardous Waste Coordinator, trained employees wearing rubber gloves, rubber boots, and protective coveralls will remove the polyethylene sheet which provided containment for the canopied area. The sheet will then be folded and placed in a drum for disposal off-site as hazardous waste. The employees will then scrape and brush the asphalt pavement to remove any material adhering to it. This material will be containerized for disposal as a hazardous waste. The pad shall then be washed with an ionic surfactant and

rinsed three times with clean, fresh water. The wash and rinse waters will be contained, collected, and drummed for disposal as hazardous waste.

The third rinse will be collected and separately contained and drummed. A sample will be taken from the third rinse and analyzed for the characteristics of hazardous waste and for total organic halogens (TOX). If results indicate that the rinse water contained more than 25 mg/l of TOX and/or failed one or more characteristic tests, then an additional rinse will be performed and rinse waters tested as above. The wash-rinse procedure will be repeated until the rinse waters are non-hazardous. All rinse and wash waters will be drummed and disposed of as hazardous waste.

A minimum of three samples of the top six inches of soil will be collected at the location of cracks or breaks in the asphalt. In addition, a composite soil sample will be collected from an unoccupied area at least one mile from the storage facility to be used as background data for determining soil contamination. The three samples and the background sample will be analyzed for the characteristics of hazardous waste and for the following constituents: xylene, toluene, methyl ethyl ketone, methyl isobutyl ketone, methylene chloride, ethylene dichloride, trichloroethane, trichlorotrifluoroethane (freon), formaldehyde, and methanol. If any sample fails the characteristic test or contains constituents of concern significantly higher than the background, the Hazardous Waste Coordinator will establish a sampling grid to determine the extent of contamination. (For purposes of the closure plan, concentrations of constituents of concern more than 15% above background or higher than 0.01 mg/kg, whichever is greater, will be considered significant). An area extending five feet beyond the limits of contamination will be excavated to a depth of six inches. Contaminated soil will be transported to a commercial hazardous waste disposal facility and the excavation will be backfilled with uncontaminated material.

Equipment Decontamination

All equipment used in the closure of the facility, including shovels, sampling tools, and buckets will be washed and rinsed in containers following the procedures used to decontaminate the facility. All wash and rinse waters will be disposed as hazardous waste. Expendable items used in the decontamination process such as mops, brooms, gloves, coveralls, and boots will be containerized and disposed as hazardous waste.

Excavation vehicles used to remove any contaminated soils at the facility will be decontaminated by scraping and/or brushing solids from the blades and tires which contacted the contaminated soil. The scrapings will be handled and disposed as hazardous waste.

CLOSURE SCHEDULE

The closure schedules for the quonset building and the storage yard are presented in Figures 1 and 2 respectively.

EXTENSION OF CLOSURE TIME

NAS Memphis does not anticipate a need for an extension at this time.

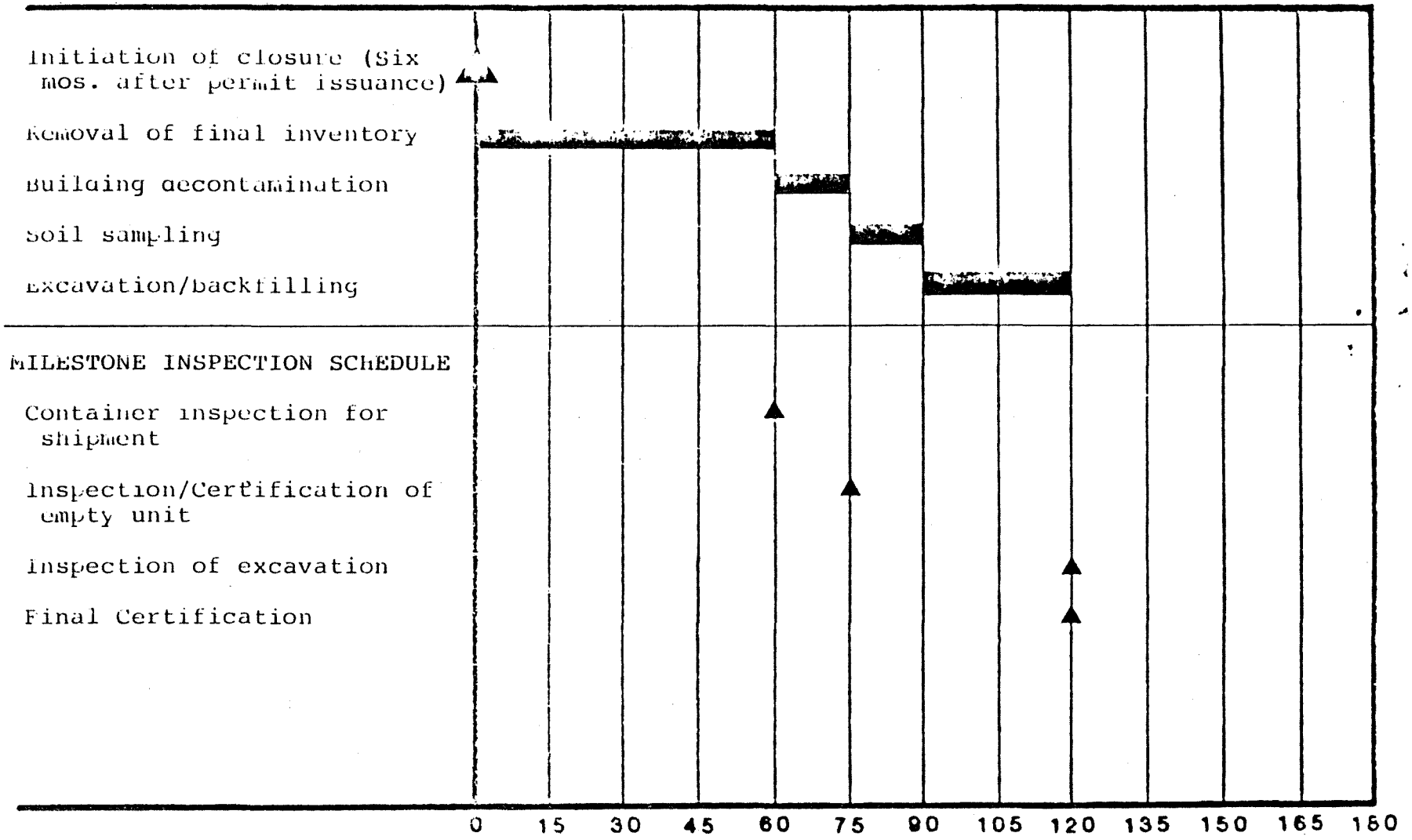


FIGURE 1

QUONSET BUILDING

NAS MEMPHIS

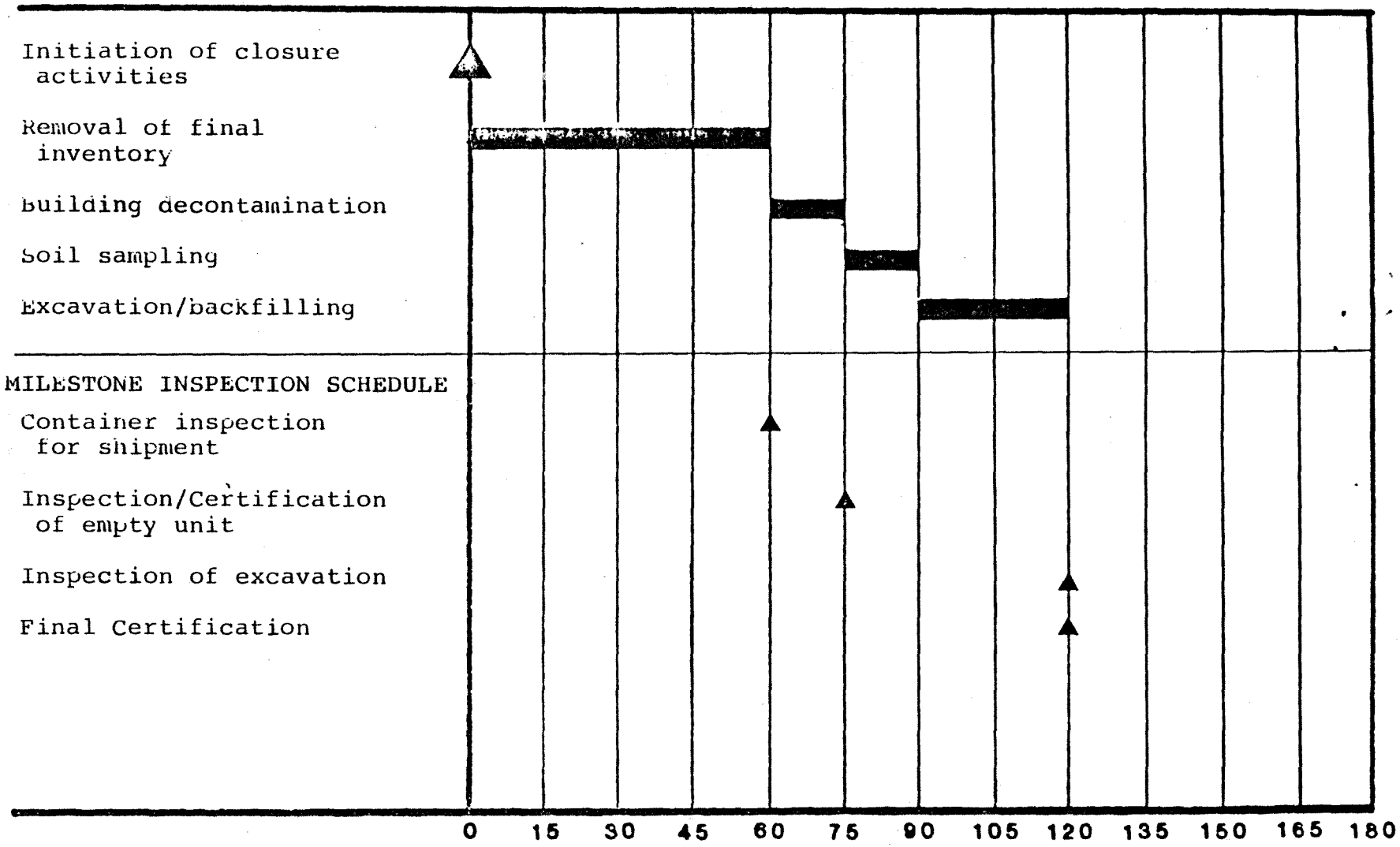


FIGURE 2

STORAGE YARD

NAS MEMPHIS

ATTACHMENT 9

PART A

Form Approved OMB No. 158-S80(AA

EPA I.D. NUMBER (enter from page 1)		FOR OFFICIAL USE ONLY	
T N 2 1 7 0 0 2 2 6 0 0	T/A C 1	W DUP	T/A C 2 DUP

VII. DESCRIPTION OF HAZARDOUS WASTES (continued)

LINE NO.	A. EPA HAZARD. WASTE NO. (enter code)	B. ESTIMATED ANNUAL QUANTITY OF WASTE	C. UNIT OF MEASURE (enter code)	D. PROCESSES 1. PROCESS CODES (enter)	D. PROCESSES 2. PROCESS DESCRIPTION (if a code is not entered in D(1))
1	F001	5000	P	S01	
2	F002	1600	P	S01	
3	F003	2600	P	S01	
4	F005	1600	P	S01	
5	D001	8000	P	S01	
6	D002	3500	P	S01	
7	D007	1000	P	S01	
8	D008	1000	P	S01	
9	D011	1000	P	S01	
10	D006	100	P	S01	
11	U077	1000	P	S01	
12					
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Form 3510-3 (6-80)

CONTINUE ON REVER

RULES

OF

TENNESSEE DEPARTMENT OF HEALTH AND ENVIRONMENT

DIVISION OF SOLID WASTE MANAGEMENT

CHAPTER 1200-1-11

HAZARDOUS WASTE MANAGEMENT

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RULE 1200-1-11-.01. HAZARDOUS WASTE MANAGEMENT SYSTEM: GENERAL

(1) General

(a) Purpose, Scope, and Applicability

1. This Rule provides definitions of terms, general standards, and overview information applicable to these Rules.

2. In this Rule:

(i) Subparagraph (1)(b) establishes rules of grammatical construction for these Rules.

(ii) Subparagraph (1)(c) describes the system by which these Rules are organized, numbered, and referenced.

(iii) Subparagraph (2)(a) defines terms which are used in these Rules.

(iv) Subparagraph (3)(a) establishes general procedures for petitioning the Commissioner or Board, as appropriate, for an exclusion from certain provisions of these Rules and establishes procedures governing the Commissioner's or Board's action on such petitions.

(v) Subparagraph (3)(b) establishes procedures for petitioning the Commissioner or Board, as appropriate, to approve testing methods as equivalent to those prescribed in Rules 1200-1-11-.02, 1200-1-11-.05, and 1200-1-11-.06.

(vi) Subparagraph (3)(c) establishes procedures for petitioning the Commissioner to amend Rules 1200-1-11-.02(4) or 1200-1-11-.02(1)(c) to exclude a waste from a particular facility as nonhazardous.

(vii) Subparagraph (3)(d) establishes procedures for petitioning the Commissioner to exclude hazardous wastes which are beneficially used or reused or legitimately recycled or reclaimed.

(viii) Paragraph (7) sets forth the procedures that the Department will use in handling proprietary information.

(b) Use of Number and Gender - As used in these Rules:

1. Words in the masculine gender also include the feminine and neuter genders; and

2. Words in the singular include the plural; and

3. Words in the plural include the singular.

(c) Rule Structure - These Rules are organized, numbered, and referenced according to the following outline form:

(1) paragraph

(a) subparagraph

1. part

(i) subpart

(I) item

I. subitem

(2) Definitions

(a) Definitions - When used in these Rules, the following terms have the meanings given below:

"Accumulate" means to collect or gather together over a period of time. •

"Act" means the Tennessee Hazardous Waste Management Act, as amended, TCA 68-46-101 et. seq.

"Active portion" means that portion of a facility where treatment, storage, or disposal operations are being or have been conducted after the date one or more of the hazardous wastes handled by the facility first became subject to regulation under rules promulgated under the Act and which is not a closed portion. (See also "closed portion" and "inactive portion".)

"Aquifer" means a geologic formation, group of formations, or part of a formation capable of yielding a significant amount of ground water to wells or springs.

"ASTM" means the American Society for Testing and Materials.

"Authorized representative" means the person responsible for the overall operation of a facility or an operational unit (i.e., part of a facility), e.g., the plant manager, superintendent or person of equivalent responsibility.

"Board" means the Tennessee Solid Waste Disposal Control Board established by TCA 68-31-111.

"Boiler" means an enclosed device using controlled flame combustion and having the following characteristics: • •

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(i) (I) The unit must have physical provisions for recovering and exporting thermal energy in the form of steam, heated fluids, or heated gases; and

(II) The unit's combustion chamber and primary energy recovery section(s) must be of integral design. To be of integral design, the combustion chamber and the primary energy recovery section(s) (such as waterwalls and superheaters) must be physically formed into one manufactured or assembled unit. A unit in which the combustion chamber and the primary energy recovery section(s) are joined only by ducts or connections carrying flue gas is not integrally designed; however, secondary energy recovery equipment (such as economizers or air preheaters) need not be physically formed into the same unit as the combustion chamber and the primary energy recovery section. The following units are not precluded from being boilers solely because they are not of integral design: process heaters (units that transfer energy directly to a process stream), and fluidized bed combustion units; and

(III) While in operation, the unit must maintain a thermal energy recovery efficiency of at least 60 percent, calculated in terms of the recovered energy compared with the thermal value of the fuel; and

(IV) The unit must export and utilize at least 75 percent of the recovered energy, calculated on an annual basis. In this calculation, no credit shall be given for recovered heat used internally in the same unit. (Examples of internal use are the preheating of fuel or combustion air, and the driving of induced or forced draft fans or feedwater pumps); or

(ii) The unit is one which the Commissioner has determined, on a case-by-case basis, to be a boiler, after considering the standards in subparagraph (5)(a) of this Rule.

"Certification" means a statement of professional opinion based upon knowledge and belief.

"CFR" means the Code of Federal Regulations.

"Closed portion" means that portion of a facility which an owner or operator has closed in accordance with the approved facility closure plan and all applicable closure requirements. (See also "active portion" and "inactive portion".)

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"Commissioner" means the Commissioner of the Tennessee Department of Health and Environment or his authorized representative.

"Confined aquifer" means an aquifer bounded above and below by impermeable beds or by beds of distinctly lower permeability than that of the aquifer itself; an aquifer containing confined ground water.

"Container" means any portable device in which a material is stored, transported, treated, disposed of, or otherwise handled.

"Contingency plan" means a document setting out an organized, planned, and coordinated course of action to be followed in case of a fire, explosion, or release of hazardous waste or hazardous waste constituents which could threaten public health or the environment.

"Department" means the Tennessee Department of Health and Environment.

"Designated facility" means a hazardous waste treatment, storage, or disposal facility which has been designated on the manifest by the generator pursuant to Rule 1200-1-11-.03(3)(a). If in Tennessee, such facility must have interim status or have received a permit in accordance with the requirements of Rule 1200-1-11-.07, or be regulated under Rule 1200-1-11-.02(1)(f)3(ii) or Rule 1200-1-11-.09(6). If in another state, such facility must have interim status or have received a permit from EPA in accordance with the requirements of 40 CFR Parts 270 and 124 or be regulated under 40 CFR 261.6(c)(2) or 40 CFR Part 266, Subpart F, or be similarly authorized/regulated under the laws and regulations of a State authorized by EPA in accordance with 40 CFR Part 271. In addition, for small quantity generators subject to the manifest requirements of Rule 1200-1-11-.02(1)(e)8(iii), the term "designated facility" also includes those facilities identified at Rule 1200-1-11-.02(1)(e)8(iv) (IV), (V), and (VI).

"Dike" means an embankment or ridge of either natural or man-made materials used to prevent the movement of liquids, sludges, solids, or other materials.

"Discharge" or "hazardous waste discharge" means the accidental or intentional spilling, leaking, pumping, pouring, emitting, emptying, or dumping of hazardous waste into or on any land or water.

"Disposal" means the discharge, deposit, injection, dumping, spilling, leaking, or placing of any hazardous waste into or on any land, water or air so that such hazardous waste or any constituent thereof may enter the environment or be emitted into the air or discharged into any waters including ground waters.

"Disposal facility" means a facility or part of a facility at which hazardous waste is intentionally placed into or on any land or water, and at which waste will remain after closure.

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"Division Director" means the Director of the Division of Solid Waste Management of the Department. This person also serves as the Technical Secretary to the Board, and functions as the chief of staff to both the Commissioner and the Board in matters relating to these Rules and their implementation.

"DOT" means the U.S. Department of Transportation.

"Elementary neutralization unit" means a device which:

(i) Is used for neutralizing wastes which are hazardous wastes only because they exhibit the corrosivity characteristic defined in Rule 1200-1-11-.02(3)(c), or are listed in Rule 1200-1-11-.02(4) only for this reason; and

(ii) Meets the definition of tank, container, transport vehicle, or vessel in this subparagraph.

"EPA" means the U.S. Environmental Protection Agency.

"Equivalent method" means any testing or analytical method approved by the Commissioner under Rule 1200-1-11-.01(3).

"Existing hazardous waste management facility" or "existing facility" means a facility which was in operation, or for which construction had commenced, on or before the date on which one or more of the hazardous wastes handled or to be handled by the facility first became subject to regulation under Rules promulgated under the Act. Construction had commenced if:

(i) The owner or operator has obtained all necessary Federal, State, and local preconstruction approvals or permits; and either

(ii) (I) A continuous physical, on-site construction program has begun, or

(II) The owner or operator has entered into contractual obligations -- which cannot be cancelled or modified without substantial loss -- for construction of the facility to be completed within a reasonable time.

"Existing portion" means that land surface area of an existing waste management unit, included in the original Part A permit application, on which wastes have been placed prior to the issuance of a permit.

"Facility" means all contiguous land, and structures, other appurtenances, and improvements on the land, used for treating, storing, or disposing of hazardous waste. A facility may consist of several treatment, storage, or disposal operational units (e.g., one or more landfills, surface impoundments, or combinations of them).

"Federal agency" means any department, agency, or other instrumentality of the Federal Government, any independent agency or establishment of the Federal Government including any Government corporation, and the Government Printing Office.

"Food-chain crops" means tobacco, crops grown for human consumption, and crops grown for feed for animals whose products are consumed by humans.

"Freeboard" means the vertical distance between the top of a tank or surface impoundment dike, and the surface of the waste contained therein.

"Free liquids" means liquids which readily separate from the solid portion of a waste under ambient temperature and pressure.

"Generation" means the act or process of producing hazardous wastes.

"Generator" means any person, by site, whose act or process produces hazardous waste identified or listed in Rule 1200-1-11-.02 or whose act first causes a hazardous waste to become subject to regulation.

"Ground water" means water below the land surface in a zone of saturation.

"Hazardous waste" means a hazardous waste as defined in Rule 1200-1-11-.02(1)(c).

"Hazardous waste code" means the code assigned by the Department to each hazardous waste listed in Rule 1200-1-11-.02(4) and to each characteristic identified in Rule 1200-1-11-.02(3), and any derivation of such codes which may be assigned by the Department to an individual waste or class of wastes.

"Hazardous waste constituent" means a constituent that caused the Board to list the hazardous waste in Rule 1200-1-11-.02(4), or a constituent listed in Table 1 of Rule 1200-1-11-.02(3)(e).

"Inactive portion" means that portion of a facility which is not operated after the date one or more of the hazardous wastes handled by the facility first became subject to regulation under rules promulgated under the Act. (See also "active portion" and "closed portion".)

"Incinerator" means an enclosed device using controlled flame combustion, that neither meets the criteria for classification as a boiler nor is listed as an industrial furnace.

"Incompatible waste" means a hazardous waste which is unsuitable for:

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(i) Placement in a particular device or facility because it may cause corrosion or decay of containment materials (e.g., container inner liners or tank walls); or

(ii) Commingling with another waste or material under uncontrolled conditions because the commingling might produce heat or pressure, fire or explosion, violent reaction, toxic dusts, mists, fumes, or gases, or flammable fumes or gases.

(See Appendix .05/D of these Rules for examples).

"Individual generation site" means the contiguous site at or on which one or more hazardous wastes are generated. An individual generation site, such as a large manufacturing plant, may have one or more sources of hazardous waste but is considered a single or individual generation site if the site or property is contiguous.

"Industrial furnace" means any of the following enclosed devices that are integral components of manufacturing processes and that use controlled flame devices to accomplish recovery of materials or energy:

(i) Cement kilns
(ii) Lime kilns
(iii) Aggregate kilns
(iv) Phosphate kilns
(v) Coke ovens
(vi) Blast furnaces
(vii) Smelting, melting and refining furnaces (including pyrometallurgical devices such as cupolas, reverberator furnaces, sintering machines, roasters, and foundry furnaces)
(viii) Titanium dioxide chloride process oxidation reactors
(ix) Methane reforming furnaces
(x) Pulping liquor recovery furnaces
(xi) Combustion devices used in the recovery of sulfur values from spent sulfuric acid
(xii) Such other devices as the Commissioner may, after notice and comment, add to this list on the basis of one or more of the following factors:

(I) The design and use of the device primarily to accomplish recovery of material products;

(II) The use of the device to burn or reduce raw materials to make a material product;

(III) The use of the device to burn or reduce secondary materials as effective substitutes for raw materials, in processes using raw materials as principal feedstocks;

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(IV) The use of the device to burn or reduce secondary materials as ingredients in an industrial process to make a material product;

(V) The use of the device in common industrial practice to produce a material product; and

(VI) Other factors, as appropriate.

"In operation" refers to a facility which is treating, storing, or disposing of hazardous waste.

"Injection well" means a well into which fluids are injected. "Class I" injection wells include wells used by generators of hazardous wastes or owners or operators of hazardous waste management facilities to inject hazardous waste, other than Class IV wells. "Class IV" injection wells include wells used by generators of hazardous wastes or owners or operators of hazardous waste management facilities to dispose of hazardous wastes into or above a formation which within one quarter mile of the well contains an underground source of drinking water. (See also "underground injection".)

"Inner liner" means a continuous layer of material placed inside a tank or container which protects the construction materials of the tank or container from the contained waste or reagents used to treat the waste.

"Installation identification number" means the number assigned to each generator, transporter, and treatment, storage, or disposal facility by the Department or EPA. For generators and facilities in this state, and for transporters who pick up hazardous waste from, or deliver hazardous waste to, locations in this state, references in these Rules to their installation identification number shall mean the number assigned by the Department. For other generators, transporters, and facilities, such references shall mean the number assigned by EPA.

"International shipment" means the transportation of hazardous waste into or out of the jurisdiction of the United States.

"Landfill" means a disposal facility or part of a facility where hazardous waste is placed in or on land and which is not a land treatment facility, a surface impoundment, or an injection well.

"Landfill cell" means a discrete volume of a hazardous waste landfill which uses a liner to provide isolation of wastes from adjacent cells or wastes. Examples of landfill cells are trenches and pits.

"Land treatment facility" means a facility or part of a facility at which hazardous waste is applied onto or incorporated into the soil surface; such facilities are disposal facilities if the waste will remain after closure.

"Leachate" means any liquid, including any suspended components in the liquid, that has percolated through or drained from hazardous waste.

"Liner" means a continuous layer of natural or man-made materials, beneath or on the sides of a surface impoundment, landfill, or landfill cell, which restricts the downward or lateral escape of hazardous waste, hazardous waste constituents, or leachate.

"Management" or "waste management" or "hazardous waste management" means the orderly control of storage, transportation, treatment, and disposal of hazardous waste.

"Manifest" means the shipping document originated and signed by the generator which contains the information required by Rule 1200-1-11-.03(3).

"Manifest document number" means the serially increasing number assigned to the manifest by the generator for recording and reporting purposes.

"Mining overburden returned to the mine site" means any material overlying an economic mineral deposit which is removed to gain access to that deposit and is then used for reclamation of a surface mine.

"Movement" means that hazardous waste transported to a facility in an individual vehicle.

"New hazardous waste management facility" or "new facility " means a facility which began operation, or for which construction commenced after the date on which one or more of the hazardous wastes handled or to be handled by the facility first become subject to regulation under rules promulgated under the Act. (See also "existing hazardous waste management facility".)

"On-site" means the same or geographically contiguous property which may be divided by public or private right-of-way, provided the entrance and exit between the properties is at a cross-roads intersection, and access is by crossing as opposed to going along, the right-of-way. Non-contiguous properties owned by the same person but connected by a right-of-way which he controls and to which the public does not have access, is also considered on-site property.

"Open burning" means the combustion of any material without the following characteristics:

(i) Control of combustion air to maintain adequate temperature for efficient combustion,

(ii) Containment of the combustion-reaction in an enclosed device to provide sufficient residence time and mixing for complete combustion, and

(iii) Control of emission of the gaseous combustion products. (See also "incineration" and "thermal treatment".)

"Operator" means the person responsible for the overall operation of a facility.

"Owner" means the person who owns a facility or part of a facility.

"Partial closure" means the closure of a discrete part of a facility in accordance with the applicable closure requirements of Rules 1200-1-11-.05 or 1200-1-11-.06. For example, partial closure may include the closure of a trench, a unit operation, a landfill cell, or a pit, while other parts of the same facility continue in operation or will be placed in operation in the future.

"Person" means an individual, trust, firm, joint stock company, corporation (including a government corporation), partnership, association, state, municipality, commission, political subdivision of a state, any interstate body, and governmental agency of this state and any department, agency, or instrumentality of the executive, legislative, and judicial branches of the federal government.

"Personnel" or "facility personnel" means all persons who work at, or oversee the operations of, a hazardous waste facility, and whose actions or failure to act may result in noncompliance with the requirements of Rules 1200-1-11-.05 or 1200-1-11-.06.

"Pile" means any non-containerized accumulation of solid, nonflowing hazardous waste that is used for treatment or storage.

"Point source" means any discernible, confined, and discrete conveyance, including, but not limited to any pipe, ditch, channel, tunnel, conduit, well, discrete fissure, container, rolling stock, concentrated animal feeding operation, or vessel or other floating craft, from which pollutants are or may be discharged. This term does not include return flows from irrigated agriculture.

"PSC" means the Tennessee Public Service Commission.

"Publicly owned treatment works" or "POTW" means any device or system used in the treatment (including recycling and reclamation) of municipal sewage or industrial wastes of a liquid nature which is owned by the State or a municipality. This definition includes sewers, pipes, or other conveyances only if they convey wastewater to a POTW providing treatment.

"Registered engineer" or "registered professional engineer" refers to a person authorized to perform engineering in Tennessee pursuant to Tennessee Code Annotated, Title 62, Chapter 2.

"Representative sample" means a sample of a universe or whole (e.g., waste pile, lagoon, ground water) which can be expected to exhibit the average properties of the universe or whole.

"Run-off" means any rainwater, leachate, or other liquid that drains over land from any part of a facility.

"Run-on" means any rainwater, leachate, or other liquid that drains over land onto any part of a facility.

"Saturated zone" or "zone of saturation" means that part of the earth's crust in which all voids are filled with water.

"Sludge" means any solid, semi-solid, or liquid waste generated from a municipal, commercial, or industrial wastewater treatment plant, water supply treatment plant, or air pollution control facility exclusive of the treated effluent from a wastewater treatment plant.

"State" means the State of Tennessee.

"Storage" means the containment of hazardous waste in such a manner as not to constitute disposal of such hazardous waste.

"Surface impoundment" or "impoundment" means a facility or part of a facility which is a natural topographic depression, man-made excavation, or diked area formed primarily of earthen materials (although it may be lined with man-made materials), which is designed to hold an accumulation of liquid wastes or wastes containing free liquids, and which is not an injection well. Examples of surface impoundments are holding, storage, settling, and aeration pits, ponds, and lagoons.

"Tank" means a stationary device, designed to contain an accumulation of hazardous waste which is constructed primarily of non-earthen materials (e.g., wood, concrete, steel, plastic) which provide structural support.

"TCA" means Tennessee Code Annotated.

"Thermal treatment" means the treatment of hazardous waste in a device which uses elevated temperatures as the primary means to change the chemical, physical, or biological character or composition of the hazardous waste. Examples of thermal treatment processes are incineration, molten salt, pyrolysis, calcination, wet air oxidation, and microwave discharge. (See also "incinerator" and "open burning".)

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"Totally enclosed treatment facility" means a facility for the treatment of hazardous waste which is directly connected to an industrial production process and which is constructed and operated in a manner which prevents the release of any hazardous waste or any constituent thereof into the environment during treatment. An example is a pipe in which waste acid is neutralized.

"Transfer facility" means any transportation related facility including loading docks, parking areas, storage areas and other similar areas where shipments of hazardous waste are held during the normal course of transportation.

"Transportation" means the movement of hazardous waste by air, rail, highway, or water.

"Transporter" means any person engaged in the transportation of hazardous waste.

"Transport vehicle" means a motor vehicle or rail car used for the transportation of cargo by any mode. Each cargo-carrying body (trailer, railroad freight car, etc.) is a separate transport vehicle.

"Treatment" means any method, technique, or process, including neutralization, designed to change the physical, chemical, or biological character or composition of any hazardous waste so as to neutralize such waste or so as to render such waste nonhazardous, safer for transport, amenable for recovery, amenable for storage, or reduced in volume. Such term includes any activity or processing designed to change the physical form or chemical composition of hazardous waste so as to render it nonhazardous.

"Treatment zone" means a soil area of the unsaturated zone of a land treatment unit within which hazardous waste constituents are degraded, transformed, or immobilized.

"24-hour, 25-year storm" means a storm of 24-hour duration with a probable recurrence interval of once in 25 years.

"Underground injection" means the subsurface emplacement of fluids through a bored, drilled or driven well; or through a dug well, where the depth of the dug well is greater than the largest surface dimension. (See also "injection well".)

"Unsaturated zone" or "zone of aeration" means the zone between the land surface and the water table.

"United States" means the 50 States, the District of Columbia, the Commonwealth of Puerto Rico, the U.S. Virgin Islands, Guam, American Samoa, and the Commonwealth of the Northern Mariana Islands.

"Uppermost aquifer" means the geologic formation nearest the natural ground surface that is an aquifer, as well as lower aquifers that are hydraulically interconnected with this aquifer within the facility's property boundary.

"Vessel" includes every description of watercraft, used or capable of being used as a means of transportation on the water.

"Waste" means a waste as defined in Rule 1200-1-11-.02(1)(b).

"Wastewater treatment unit" means a device which:

(i) Is part of a wastewater treatment facility which is subject to regulation under TCA 69-3-101 et. seq.; and

(ii) Receives and treats or stores an influent wastewater which is a hazardous waste as defined in Rule 1200-1-11-.02(1)(c) or generates and accumulates a wastewater treatment sludge which is a hazardous waste as defined in Rule 1200-1-11-.02(1)(c) or treats or stores a wastewater treatment sludge which is a hazardous waste as defined in Rule 1200-1-11-.02(1)(c); and

(iii) Meets the definition of tank in this subparagraph.

"On-site wastewater treatment units" are those which received solely wastes generated on-site (according to the definition of "on-site" found in this subparagraph). "Off-site wastewater treatment units" are those which receive wastes generated by facilities that are not on-site.

"Water (bulk shipment)" means the bulk transportation of hazardous waste which is loaded or carried on board a vessel without containers or labels.

"Well" means any shaft or pit dug or bored into the earth, generally of a cylindrical form, and often walled with bricks or tubing to prevent the earth from caving in.

"Well injection": (See "underground injection".)

(b) <u>References</u>

1. When used in these Rules, the following publications are incorporated by reference:

   "ASTM" Standard Test Methods for Flash Point of Liquids by Setaflash Closed Tester," ASTM Standard D-3278-78, available from American Society for Testing and Materials, 1916 Race Street, Philadelphia, Pa. 19103.

"ASTM" Standard Test Methods for Flash Point by Pensky-Martens Closed Tester," ASTM Standard D-93-79 or D-93-80. D-93-80 is available from American Society for Testing and Materials, 1916 Race Street, Philadelphia, Pa. 19103.

"Flammable and Combustible Liquids Code" (1977 and 1981), available from the National Fire Protection Association, 470 Atlantic Avenue, Boston, Massachusetts 02210.

"Test Methods for Evaluating Solid Waste, Physical/Chemical Methods", EPA Publications SW-846 (Second Edition, 1982 as amended by Update I (April, 1984) and Update II (April, 1985)). The second edition of SW-846 and Updates I and II are available from the Superintendent of Documents, U.S. Government Printing Office, Washington, D.C. 20402, (202) 783-3238, on a subscription basis.

2. The references listed in part 1 of this subparagraph are also available for inspection at the central and field offices of the Department's Division of Solid Waste Management. These materials are incorporated as they exist on October 1, 1985.

(3) Petitions for Exclusions

(a) General

1. Any person may petition the Commissioner for an exclusion from certain provisions of these Rules, as provided in this paragraph. This subparagraph sets forth general requirements which apply to all such petitions. Subparagraph (b) of this paragraph sets forth additional requirements for petitions to allow use of different testing or analytical methods than those prescribed in Rules 1200-1-11-.02, 1200-1-11-.05, or 1200-1-11-.06. Subparagraph (c) of this paragraph sets forth additional requirements for petitions to exclude a waste at a particular facility from the definition in Rule 1200-1-11-.02(1)(c) or the lists of hazardous wastes in Rule 1200-1-11-.02(4).

2. Each petition must be submitted to the Commissioner by certified mail and must include:

(i) The petitioner's name and address;

(ii) A statement of the petitioner's interest in the proposed action;

(iii) A description of the proposed action, including (where appropriate) suggested regulatory language; and

(iv) A statement of the need and justification for the proposed action, including any supporting tests, studies, or other information.

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3. The Commissioner will make a tentative decision to grant or deny a petition and will issue a public notice of such tentative decision for written public comment.

4. Upon the written request of any interested person, the Commissioner may, at his discretion, hold an informal public hearing to consider oral comments on the tentative decision. A person requesting a hearing must state the issues to be raised and explain why written comments would not suffice to communicate the person's views. The Commissioner may in any case decide on his own motion to hold an informal public hearing.

5. After evaluating all public comments the Commissioner will make a final decision to either grant or deny the petition, and will issue a public notice of such decision.

6. If the regulations of this paragraph are revised to require additional information to be included in a petition, the Commissioner may require any person who has been previously granted an exclusion to submit a new petition (including such additional information) for reevaluation in accordance with the procedures of this subparagraph. The Commissioner shall notify such a person in writing that he must submit a new petition and in the notice establish a due date for such submission. This due date shall not be less than 30 days nor more than 180 days from the date of such notice. Except as provided in parts 7 and 8 of this subparagraph, the existing exclusion shall remain in effect until a final decision is reached on the new petition.

7. Any exclusion or other variance granted to an individual person or waste pursuant to this paragraph shall be rescinded if it is discovered or later determined that the exclusion or other variance has resulted or may result in a significant hazard to public health or the environment.

8. Any exclusion or other variance granted pursuant to this paragraph shall remain valid only so long as the stipulations under which it was granted are not violated. If the characteristics of the waste and/or the waste management situation change so as to render the waste subject to regulation under these Rules, the petitioner shall immediately begin managing the waste according to the appropriate requirements of these Rules and shall notify the Department according to Rule 1200-1-11-.03(2)(c).

(b) <u>Petitions for Equivalent Testing or Analytical Methods</u>

1. Any person seeking permission to use a testing or analytical method different from those required in Rules 1200-1-11-.02, 1200-1-11-.05, or 1200-1-11-.06 may petition for such permission under this subparagraph and subparagraph (a). To be successful, the person must

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demonstrate to the satisfaction of the Commissioner that the proposed method is equal to or superior to the corresponding method prescribed in Rule 1200-1-11-.02, 1200-1-11-.05, or 1200-1-11-.06, in terms of its sensitivity, accuracy, and precision (i.e., reproducibility).

2. Each petition must include, in addition to the information required by part (a)2 of this paragraph:

   (i) A full description of the proposed method, including all procedural steps and equipment used in the method;

   (ii) A description of the types of wastes or waste matrices for which the proposed method may be used;

   (iii) Comparative results obtained from using the proposed method with those obtained from using the relevant or corresponding methods prescribed in Rules 1200-1-11-.02, 1200-1-11-.05, or 1200-1-11-.06.

   (iv) An assessment of any factors which may interfere with, or limit the use of, the proposed method; and

   (v) A description of the quality control procedures necessary to ensure the sensitivity, accuracy and precision of the proposed method.

3. After receiving a petition for an equivalent method, the Commissioner may request any additional information on the proposed method which he may reasonably require to evaluate the method.

(c) <u>Petitions to Exclude a Waste Produced at a Particular Facility as Nonhazardous</u>

1. Any persons seeking to exclude a waste at a particular generating facility from the lists in Rule 1200-1-11-.02(4) may petition for such an exclusion under this subparagraph and subparagraph (a) of this paragraph. To be successful:

   (i) The petitioner must demonstrate to the satisfaction of the Commissioner that the waste produced by a particular generating facility does not meet any of the criteria under which the waste was listed as a hazardous or any acutely hazardous waste; and

   (ii) Based on a complete application, the Commissioner must determine, where he has a reasonable basis to believe that factors (including additional constituents) other than those for which the waste was listed could cause the waste to be a

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hazardous waste, that such factors do not warrant retaining the waste as a hazardous waste; and

(iii) (I) The Department must be authorized to grant such exclusions in lieu of EPA pursuant to Section 3006 of the Resource Conservation and Recovery Act of 1976, as amended (42 USC Section 6901, et seq.); or

(II) The petitioner must demonstrate that the waste has been so excluded by EPA pursuant to 40 CFR Sections 260.20 and 260.22.

2. The procedures in this subparagraph and subparagraph (a) may also be used to petition the Commissioner to exclude from Rule 1200-1-11-.02(1)(c)1(ii)(II) or (1)(c)3 a waste which is described in that item or part and is either a waste listed in Rule 1200-1-11-.02(4), contains a waste listed in Rule 1200-1-11-.02(4), or is derived from a waste listed in Rule 1200-1-11-.02(4). This exclusion may only be issued for a particular generating, storage, treatment, or disposal facility. The petitioner must make the same demonstration as required by part 1, except that where the waste is a mixture of waste and one or more listed hazardous wastes or is derived from one or more hazardous wastes, his demonstration may be made with respect to each constituent listed waste or the waste mixture as a whole.

3. If the waste is listed with codes "I", "C", "R", or "E" in Rule 1200-1-11-.02(4),

(i) The petitioner must show that the waste does not exhibit the relevant characteristic for which the waste was listed as defined in Rule 1200-1-11-.02(3)(b),(c),(d) or (e) using any applicable methods prescribed therein. The petitioner also must show that the waste does not exhibit any of the other characteristics defined in Rule 1200-1-11-.02(3)(b),(c), (d), or (e) using any applicable methods prescribed therein;

(ii) Based on a complete application, the Commissioner must determine, where he has a reasonable basis to believe that factors (including additional constituents) other than those for which the waste was listed could cause the waste to be hazardous waste, that such factors do not warrant retaining the waste as a hazardous waste.

4. If the waste is listed with code "T" in Rule 1200-1-11-.02(4),

(i) The petitioner must demonstrate that the waste:

(I) Does not contain the constituent or constituents (as defined in Appendix .02/D of Rule 1200-1-11-.02) that

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caused the Commissioner to list the waste, using the appropriate test methods prescribed in Appendix .02/C of Rule 1200-1-11-.02; or

(II) Although containing one or more of the hazardous constituents (as defined in Appendix .02/D of Rule 1200-1-11-.02) that caused the Commissioner to list the waste, does not meet the criterion of Rule 1200-1-11-.02(2)(b)1(iii) when considering the factors used by the Commissioner in Rule 1200-1-11-.02(b)1(iii)(I) through (XI) under which the waste was listed as hazardous; and

(ii) Based on a complete application, the Commissioner must determine, where he has a reasonable basis to believe that factors (including additional constituents) other than those for which the waste was listed could cause the waste to be a hazardous waste, that such factors do not warrant retaining the waste as a hazardous waste; and

(iii) The petitioner must demonstrate that the waste does not exhibit any of the characteristics defined in Rule 1200-1-11-.02(3)(b),(c),(d), and (e) using any applicable method prescribed therein;

5. If the waste is listed with the code "H" in Rule 1200-1-11-.02(4),

(i) The petitioner must demonstrate that the waste does not meet the criterion of Rule 1200-1-11-.02(2)(b)1(ii); and

(ii) Based on a complete application, the Commissioner must determine, where he has a reasonable basis to believe that additional factors (including additional constituents) other than those for which the waste was listed could cause the waste to be a hazardous waste, that such factors do not warrant retaining the waste as a hazardous waste; and

(iii) The petitioner must demonstrate that the waste does not exhibit any of the characteristics defined in Rule 1200-1-11-.02(3)(b),(c),(d), and (e) using any applicable methods prescribed therein;

6. Demonstration samples must consist of enough representative samples, but in no case less than four samples, taken over a period of time sufficient to represent the variability or the uniformity of the waste.

7. Each petition must include, in addition to the information required by part (a)2 of this paragraph:

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(i) The name and address of the laboratory facility performing the sampling or tests of the waste;

(ii) The names and qualifications of the persons sampling and testing the waste;

(iii) The dates of sampling and testing;

(iv) The location of the generating facility;

(v) A description of the manufacturing processes or other operations and feed materials producing the waste and an assessment of whether such processes, operations or feed materials can or might produce a waste that is not covered by the demonstration;

(vi) A description of the waste and an estimate of the average and maximum monthly and annual quantities of waste covered by the demonstration;

(vii) Pertinent data on and discussion of the factors delineated in the respective criterion for listing a hazardous waste, where the demonstration is based on the factors in Rule 1200-1-11-.02(2)(b)1(iii);

(viii) A description of the methodologies and equipment used to obtain the representative samples;

(ix) A description of the sample handling and preparation techniques, including techniques used for extraction, containerization and preservation of the samples;

(x) A description of the tests performed (including results);

(xi) The names and model numbers of the instruments used in performing the tests; and

(xii) The following statement signed by the generator of the waste or his authorized representative: "I certify under penalty of law that I have personally examined and am familiar with the information submitted in this demonstration and all attached documents, and that, based on my inquiry of those individuals immediately responsible for obtaining the information, I believe that the submitted information is true, accurate, and complete. I am aware that there are significant penalties for submitting false information, including the possibility of fine and imprisonment."

8. After receiving a petition for an exclusion, the Commissioner may request any additional information which he may reasonably require to evaluate the petition.

9. The Commissioner shall make his final decision under part (a)4 of this paragraph within 90 days of receipt of all required information.

10. An exclusion will only apply to the waste generated at the individual facility covered by the demonstration and will not apply to waste from any other facility.

11. The Commissioner may exclude only part of the waste for which the demonstration is submitted where he has reason to believe that variability of the waste justifies a partial exclusion.

(4) Variances from Classification as a Waste

(a) General - In accordance with subparagraphs (b) and (c) of this paragraph, the Commissioner may determine on a case-by-case basis that the following recycled materials are not wastes:

1. Materials that are accumulated speculatively without sufficient amounts being recycled (as defined in Rule 1200-1-11-.02(1)(a)3(viii);

2. Materials that are reclaimed and then reused within the original primary production processes in which they were generated;

3. Materials that have been reclaimed but must be reclaimed further before the materials are completely recovered.

(b) Standards and Criteria

1. The Commissioner may grant requests for a variance from classifying as a waste those materials that are accumulated speculatively without sufficient amounts being recycled if the applicant demonstrates that sufficient amounts of the material will be recycled or transferred for recycling in the following year. If a variance is granted, it is valid only for the following year, but can be renewed, on an annual basis, by filing a new application. The Commissioner's decision will be based on the following standards and criteria:

(i) The manner in which the material is expected to be recycled, when the material is expected to be recycled, and whether this expected disposition is likely to occur (for example, because of past practice, market factors, the nature of the material, or contractual arrangements for recycling);

(ii) The reason that the applicant has accumulated the material for one or more years without recycling 75 percent of the volume accumulated at the beginning of the year;

(iii) The quantity of material already accumulated and the quantity expected to be generated and accumulated before the material is recycled.

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(iv) The extent to which the material is handled to minimize loss;

(v) Other relevant factors.

2. The Commissioner may grant requests for a variance from classifying as a waste those materials that are reclaimed and then reused as feedstock within the original primary production process in which the materials were generated if the reclamation operation is an essential part of the production process. The determination will be based on the following criteria:

(i) How economically viable the production process would be if it were to use virgin materials, rather than reclaimed materials;

(ii) The prevalence of the practice on an industry-wide basis;

(iii) The extent to which the material is handled before reclamation to minimize loss;

(iv) The time periods between generating the material and its reclamation, and between reclamation and return to the original primary production process;

(v) The location of the reclamation operation in relation to the production process;

(vi) Whether the reclaimed material is used for the purpose for which it was originally produced when it is returned to the original process, and whether it is returned to the original process in substantially its original form;

(vii) Whether the person who generates the material also reclaims it;

(viii) Other relevant factors.

3. The Commissioner may grant requests for a variance from classifying as a waste those materials that have been reclaimed but must be reclaimed further before recovery is completed if, after initial reclamation, the resulting material is commodity-like (even though it is not yet a commercial product, and has to be reclaimed further). This determination will be based on the following factors:

(i) The degree of processing the material has undergone and the degree of further processing that is required;

(ii) The value of the material after it has been reclaimed;

(iii) The degree to which the reclaimed material is like an analogous raw material;

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(iv) The extent to which an end market for the reclaimed material is guaranteed;

(v) The extent to which the reclaimed material is handled to minimize loss;

(vi) Other relevant factors.

(c) Procedures - The Commissioner will use the following procedures in evaluating applications for variances from classification as a waste:

1. The applicant must apply to the Commissioner, and the application must address the relevant criteria contained in subparagraph (b) of this paragraph.

2. The Commissioner will evaluate the application and issue a draft notice tentatively granting or denying the application. Notification of this tentative decision will be provided by newspaper advertisement and radio broadcast in the locality where the recycler is located. The Commissioner will accept comment on the tentative decision for 30 days, and may also hold a public hearing upon request or at his discretion. The Commissioner will issue a final decision after receipt of comments and after the hearing (if any).

(d) Temporary Variance for Hazardous Wastes Previously Excluded as being Beneficially Used or Reused or Legitimately Recycled or Reclaimed - Materials for which, as of the effective date of this paragraph, a tentative or final exclusion has been granted by the Commissioner pursuant to the petition process established by former Department Rule 1200-1-11-.01(3)(d) (entitled "Petitions to Exclude a Waste Which Is Beneficially Used or Reused or Legitimately Recycled or Reclaimed", but subsequently deleted) shall be deemed to be temporarily granted a variance pursuant to this paragraph until a final variance determination is made in accordance with this paragraph, provided that the person to which the exclusion was granted files a variance application pursuant to part (c) 1 of this paragraph within 90 days after the effective date of this paragraph.

(5) Variance to be Classified as a Boiler

(a) General/Criteria - In accordance with the standards and criteria of subparagraph (2)(a) of this Rule and the procedures of subparagraph (b) of this paragraph, the Commissioner may determine on a case-by-case basis that certain enclosed devices using controlled flame combustion are boilers, even though they do not otherwise meet the definition of boiler contained in subparagraph (2)(a) of this Rule, after consideration of the following criteria:

1. The extent to which the unit has provision for recovering and

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exporting thermal energy in the form of steam, heated fluids, or heated gases; and

2. The extent to which the combustion chamber and energy recovery equipment are of integral design; and

3. The efficiency of energy recovery, calculated in terms of the recovered energy compared with the thermal value of the fuel; and

4. The extent to which exported energy is utilized; and

5. The extent to which the device is in common and customary use as a "boiler" functioning primarily to produce steam, heated fluids, or heated gases; and

6. Other factors, as appropriate.

(b) Procedures - The Commissioner will use the following procedures in evaluating applications to classify particular enclosed flame combustion devices as boilers:

1. The applicant must apply to the Commissioner, and the application must address the relevant criteria contained in subparagraph (a) of this paragraph.

2. The Commissioner will evaluate the application and issue a draft notice tentatively granting or denying the application. Notification of this tentative decision will be provided by newspaper advertisement and radio broadcast in the locality where the recycler is located. The Commissioner will accept comment on the tentative decision for 30 days, and may also hold a public hearing upon request or at his discretion. The Commissioner will issue a final decision after receipt of comments and after the hearing (if any).

(6) Additional Regulation of Certain Hazardous Waste Recycling Activities on a Case-by-Case Basis

(a) General - In accordance with the procedures of subparagraph (b) of this paragraph, the Commissioner may decide on a case-by-case basis that persons accumulating or storing the recyclable materials described in Rule 1200-1-11-.02(1)(f)1(ii)(IV) should be regulated under Rule 1200-1-11-.02(1)(f)2 and 3. The basis for this decision is that the materials are being accumulated or stored in a manner that does not protect human health and the environment because the materials or their toxic constituents have not been adequately contained, or because the materials being accumulated or stored together are incompatible. In making this decision, the Commissioner will consider the following factors:

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1. The types of materials accumulated or stored and the amounts accumulated or stored;

2. The method of accumulation or storage;

3. The length of time the materials have been accumulated or stored before being reclaimed;

4. Whether any contaminants are being released into the environment, or are likely to be so released; and

5. Other relevant factors.

(b) Procedures - The Commissioner will use the following procedures when determining whether to regulate hazardous waste recycling activities described in Rule 1200-1-11-.02(1)(f)1(ii)(IV) under the provisions of Rule 1200-1-11-.02(1)(f)2 and 3, rather than under the provisions of Rule 1200-1-11-.09(6).

1. If a generator is accumulating the waste, the Commissioner will issue a notice setting forth the factual basis for the decision and stating that the person must comply with the applicable requirements of Rule 1200-1-11-.03(1), (4), (5) and (6). The notice will become final within 30 days, unless the person served requests a public hearing to challenge the decision. Upon receiving such a request, the Commissioner will hold a public hearing and allow public participation at the hearing. The Commissioner will issue a final order after the hearing stating whether or not compliance with Rule 1200-1-11-.03 is required. The order becomes effective 30 days after service of the decision unless the Commissioner specifies a later date or unless review by the Board is requested. The order may be appealed to the Board by any person affected by the decision who participated in the public hearing. The Board may choose to grant or to deny the appeal. Final Department action occurs when a final order is issued and Department review procedures are exhausted.

2. If the person is accumulating the recyclable material as a storage facility, the notice will state that the person must obtain a permit in accordance with all applicable provisions of Rule 1200-1-11-.07. The owner or operator of the facility must apply for a permit within no less than 60 days and no more than six months of notice, as specified in the notice. If the owner or operator of the facility wishes to challenge the Commissioner's decision, he may do so in his permit application, in a public hearing held on the draft permit, or in comments filed on the draft permit or on the notice of intent to deny the permit. The fact sheet accompanying the permit will specify the reasons for the Commissioner's determination. The question of whether the Commissioner's decision was proper will remain open for consideration during the public comment period discussed under Rule 1200-1-11-.07(7)(e) and in any subsequent hearing.

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(7) Proprietary Information

(a) General

1. Purpose, Scope, and Applicability - Any information which is supplied to the Department by persons who are subject to these Rules or by other governmental agencies and which is designated as proprietary information (as defined in subpart 2(viii) of this subparagraph) shall be handled by the Department as specified in this paragraph to assure that its confidentiality is maintained. Unless it is claimed or designated as proprietary, any information supplied to the Department under or relating to these Rules shall be available for public review at any time during the State's normal business hours.

2. Definitions - The following terms shall be defined as indicated for the purposes of this paragraph and this paragraph only:

(i) "Access" is the ability and opportunity to gain knowledge of Proprietary Information in any manner whatsoever.

(ii) "Authorized person" is any person, including members of the Board, authorized to receive Proprietary Information. Except for members of the Board, such authorization shall be granted in writing by the Commissioner.

(iii) "Document" is any recorded information regardless of its physical form or characteristics, including, but not limited to, written or printed material; processing cards and tapes; maps; charts; paintings; drawings; engravings; sketches; working papers and notes; reproduction of such things by any means or process; and sound, voice, or electronic recordings in any form.

(iv) "Document Control Number" is the unique number assigned by the document control officer to any document containing Proprietary Information.

(v) "Document Control Officer" is the individual authorized by the Commissioner in writing to be responsible for all incoming and outgoing documents identified as containing Proprietary Information.

(vi) "Information" is knowledge which can be communicated by any means.

(vii) "Instruction" is fully informing individuals in writing of their responsibilities for safeguarding Proprietary Information and the security procedures they shall follow.

(viii) "Proprietary Information" means any confidential information that relates to a trade secret, product, apparatus, process, operation, style of work, or financial information which is owned (not necessarily exclusively) by or licensed to a person and claimed by that person to be proprietary and confidential; provided that the claim is accompanied by a written statement from such person relating the reasons why such information should be held confidential. Such information may be submitted to the Department by the owner/licensee of the trade secret, product, etc.; or by another governmental agency which has obtained the information. If submitted by the owner/licensee, the written statement accompanying the information claimed proprietary must, at a minimum, answer the questions in items (I) through (IV) of this subpart. If submitted by another governmental agency, the written statement need include only the accompanying statements/reasons obtained by that agency.

(I) Will disclosure of the information be likely to substantially harm your competitive position? If so, what would the harm be, and why should it be viewed as substantial? What is the relationship between disclosure and the harm?

(II) What measures have you taken to guard against undesired disclosure of the information to others?

(III) To what extent has the information been disclosed to others, and what precautions have you taken in connection with that disclosure?

(IV) Has the U.S. Environmental Protection Agency or any other Federal or State of Tennessee agency made a pertinent confidentiality determination? (If so, please include a copy of this determination, if available.)

3. Policy - Department employees are prohibited from disclosing, in any manner and to any extent not authorized by law or regulations, any Proprietary Information coming to them in the course of their employment or official duties. Proprietary Information is to be held in confidence, protected in accordance with the procedures described in this paragraph, and released only to authorized persons.

(b) Responsibilities

1. Commissioner - The Commissioner is responsible for:

(i) Designating a document control officer;

(ii) Assuring that all Department employees receiving and handling Proprietary Information receive instruction as to their responsibilities for controlling Proprietary Information;

(iii) Maintaining a record which lists all employees who have authorized access to Proprietary Information;

(iv) Obtaining a "Confidentiality Agreement" from all employees having access to Proprietary Information;

(v) Obtaining a "Confidentiality Agreement upon Transfer or Termination" from all employees having access to Proprietary Information in the event such employees decide to terminate employment or are transferred to a position not requiring such access;

(vi) Assuring that the appropriate requirements for storage and use are met, including control of access to keys and combinations;

(vii) Taking appropriate disciplinary action concerning any Department employees who fail to comply with the requirements of this paragraph; and

(viii) Notifying the person submitting Proprietary Information which has been disclosed in violation of the requirements of this paragraph of such occurrence.

2. Document Control Officer - The Document Control Officer is responsible for the maintenance, control and distribution of all Proprietary Information received by the Department as follows:

(i) Logging of all Proprietary Information as received by the Department, both incoming and outgoing;

(ii) Assigning a document control number to each document received containing Proprietary Information;

(iii) Maintaining a system which identifies employees authorized to receive Proprietary Information;

(iv) Releasing Proprietary Information only to persons from whom the confidentiality agreements of subparts 1(iv) and (v) of this subparagraph have been obtained;

(v) Maintaining a system to insure that any Proprietary Information transmitted to field locations is received;

(vi) Maintaining at Department offices a system for retrieval of documents that are furnished to other program offices;

(vii) Authorizing and supervising the reproduction and destruction of Proprietary Information; and

(viii) Assuring that recipients of Proprietary Information have proper storage capability prior to release of such documents, or, if they do not, requiring return of the released Proprietary Information the same day.

3. Employees - Employees are responsible for:

(i) Controlling all Proprietary Information intrusted to them;

(ii) Only discussing Proprietary Information with authorized persons;

(iii) Never leaving the Proprietary Information unattended when not properly stored;

(iv) Never discussing Proprietary Information over the telephone except upon approval of the document control officer should the Proprietary Information be needed in an emergency situation;

(v) Storing the Proprietary Information as specified in part (c)(5) of this paragraph when not in use and at the close of business;

(vi) Not reproducing Proprietary Information documents. Additional copies must be obtained through the document control officer; and

(vii) Reporting immediately possible violations of these regulations to the Commissioner.

(c) Procedures

1. Receipt and Handling - The document control officer shall:

(i) Receive all information claimed as proprietary and confidential which is submitted to the Department;

(ii) Log in all Proprietary Information received by the Department;

(iii) Assign a document control number to all Proprietary Information;

(iv) Attach a Proprietary Information cover sheet to the document; and

(v) Release Proprietary Information only to authorized persons.

2. Transmission

(i) Proprietary Information must be transmitted in a double envelope by Registered Mail, Return Receipt Requested. The

inner envelope must reflect the address of the recipient with the following additional wording on the front side of the inner envelope:

"Confidential Business - To Be Opened By Document Control Officer Only."

The outer envelope must reflect the normal address without the additional wording.

(ii) All requests to the document control officer for Proprietary Information must be in writing and signed by the requesting employee.

(iii) Proprietary Information may be hand carried to other Department facilities by authorized persons providing the dispatching document control officer maintains a record and obtains a receipt from the receiving document control officer. Information being hand carried should be packaged as described in subpart (i) of this part.

(iv) Proprietary Information within a Department office shall be hand delivered only by an authorized person. At no time shall Proprietary Information be transmitted through inner office mailing channels.

3. Reproduction - Proprietary Information shall not be reproduced except upon approval by and under the supervision of the document control officer. Any reproduction shall be limited by a document control system and be subject to the same control requirements as for the original.

4. Destruction - Proprietary Information shall not be destroyed except upon approval by and under the supervision of the document control officer. The document control officer shall keep a record of destruction in the appropriate log and notify the person submitting the Proprietary Information.

5. Storage

(i) Documents containing Proprietary Information must be stored within a locked cabinet within a locked room so as to limit access to authorized persons.

(ii) Keys and/or combinations to cabinets and/or rooms where the data is stored must be issued only to an authorized person.

(d) Transmittal Outside Department Offices - Proprietary Information shall not be transmitted outside Department offices without the approval of

the Commissioner and such information must be transmitted by the document control officer in accordance with part (c)2 of this paragraph. The person submitting the Proprietary Information shall be notified when such occurs.

(e) Release to EPA - Notwithstanding any requirement of this paragraph seemingly to the contrary, Proprietary Information may be released to the U.S. Environmental Protection Agency in connection with the Commissioner's or Board's implementation or his or its responsibilities pursuant to the Act or as necessary to comply with federal law. Any such release of Proprietary Information to EPA, however, will be made with a confidentiality claim and shall be accompanied by the written statement received by the Department pursuant to subpart (a)2(viii) of this paragraph. Any transmittal of Proprietary Information to EPA shall be subject to the requirements of subparagraph (d) of this paragraph. The Commissioner shall notify the submitter of Proprietary Information of the release of such information to EPA as soon as practicable - to be no later than 5 days after such release - following receipt of EPA's request for the information.

RULE 1200-1-11-.02 IDENTIFICATION AND LISTING OF HAZARDOUS WASTE

(1) General

(a) Purpose and Scope

1. This Rule identifies those wastes which are subject to regulation as hazardous wastes under Rule Chapter 1200-1-11. In this Rule:

(i) Paragraph (1) defines the terms "waste" and "hazardous waste", identifies those wastes which are excluded from regulation under Rule Chapter 1200-1-11 or portions of Rule Chapter 1200-1-11 and establishes special management requirements for hazardous wastes produced by small quantity generators and hazardous wastes which are recycled.

(ii) Paragraph (2) sets forth the criteria used by the Board to identify characteristics of hazardous waste and to list particular hazardous wastes.

(iii) Paragraph (3) identifies characteristics of hazardous waste.

(iv) Paragraph (4) lists particular hazardous wastes.

2. The definition of waste contained in this Rule applies only to wastes that also are hazardous for purposes of the regulations implementing TCA Title 68, Chapter 46. For example, it does not apply to materials (such as non-hazardous scrap, paper, textiles, or rubber) that are not otherwise hazardous wastes and that are recycled.

3. For the purposes of subparagraphs (b) and (f) of this paragraph:

(i) A "spent material" is any material that has been used and as a result of contamination can no longer serve the purpose for which it was produced without processing;

(ii) "Sludge" has the same meaning used in Rule 1200-1-11-.01(2)(a);

(iii) A "by-product" is a material that is not one of the primary products of a production process and is not solely or separately produced by the production process. Examples are process residues such as slags or distillation column bottoms. The term does not include a co-product that is produced for the general public's use and is ordinarily used in the form it is produced by the process.

(iv) A material is "reclaimed" if it is processed to recover a usable product, or if it is regenerated. Examples are recovery of lead

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values from spent batteries and regeneration of spent solvents.

(v) A material is "used or reused" if it is either:

(I) Employed as an ingredient (including use as an intermediate) in an industrial process to make a product (for example, distillation bottoms from one process used as feedstock in another process). However, a material will not satisfy this condition if distinct components of the material are recovered as separate end products (as when materials are recovered from metal-containing secondary materials); or

(II) Employed in a particular function or application as an effective substitute for a commercial product (for example, spent pickle liquor used as phosphorous precipitant and sludge conditioner in wastewater treatment).

(vi) "Scrap metal" is bits and pieces of metal parts (e.g., bars, turnings, rods, sheets, wire) or metal pieces that may be combined together with bolts or soldering (e.g., radiators, scrap automobiles, railroad box cars), which when worn or superfluous can be recycled.

(vii) A material is "recycled" if it is used, reused, or reclaimed.

(viii) A material is "accumulated speculatively" if it is accumulated before being recycled. A material is not accumulated speculatively, however, if the person accumulating it can show that the material is potentially recyclable and has a feasible means of being recycled; and that - during the calendar year (commencing on January 1) - the amount of material that is recycled, or transferred to a different site for recycling, equals at least 75 percent by weight or volume of the amount of that material accumulated at the beginning of the period. In calculating the percentage of turnover, the 75 percent requirement is to be applied to each material of the same type (e.g., slags from a single smelting process) that is recycled in the same way (i.e., from which the same material is recovered or that is used in the same way). Materials accumulating in units that would be exempt from regulation under subpart (d)3(i) of this paragraph are not to be included in making the calculation. (Materials that are already defined as wastes also are not to be included in making the calculation.) Materials are no longer in this category once they are removed from accumulation for recycling, however.

(b) <u>Definition of Waste</u>

1. (i) A "waste" is any discarded material that is not excluded by part

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(d)1 of this paragraph or that is not excluded by variance granted under Rule 1200-1-11-.01(4).

(ii) A "discarded material" is any material which is:

(I) "Abandoned" as explained in part 2 of this subparagraph; or

(II) "Recycled" as explained in part 3 of this subparagraph; or

(III) Considered "inherently waste-like", as explained in part 4 of this subparagraph.

2. Materials are wastes if they are "abandoned" by being:

(i) Disposed of; or

(ii) Burned or incinerated; or

(iii) Accumulated, stored, or treated (but not recycled) before or in lieu of being abandoned by being disposed of, burned, or incinerated.

3. Materials are wastes if they are "recycled" - or accumulated, stored, or treated before recycling - as specified in subparts (i) through (iv) of this part.

(i) "Used in a manner constituting disposal"

(I) Except as provided in item (II), materials listed in item (III) of this subpart are wastes when they are:

I. Applied to or placed on the land in a manner that constitutes disposal; or

II. Used to produce products that are applied to or placed on the land or are otherwise contained in products that are applied to or placed on the land (in which case the product itself remains a waste).

(II) However, commercial chemical products listed in subparagraph (4)(d) of this Rule are not wastes if they are applied to the land and that is their ordinary manner of use.

(III) I. Spent materials
II. Sludges listed in subparagraphs (4)(b) or (c) of this Rule
III. Sludges exhibiting a characteristic of hazardous waste
IV. By-products listed in subparagraphs (4)(b) or (c) of this Rule

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V. By-products exhibiting a characteristic of hazardous waste
VI. Commercial chemical products listed in subparagraph (4)(d) of this Rule
VII. Scrap metal

(ii) "Burning for energy recovery"

(I) Except as provided in part (II), materials listed in item (III) of this subpart are wastes when they are:

I. Burned to recover energy;
II. Used to produce a fuel or are otherwise contained in fuels (in which case the fuel itself remains a waste).

(II) However, commercial chemical products listed in subparagraph (4)(d) of this Rule are not wastes if they are themselves fuels.

(III) I. Spent materials.
II. Sludges listed in subparagraphs (4)(b) or (c) of this Rule.
III. Sludges exhibiting a characteristic of hazardous waste.
IV. By-products listed in subparagraphs (4)(b) or (c) of this Rule.
V. By-products exhibiting a characteristic of hazardous waste.
VI. Commercial chemical products listed in subparagraph (4)(d) of this Rule.
VII. Scrap metal.

(iii) "Reclaimed" - The following materials are wastes when reclaimed:

(I) Spent materials,
(II) Sludges listed in subparagraphs (4)(b) or (c) of this Rule,
(III) By-products listed in subparagraphs (4)(b) or (c) of this Rule, and
(IV) Scrap metal.

(iv) "Accumulated speculatively" - The following materials are wastes when accumulated speculatively:

(I) Spent materials,
(II) Sludges listed in subparagraphs (4)(b) or (c) of this Rule,
(III) Sludges exhibiting a characteristic of hazardous waste,
(IV) By-products listed in subparagraph (4)(b) or (c) of this Rule,
(V) By-products exhibiting a characteristic of hazardous waste, and
(VI) Scrap metal.

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4. "Inherently waste-like materials"

(i) The following materials are wastes when they are recycled in any manner:

(I) Hazardous Waste Codes F020, - F021 (unless used as an ingredient to make a product at the site of generation), F022, F023, F026, and F028.

(ii) The Board will use the following criteria to add wastes to that list:

(I) I. The materials are ordinarily disposed of, burned, or incinerated; or

II. The materials contain toxic constituents listed in Appendix .02/E of this Rule and these constituents are not ordinarily found in raw materials or products for which the materials substitute (or are found in raw materials or products in smaller concentrations) and are not used or reused during the recycling process; and

(II) The material may pose a substantial hazard to human health and the environment when recycled.

5. "Materials that are not waste when recycled"

(i) Materials are not wastes when they can be shown to be recycled by being:

(I) Used or reused as ingredients in an industrial process to make a product, provided the materials are not being reclaimed; or

(II) Used or reused as effective substitutes for commercial products; or

(III) Returned to the original process from which they are generated, without first being reclaimed. The material must be returned as a substitute for raw material feedstock, and the process must use raw materials as principal feedstocks.

(ii) The following materials are wastes, even if the recycling involves use, reuse, or return to the original process (described in items (i)(I) - (III) of this part):

(I) Materials used in a manner constituting disposal, or used to produce products that are applied to the land; or

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(II) Materials burned for energy recovery, used to produce a fuel, or contained in fuels; or

(III) Materials accumulated speculatively; or

(IV) Materials listed in subpart 4(i) of this subparagraph.

6. "Documentation of claims that materials are not wastes or are conditionally exempt from regulation" - Respondents in actions to enforce the requirements of the Act and Rule Chapter 1200-1-11 who raise a claim that a certain material is not a waste, or is conditionally exempt from regulation, must demonstrate that there is a known market or disposition for the material, and that they meet the terms of the exclusion or exemption. In doing so, they must provide appropriate documentation (such as contracts showing that a second person uses the material as an ingredient in a production process) to demonstrate that the material is not a waste, or is exempt from regulation. In addition, owners or operators of facilities claiming that they actually are recycling materials must show that they have the necessary equipment to do so.

(c) Definition of Hazardous Waste

1. A waste, as defined in subparagraph (b) of this paragraph is a hazardous waste if:

(i) It is not excluded from regulation as a hazardous waste under part (d)2 of this paragraph; and

(ii) It meets any of the following criteria:

(I) It exhibits any of the characteristics of hazardous waste identified in paragraph (3).

(II) It is listed in paragraph (4) and has not been excluded from the lists in that paragraph under Rule 1200-1-11-.01(3).

(III) It is a mixture of a waste and a hazardous waste that is listed in paragraph (4) solely because it exhibits one or more of the characteristics of hazardous waste identified in paragraph (3), unless the resultant mixture no longer exhibits any characteristic of hazardous waste identified in paragraph (3).

(IV) It is a mixture of waste and one or more hazardous wastes listed in paragraph (4) and has not been excluded from being a hazardous waste under Rule 1200-1-11-.01(3); however, the following mixtures of waste and hazardous wastes listed in paragraph (4) are not hazardous wastes (except by

application of items (I) or (II) of this subpart) if the generator can demonstrate that the mixture consists of wastewater the discharge of which is subject to regulation under TCA 69-3-101 et. seq. (including wastewater at facilities which have eliminated the discharge of wastewater) and, as applicable,:

I. One or more of the following spent solvents listed in subparagraph (4)(b) - carbon tetrachloride, tetrachloroethylene, trichloroethylene - provided that the maximum total weekly usage of these solvents (other than the amounts that can be demonstrated not to be discharged to wastewater) divided by the average weekly flow of wastewater into the headworks of the facility's wastewater treatment or pre-treatment system does not exceed 1 part per million; or

II. One or more of the following spent solvents listed in subparagraph (4)(b) - methylene chloride, 1,1,1,-trichloroethane, chlorobenzene, o-dichlorobenzene, cresols, cresylic acid, nitrobenzene, toluene, methyl ethyl ketone, carbon disulfide, isobutanol, pyridine, spent chlorofluorocarbon solvents - provided that the maximum total weekly usage of these solvents (other than the amounts that can be demonstrated not to be discharged to wastewater) divided by the average weekly flow of wastewater into the headworks of the facility's wastewater treatment or pre-treatment system does not exceed 25 parts per million; or

III. One of the following wastes listed in subparagraph (4)(c) - heat exchanger bundle cleaning sludge from the petroleum refining industry (Hazardous Waste Code K050); or

IV. A discarded commercial chemical product, or chemical intermediate listed in subparagraph (4)(d), arising from de minimis losses of these materials from manufacturing operations in which these materials are used as raw materials or are produced in the manufacturing process. For purpose of this subitem, "de minimis" losses include those from normal material handling operations (e.g., spills from the unloading or transfer of materials from bins or other containers, leaks from pipes, valves, or other devices used to transfer materials); minor leaks of process equipment, storage tanks or containers; leaks from well-maintained pump packings and seals; sample purgings; relief device discharges; discharges from safety showers and rinsing

and cleaning of personal safety equipment; and rinsate from empty containers or from containers that are rendered empty by that rinsing; or

V. Wastewater resulting from laboratory operations containing toxic (T) wastes listed in paragraph (4), provided that the annualized average flow of laboratory wastewater does not exceed one percent of total wastewater flow into the headworks of the facility's wastewater treatment or pre-treatment system, or provided the wastes' combined annualized average concentration does not exceed one part per million in the headworks of the facility's wastewater treatment or pre-treatment facility. Toxic (T) wastes used in laboratories that are demonstrated not to be discharged to wastewater are not to be included in this calculation.

2. A waste which is not excluded from regulation under part (d)2 of this paragraph becomes a hazardous waste when any of the following events occur:

(i) In the case of a waste listed in paragraph (4), when the waste first meets the listing description set forth in paragraph (4).

(ii) In the case of a mixture of waste and one or more listed hazardous wastes, when a hazardous waste listed in paragraph (4) is first added to the waste.

(iii) In the case of any other waste (including a waste mixture), when the waste exhibits any of the characteristics identified in paragraph (3).

3. Unless and until it meets the criteria of part 4 below:

(i) A hazardous waste will remain a hazardous waste.

(ii) (I) Except as otherwise provided in item (II) of this subpart, any waste generated from the treatment, storage, or disposal of a hazardous waste, including any sludge, spill residue, ash, emission control dust, or leachate (but not including precipitation runoff) is a hazardous waste. (However, materials that are reclaimed from wastes and that are used beneficially are not wastes and hence are not hazardous wastes under this provision unless the reclaimed material is burned for energy recovery or used in a manner constituting disposal.)

(II) The following wastes are not hazardous wastes even though they are generated from the treatment, storage, or disposal

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of a hazardous waste, unless they exhibit one or more of the characteristics of hazardous waste:

I. Waste pickle liquor sludge generated by lime stabilization of spent pickle liquor from the iron and steel industry (SIC Codes 331 and 332).

4. Any waste described in part 3 of this subparagraph is not a hazardous waste if it meets the following criteria:

(i) In the case of any waste, if it does not exhibit any of the characteristics of hazardous waste identified in paragraph (3).

(ii) In the case of a waste which is a listed waste under paragraph (4), contains a waste(s) listed under paragraph (4) or is derived from a waste listed in paragraph (4), if it also has been excluded from part 3 of this subparagraph under Rule 1200-1-11-.01(3).

(d) Exclusions

1. Materials Which Are Not Wastes - The following materials are not wastes for the purpose of this Rule:

(i) (I) Domestic sewage; and

(II) Any mixture of domestic sewage and other wastes that passes through a sewer system to a publicly-owned treatment works for treatment.

NOTE - "Domestic sewage" means untreated sanitary wastes that pass through a sewer system.

(ii) Industrial wastewater discharges that are point source discharges subject to regulation under TCA 69-3-101 et seq.

(Comment: This exclusion applies only to the actual point source discharge. It does not exclude industrial wastewaters while they are being collected, stored or treated before discharge, nor does it exclude sludges that are generated by industrial wastewater treatment.)

(iii) Irrigation return flows.

(iv) Source, special nuclear or by-product material as defined by the Atomic Energy Act of 1954, as amended, 42 U.S.C. 2011 et seq.

(v) Materials subjected to in-situ mining techniques which are not removed from the ground as part of the extraction process.

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(vi) Pulping liquors (i.e., black liquor) that are reclaimed in a pulping liquor recovery furnace and then reused in the pulping process, unless it is accumulated speculatively as defined in subpart (a)3(viii) of this paragraph.

(vii) Spent sulfuric acid used to produce virgin sulfuric acid, unless it is accumulated speculatively as defined in subpart (a)3(viii) of this paragraph.

2. Wastes Which Are Not Hazardous Wastes - The following wastes are not hazardous wastes:

(i) Household waste, including household waste that has been collected, transported, stored, treated, disposed, recovered (e.g., refuse-derived fuel) or reused. "Household waste" means any material (including garbage, trash and sanitary wastes in septic tanks) derived from households (including single and multiple residences, hotels and motels, bunkhouses, ranger stations, crew quarters, campgrounds, picnic grounds and day-use recreation areas). A resource recovery facility managing municipal waste shall not be deemed to be treating, storing, disposing of, or otherwise managing hazardous wastes for the purposes of regulation under Rule Chapter 1200-1-11, if such facility:

(I) Receives and burns only

I. Household waste (from single and multiple dwellings, hotels, motels, and other residential sources) and

II. Waste from commercial and industrial sources that does not contain hazardous waste; and

(II) Such facility does not accept hazardous wastes and the owner or operator of such facility has established contractual requirements or other appropriate notification or inspection procedures to assure that hazardous wastes are not received at or burned in such facility.

(ii) The following wastes generated within a farm and incidental to the operation of that farm:

(I) Wastes from the growing and harvesting of agricultural crops or from the raising of animals (including animal manures), which are returned to the soil as fertilizers; and

(II) Waste pesticides, provided the farmer triple-rinses each emptied pesticide container (using a capable solvent) and disposes of the pesticide residues on his own farm in a manner consistent with the disposal instruction on the

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pesticide label.

(iii) Mining overburden returned to the mine site.

(iv) Waste which consists of discarded wood or wood products which fails the test for the characteristic of EP toxicity and which is not a hazardous waste for any other reason if the waste is generated by persons who utilize the arsenical-treated wood and wood products for these materials' intended end use.

(v) Wastes which (1) fail the test for the characteristic of EP toxicity because chromium is present or are listed in paragraph (4) of this Rule due exclusively to the presence of chromium, (2) do not fail the test for the characteristic of EP toxicity for any other constituent, and (3) do not fail the test for any other characteristic; if it is shown by a waste generator or by waste generators that: + •

(I) The chromium in the waste is exclusively (95% or greater) trivalent chromium; and +

(II) The waste is generated from an industrial process which uses trivalent chromium exclusively (95% or greater) and the process does not generate hexavalent chromium; and +

(III) The waste is managed in non-oxidizing environments. +

(vi) Specific wastes which meet the standard in item (V) of this subpart (so long as they do not fail the test for the characteristic of EP toxicity, and do not fail the test for any other characteristic) are: +

(I) Chrome (blue) trimmings generated by the following subcategories of the leather tanning and finishing industry: hair pulp/chrome tan/retan/wet finish; retan/wet finish no beamhouse; through-the-blue; and shearling. +

(II) Chrome (blue) shavings generated by the following subcategories of the leather tanning and finishing industry: hair pulp/chrome tan/retan/wet finish; hair save/chrome tan/retan wet finish; retan/wet finish; no beamhouse; through-the-blue; shearling. +

(III) Buffing dust generated by the following subcategories of the leather tanning and finishing industry: hair pulp/chrome tan/retan/wet finish; hair save/chrome tan/retan/wet finish; retan/wet finish; no beamhouse; through-the-blue. +

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(IV) Sewer screenings generated by the following subcategories of the leather tanning and finishing industry: hair pulp/chrome tan/retan/wet finish; hair save/chrome tan/retan/wet finish; retan/wet finish; no beamhouse; through-the-blue; and shearling. +

(V) Wastewater treatment sludges generated by the following subcategories of the leather tanning and finishing industry: hair pulp/chrome tan/retan/wet finish; hair save/chrome tan/retan/wet finish; retan/wet finish; no beamhouse; through-the-blue; and shearling. +

(VI) Wastewater treatment sludges generated by the following subcategories of the leather tanning and finishing industry: hair pulp/chrome tan/retan/wet finish; hair save/chrome tan/retan/wet finish; and through-the-blue. +

(VII) Waste scrap leather from the leather tanning industry, the shoe manufacturing industry, and other leather product manufacturing industries. +

(VIII) Wastewater treatment sludges from the production of TiO_2 pigment using chromium-bearing ores by the chloride process. +

3. Hazardous Wastes Which Are Exempted From Certain Regulations

(i) (I) A hazardous waste which is generated in a product or raw material storage tank, a product or raw material transport vehicle or vessel, or in a manufacturing process unit or an associated non-waste-treatment manufacturing unit, is not subject to regulation under these Rules except as specified in item (II) of this subpart until it exits the units in which it was generated, unless the unit is a surface impoundment, or unless the hazardous waste remains in the unit more than 90 days after the unit ceases to be operated for manufacturing, or for storage or transportation of product raw materials.

(II) A hazardous waste as described in item (I) of this subpart shall be subject to the generator notification requirement of Rule 1200-1-11.03(2), and shall be subject to such requirement irrespective of how the waste is managed after it exits the units in which it was generated (e.g., even if it exits directly into a domestic sewer system), except as provided otherwise in Rule 1200-1-11-.03(2)(a)2. Such a waste shall also be subject to the annual reporting requirements of Rule 1200-1-11-.03(5)(b) for the years in which it is removed from the units in which it was generated. •

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(ii) The following wastes shall not be subject to the requirements of Rules 1200-1-11-.03 through 1200-1-11-.07 except for the hazardous waste determination requirement of Rule 1200-1-11-.03(1)(b) and, if determined to be hazardous, the generator notification requirement of Rule 1200-1-11-.03(2) and the annual reporting requirements of Rule 1200-1-11-.03(5)(b): •

(I) Fly ash waste, bottom ash waste, slag waste, and flue gas emission control waste generated primarily from the combustion of coal or other fossil fuels;

(II) Drilling fluids, produced waters, and other wastes associated with the exploration, development, or production of crude oil, natural gas or geothermal energy;

(III) Waste from the extraction, benefication, and processing of ores and minerals (including coal), including phosphate rock and overburden from the mining of uranium ore; and

(IV) Cement kiln dust waste.

4. <u>Samples</u> +

(i) Except as provided in subpart (ii) of this part, a sample of waste or a sample of water, soil, or air, which is collected for the sole purpose of testing to determine its characteristics or composition, is not subject to any requirements of these Rules when:

(I) The sample is being transported to a laboratory for the purpose of testing; or

(II) The sample is being transported back to the sample collector after testing; or

(III) The sample is being stored by the sample collector before transport to a laboratory for testing; or

(IV) The sample is being stored in a laboratory before testing; or

(V) The sample is being stored in a laboratory after testing but before it is returned to the sample collector; or

(VI) The sample is being stored temporarily in the laboratory after testing for a specific purpose (for example, until conclusion of a court case or enforcement action where further testing of the sample may be necessary).

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(ii) In order to qualify for the exemption in items (i)(I) and (II) of this part, a sample collector shipping samples to a laboratory and a laboratory returning samples to a sample collector must:

(I) Comply with U.S. Department of Transportation (DOT), U.S. Postal Service (USPS), or any other applicable shipping requirements; or

(II) Comply with the following requirements if the sample collector determines that DOT, USPS, or other shipping requirements do not apply to the shipment of the sample:

I. Assure that the following information accompanies the sample:

A. The sample collector's name, mailing address, and telephone number;

B. The laboratory's name, mailing address, and telephone number;

C. The quantity of the sample;

D. The date of shipment; and

E. A description of the sample.

II. Package the sample so that it does not leak, spill, or vaporize from its packaging.

(iii) This exemption does not apply if the laboratory determines that the waste is hazardous but the laboratory is no longer meeting any of the conditions stated in subpart (i) of this part.

(e) Special Requirements For Hazardous Waste Generated By Small Quantity Generators

1. A generator is a small quantity generator in a calendar month if he generates less than 1000 kilograms (2200 pounds) of hazardous waste in that month.

2. Except for those wastes identified in parts 5, 6, 7 and 8 of this subparagraph and except as specified in part 11 of this subparagraph, a small quantity generator's hazardous wastes are not subject to regulation under Rule Chapter 1200-1-11, provided the generator complies with the requirements of parts 6, 7 and 8 of this subparagraph.

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3. Hazardous waste that is recycled and that is excluded from regulation under items (f)1(ii)(III) or (V) or subpart (f)1(iii) of this paragraph, or under Rule 1200-1-1-.09(4)(g), is not included in the quantity determinations of this subparagraph and is not subject to any requirements of this subparagraph. Hazardous waste that is subject to the requirements of parts (f)2 and 3 of this paragraph and Rule 1200-1-11-.09(3),(4), and (6) is included in the quantity determination of this subparagraph and is subject to the requirements of this subparagraph.

4. In determining the quantity of hazardous waste he generates, a generator need not include:

   (i) His hazardous waste when it is removed from on-site storage; or

   (ii) Hazardous waste produced by on-site treatment of his hazardous waste; or

   (iii) Hazardous wastes identified in subpart (d)3(ii) of this paragraph.

5. If a small quantity generator generates acutely hazardous waste in a calendar month in quantities greater than set forth below, all quantities of that acutely hazardous waste are subject to regulation under these Rules:

   (i) A total of one kilogram of acute hazardous wastes listed in subparagraph (4)(b), subparagraph (4)(c), or part (4)(d)5 of this Rule.

   (ii) A total of 100 kilograms of any residue or contaminated soil, water or other debris resulting from the cleanup of a spill, into or on any land or water, of any acute hazardous waste listed in subparagraph (4)(b), subparagraph (4)(c), or part (4)(d)5 of this Rule.

6. In order for hazardous wastes generated by a small quantity generator of acutely hazardous wastes in quantities equal to or less than those set forth in subparts (5)(i) or (ii) of this subparagraph to be excluded under this subparagraph from full regulation, the generator must comply with the following requirements:

   (i) The small quantity generator must perform the hazardous waste determination of Rule 1200-1-11-.03(1)(b) and keep records thereof as required by Rule 1200-1-11-.03(5)(a)3.

   (ii) The small quantity generator may accumulate acutely hazardous waste on-site. If he accumulates at any time acutely hazardous wastes in quantities greater than those set forth in subparts (5)(i) or (ii) of this subparagraph, all those accumulated wastes for which the accumulation limit was exceeded are subject to

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regulation under Rule Chapter 1200-1-11. The time period of Rule 1200-1-11-.03(4)(e) for accumulation of wastes on-site begins when the accumulated wastes exceed the applicable exclusion limit.

(iii) A small quantity generator may either treat or dispose of his hazardous waste in an on-site facility, or ensure delivery to an off-site storage, treatment or disposal facility, either of which is:

(I) In this state and permitted under Rule 1200-1-11-.07;

(II) In this state and in interim status under Rule 1200-1-11-.07 and 1200-1-11-.05;

(III) In another state and authorized to manage hazardous waste by EPA or that State (if that State has a hazardous waste management program approved by EPA under 40 CFR Part 271);

(IV) In this state and permitted by the Commissioner or Board to manage waste under regulations promulgated pursuant to TCA 68-31-101 et seq. (the Tennessee Solid Waste Disposal Act, as amended);

(V) In another state and permitted, licensed, or registered by that State to manage municipal or industrial waste; or

(VI) A facility which:

I. Beneficially uses or reuses or legitimately recycles or reclaims his waste, in a manner which will not pose a significant hazard to public health or the environment; or

II. Treats his waste prior to it being managed as set forth in subitem I of this item.

7. In order for hazardous waste generated by a small quantity generator in quantities of less than 100 kilograms hazardous waste during a calendar month to be excluded under this subparagraph from full regulation, the generator must comply with the following requirements:

(i) The small quantity generator must perform the hazardous waste determination of Rule 1200-1-11-.03(1)(b) and keep records thereof as required by Rule 1200-1-11-.03(5)(a)3.

(ii) The small quantity generator may accumulate hazardous waste on-site. If he accumulates at any time more than a total of 1000

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kilograms of this hazardous waste, all of those accumulated wastes for which the accumulation limit was exceeded are subject to regulation under Rule Chapter 1200-1-11. The time period of Rule 1200-1-11-.03(4)(e) for accumulation of wastes on-site begins for a small quantity generator when the accumulated wastes exceed 1000 kilograms.

(iii) A small quantity generator may either treat or dispose of his hazardous waste in an on-site facility, or ensure delivery to an off-site storage, treatment, or disposal facility, either of which is:

(I) In this state and permited under Rule 1200-1-11-.07;

(II) In this state and in interim status under Rules 1200-1-11-.07 and 1200-1-11-.05;

(III) In another state and authorized to manage hazardous waste by EPA or that State (if that State has a hazardous waste management program approved by EPA under 40 CFR Part 271);

(IV) In this state and permitted by the Commissioner or Board to manage waste under regulations promulgated pursuant to TCA 68-31-101 et seq. (the Tennessee Solid Waste Disposal Control Act, as amended);

(V) In another state and permitted, licensed, or registered by that State to manage municipal or industrial waste; or

(VI) A facility which:

I. Beneficially uses or reuses or legitimately recycles or reclaims his waste, in a manner which will not pose a significant hazard to public health or the environment; or

II. Treats his waste prior to it being managed as set forth in subitem I of this item.

8. In order for hazardous waste generated by a small quantity generator in a quantity greater than 100 kilograms but less than 1000 kilograms during a calendar month to be excluded under this subparagraph from full regulation, the generator must comply with the following requirements:

(i) The small quantity generator must perform the hazardous waste determination of Rule 1200-1-11-.03(1)(b) and keep records thereof as required by Rule 1200-1-11-.03(5)(a)3.

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(ii) A small quantity generator may accumulate hazardous waste on-site. If he accumulates at any time more than a total of 1000 kilograms of his hazardous waste, all those accumulated wastes for which the accumulation limit was exceeded are subject to regulation under Rule Chapter 1200-1-11. The time period of Rule 1200-1-11-.03(4)(e) for accumulation of hazardous waste on-site begins for a small quantity generator when the accumulated wastes exceed 1000 kilograms.

(iii) Beginning on the effective date of this regulation, for any hazardous waste shipped off-site, the generator must ensure that such waste is accompanied by a copy of the manifest (the Uniform Hazardous Waste Manifest required at Rule 1200-1-11-.03(3)(a)1) signed by him and containing the following information:

(I) The name and address of the generator of the waste;

(II) The United States Department of Transportation description of the waste, including the proper shipping name, hazard class, and identification number (UN/NA);

(III) The number and type of containers;

(IV) The quantity of waste being transported; and

(V) The name and address of the facility designated to receive the waste.

(iv) A small quantity generator may either treat or dispose of his hazardous waste in an on-site facility, or ensure delivery to an off-site storage, treatment or disposal facility, either of which is:

(I) In this state and permitted under Rule 1200-1-11-.07;

(II) In this state and in interim status under Rules 1200-1-11-.07 and 1200-1-11-.05;

(III) In another state and authorized to manage hazardous waste by EPA or that State (if that State has a hazardous waste management program approved by EPA under 40 CFR Part 271);

(IV) In this state and permitted by the Commissioner or Board to manage waste under regulations promulgated pursuant to TCA 68-31-101 et seq. (the Tennessee Solid Waste Disposal Control Act, as amended);

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(V) In another state and permitted, licensed, or registered by that State to manage municipal or industrial waste; or

(VI) A facility which:

I. Beneficially uses or reuses or legitimately recycles or reclaims his waste, in a manner which will not pose a significant hazard to public health or the environment; or

II. Treats his waste prior to it being managed as set forth in subitem I of this item.

9. Hazardous waste subject to the reduced requirements of this subparagraph may be mixed with non-hazardous waste and remain subject to these reduced requirements even though the resultant mixture exceeds the quantity limitations identified in this subparagraph, unless the mixture meets any of the characteristics of hazardous wastes identified in paragraph (3).

10. If a small quantity generator mixes a waste with a hazardous waste that exceeds a quantity exclusion level of this subparagraph, the mixture is subject to full regulation.

11. (i) Small quantity generators who generate more than 100 kilograms (220 pounds) of hazardous waste in a calendar month must notify according to Rule 1200-1-11-.03(2).

(ii) Small quantity generators who generated an acute hazardous waste (see subpart (4)(d)5 (of this Rule) or more than 1000 kilograms (2200 pounds) of hazardous waste in a calendar year are subject to the annual reporting requirements of Rule 1200-1-11-.03(5)(b) for that year.

(f) Requirements for Recyclable Materials

1. (i) Hazardous wastes that are recycled are subject to the requirements for generators, transporters, and storage facilities of parts 2 and 3 of this subparagraph, except for the materials listed in subparts (ii) and (iii) of this part. Hazardous wastes that are recycled will be known as "recyclable materials."

(ii) The following recyclable materials are not subject to the requirements of this subparagraph but are regulated under paragraphs (3) through (7) of Rule 1200-1-11-.09 and all applicable provisions of Rule 1200-1-11-.07:

(I) Recyclable materials used in a manner constituting disposal (Rule 1200-1-11-.09(3));

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(II) Hazardous wastes burned for energy recovery in boilers and industrial furnaces that are not regulated under Rules 1200-1-11-.05(15) or 1200-1-11-.06(15) (Rule 1200-1-11-.09(4));

(III) (Reserved for used oil);

(IV) Recyclable materials from which precious metals are reclaimed (Rule 1200-1-11-.09(6)); and

(V) Spent lead-acid batteries that are being reclaimed (Rule 1200-1-11-.09(7)).

(iii) The following recyclable materials are not subject to regulation under Rule Chapter 1200-1-11:

(I) Industrial ethyl alcohol that is reclaimed;

(II) Used batteries (or used battery cells) returned to a battery manufacturer for regeneration;

(III) Used oil that exhibits one or more of the characteristics of hazardous waste;

(IV) Scrap metal;

(V) Fuels produced from the refining of oil-bearing hazardous wastes along with normal process streams at a petroleum refining facility if such wastes result from normal petroleum refining, production, and transportation practices;

(VI) Oil reclaimed from hazardous waste resulting from normal petroleum refining, production, and transportation practices, which oil is to be refined along with normal process streams at a petroleum refining facility; or

(VII) Coke from the iron and steel industry that contains hazardous waste from the iron and steel production process.

2. Generators and transporters of recyclable materials are subject to the applicable requirements of Rules 1200-1-11-.03 and 1200-1-11-.04, except as provided in part 1 of this subparagraph.

3. (i) Owners or operators of facilities that store recyclable materals before they are recycled are regulated under all applicable provisions of Rule 1200-01-11-.05(1)-(12), Rule 1200-1-11-.06(1)-(12), and Rule 1200-1-11-.07, except as provided in part 1 of this subparagraph. (The recycling process itself is exempt from regulation.)

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(ii) Owners or operators of facilities that recycle recyclable materials without storing them before they are recycled are subject to the following requirements, except as provided in part 1 of this subparagraph.

(I) Such owners or operators must notify the Division Director of their activities within 90 days of the effective date of this regulation. Notification must be made using forms provided by the Department and completed per accompanying instructions.

(II) Such owners or operators must comply with Rule 1200-1-11-.05(5)(b) and (c) (dealing with the use of the manifest and manifest discrepancies).

4. Generators of recyclable materials must notify the Department describing the recyclable materials they generate, how such materials are generated, and how they are managed. Such notifications must be filed with the Department within 90 days of the effective date of this part (for existing generators) or within 90 days of the date a generator first becomes subject to this subparagraph (for new generators). Such notification must be submitted on forms provided by the Department. The form must be completed according to the accompanying instructions.

(g) Residues of Hazardous Waste in Empty Containers.

1. (i) Any hazardous waste remaining in either (1) an empty container or (2) an inner liner removed from an empty container, as defined in part 2 of this subparagraph, is not subject to regulation under these Rules.

(ii) Any hazardous waste in either (1) a container that is not empty or (2) an inner liner removed from a container that is not empty, as defined in part 2 of this subparagraph, is subject to regulation under these Rules.

2. (i) A container or an inner liner removed from a container that has held any hazardous waste, except a waste that is a compressed gas or that is identified as an acute hazardous waste listed in subparagraph (4)(b), subparagraph (4)(c), or part (4)(d)5 of this Rule, is empty if:

(I) All wastes have been removed that can be removed using the practices commonly employed to remove materials from that type of container, e.g., pouring, pumping, and aspirating, and

(II) I. No more than 2.5 centimeters (one inch) of residue remain on the bottom of the container or inner liner, or

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II. No more than 3 percent by weight of the total capacity of the container remains in the container or inner liner if the container is less than or equal to 110 gallons in size, or

III. No more than 0.3 percent by weight of the total capacity of the container remains in the container or inner liner if the container is greater than 110 gallons in size.

(ii) A container that has held a hazardous waste that is a compressed gas is empty when the pressure in the container approaches atmospheric.

(iii) A container or an inner liner removed from a container that has held an acute hazardous waste listed in subparagraph (4)(b), subparagraph (4)(c), or part (4)(d)5 of this Rule is empty if:

(I) The container or inner liner has been triple rinsed using a solvent capable of removing the commercial chemical product or manufacturing chemical intermediate;

(II) The container or inner liner has been cleaned by another method that has been shown in the scientific literature, or by tests conducted by the generator, to achieve equivalent removal; or

(III) In the case of a container, the inner liner that prevented contact of the commercial chemical product or manufacturing chemical intermediate with the container, has been removed.

(h) Management of Excluded Wastes - Nothing in these Rules shall exclude persons whose waste is nonhazardous or otherwise excluded from these Rules from the requirements of the "Tennessee Solid Waste Disposal Act" (TCA 68-31-101 et. seq.) and pursuant regulations, or from other applicable State, local or Federal laws.

(2) Criteria for Identifying the Characteristics of Hazardous Waste and for Listing Hazardous Waste

(a) Criteria for Identifying the Characteristics of Hazardous Waste

1. The Board shall identify and define a characteristic of hazardous waste in paragraph (3) only upon determining that:

(i) A waste that exhibits the characteristic may:

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(I) Cause, or significantly contribute to, an increase in mortality or an increase in serious irreversible, or incapacitating reversible, illness; or

(II) pose a substantial present or potential hazard to public health or the environment when it is improperly treated, stored, transported, disposed of or otherwise managed; and

(ii) The characteristic can be:

(I) Measured by an available standardized test method which is reasonably within the capability of generators of waste or private sector laboratories that are available to serve generators of waste; or

(II) Reasonably detected by generators of waste through their knowledge of their waste.

(b) Criteria for Listing Hazardous Waste

1. The Board shall list a waste as a hazardous waste only upon determining that the waste meets one of the following criteria:

(i) It exhibits any of the characteristics of hazardous waste identified in paragraph (3).

(ii) It has been found to be fatal to humans in low doses or, in the absence of data on human toxicity, it has been shown in studies to have an oral LD50 toxicity (rat) of less than 50 milligrams per kilogram, an inhalation LC 50 toxicity (rat) of less than 2 milligrams per liter, or a dermal LD50 toxicity (rabbit) of less than 200 milligrams per kilogram or is otherwise capable of causing or significantly contributing to an increase in serious irreversible, or incapacitiating reversible, illness. (Waste listed in accordance with these criteria will be designated Acute Hazardous Waste.)

(iii) It contains any of the toxic constituents listed in Appendix .02/E unless, after considering any of the following factors, the Board concludes that the waste is not capable of posing a substantial present or potential hazard to public health or the environment when improperly treated, stored, transported or disposed of, or otherwise managed:

(I) The nature of the toxicity presented by the constituent;

(II) The concentration of the constituent in the waste;

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(III) The potential of the constituent or any toxic degradation product of the constituent to migrate from the waste into the environment under the types of improper management considered in item (VII) below;

(IV) The persistence of the constituent or any toxic degradation product of the constituent;

(V) The potential for the constituent or any toxic degradation product of the constituent to degrade into non-harmful constituents and the rate of degradation;

(VI) The degree to which the constituent or any degradation product of the constituent bioaccumulates in ecosystems;

(VII) The plausible types of improper management to which the waste could be subjected;

(VIII) The quantities of the waste generated at individual generation sites or on a regional or national basis;

(IX) The nature and severity of the public health and environmental damage that has occurred as a result of the improper management of wastes containing the constituent;

(X) Actions taken by other governmental agencies or regulatory progams based on the health or environmental hazard posed by the waste or waste constituent; and

(XI) Such other factors as may be appropriate.

NOTE - Substances will be listed on Appendix .02/E only if they have been shown in scientific studies to have toxic, carcinogenic, mutagenic or teratogenic effects on humans or other life forms.

(NOTE - Wastes listed in accordance with these criteria will be designated Toxic wastes.)

2. The Board may list classes or types of waste as hazardous waste if it has reason to believe that individual wastes, within the class or type of waste, typically or frequently are hazardous under the definition of hazardous waste found in Section 68-46-104 of the Act.

3. The Board will use the criteria for listing specified in this subparagraph to establish the exclusion limits referred to in part (1)(e)5 of this Rule.

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(3) Characteristics of Hazardous Waste

(a) General

1. A waste, as defined in subparagraph (1)(b) of this Rule, excluded from regulation as a hazardous waste under part (1)(d)2 of this Rule, is a hazardous waste if it exhibits any of the characteristics identified in this paragraph.

(Comment: Rule 1200-1-11-.03(1)(b) sets forth the generator's responsibility to determine whether his waste exhibits one or more of the characteristics identified in this paragraph.)

2. A hazardous waste which is identified by a characteristic in this paragraph, but is not listed as a hazardous waste in paragraph (4), is assigned the Hazardous Waste Code set forth in the respective characteristic in this paragraph. This number must be used in complying with certain recordkeeping and reporting requirements under Rules 1200-1-11-.03 through 1200-1-11-.07.

3. For purposes of this paragraph, the Commissioner will consider a sample obtained using any of the applicable sampling methods specified in Appendix .02/A to be a representative sample within the meaning of Rule 1200-1-11-.01.

(Comment: Since the Appendix .02/A sampling methods are not being formally adopted by the Commissioner, a person who desires to employ an alternative sampling method is not required to demonstrate the equivalency of his method under the procedures set forth in Rule 1200-1-11-.01(3).)

(b) Characteristic of Ignitability

1. A waste exhibits the characteristic of ignitability if a representative sample of the waste has any of the following properties:

(i) It is a liquid, other than an aqueous solution containing less than 24 percent alcohol by volume, and has a flash point less than 60°C (140°F), as determined by a Pensky-Martens Closed Cup Tester, using the test method specified in ASTM Standard D-93-79 or D-93-80 (incorporated by reference, see Rule 1200-1-11-.01(2)(b)), or a Setaflash Closed Cup Tester, using the test method specified in ASTM Standard D-3278-78 (incorporated by reference, see Rule 1200-1-11-.01(2)(b)), or as determined by an equivalent test method approved by the Commissioner under the procedures set forth in Rule 1200-1-11-.01(3).

(ii) It is not a liquid and is capable, under standard temperature and pressure, of causing fire through friction, absorption of moisture

or spontaneous chemical changes and, when ignited, burns so vigorious and presistently that it creates a hazard.

(iii) It is an ignitable compressed gas as defined in 40 CFR 173.300 (as that Federal regulation exists on the effective date of this regulation) and as determined by the test methods described in that regulation or equivalent test methods approved by the Commissioner under Rule 1200-1-11-.01(3).

(iv) It is an oxidizer as defined in 49 CFR 173.151 (as that Federal regulation exists on the effective date of this regulation).

2. A waste that exhibits the characteristic of ignitability, but is not listed as a hazardous waste in paragraph (4), has the Hazardous Waste Code of D001.

(c) Characteristic of Corrosivity

1. A waste exhibits the characteristic of corrosivity if a representative sample of the waste has either of the following properties:

(i) It is aqueous and has a pH less than or equal to 2 or greater than or equal to 12.5, as determined by a pH meter using either an EPA test method or an equivalent test method approved by the Commissioner under the procedures set forth in Rule 1200-1-11-.01(3). The EPA test method for pH is specified as Method 5.2 in "Test Methods for the Evaluation of Solid Waste, Physical/Chemical Methods" (incorporated by reference, see Rule 1200-1-11-.01(2)(b)).

(ii) It is a liquid and corrodes steel (SAE 1020) at a rate greater than 6.35 mm (0.250 inch) per year at a test temperature of 55°C (130°F) as determined by the test method specified in NACE (National Association of Corrosion Engineers) Standard TM-01-69 as standardized in "Test Methods for the Evaluation of Solid Waste, Physical/Chemical Methods" (incorporated by reference, see Rule 1200-1-11-.01(2)(b)) or an equivalent test method approved by the Commissioner under the procedures set forth in Rule 1200-1-11-.01(3).

2. A waste that exhibits the characteristic of corrosivity, but is not listed as a hazardous waste in paragraph (4), has the Hazardous Waste Code of D002.

(d) Characteristic of Reactivity

1. A waste exhibits the characteristic of reactivity if a representative sample of the waste has <u>any</u> of the following properties:

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(i) It is normally unstable and readily undergoes violent change without detonating.

(ii) It reacts violently with water.

(iii) It forms potentially explosive mixtures with water.

(iv) When mixed with water, it generates toxic gases, vapors or fumes in a quantity sufficient to present a danger to public health or the environment.

(v) It is a cyanide or sulfide bearing waste which, when exposed to pH conditions between 2 and 12.5, can generate toxic gases, vapors or fumes in a quantity sufficient to present a danger to public health or the environment.

(vi) It is capable of detonation or explosive reaction if it is subjected to a strong initiating source or if heated under confinement.

(vii) It is readily capable of detonation or explosive decomposition or reaction at standard temperature and pressure.

(viii) It is a forbidden explosive as defined in 49 CFR 173.51 or a Class A explosive as defined in 49 CFR 173.53, or a Class B explosive as defined in 49 CFR 173.88 (as those Federal regulations exist on the effective date of this regulation.)

2. A waste that exhibits the characteristic of reactivity, but is not listed as a hazardous waste in paragraph (4), has the Hazardous Waste Code of D003.

(e) Characteristic of EP Toxicity

1. A waste exhibits the characteristic of EP toxicity if, using the test methods described in Appendix .02/B or equivalent methods approved by the Commissioner under the procedures set forth in Rule 1200-1-11-.01(3) the extract from a representative sample of the waste contains any of the contaminants listed in Table I at a concentration equal to or greater than the respective value given in that Table. Where the waste contains less than 0.5 percent filterable solids, the waste itself, after filtering, is considered to be the extract for the purposes of this section.

2. A waste that exhibits the characteristic of EP toxicity, but is not listed as a hazardous waste in paragraph (4), has the Hazardous Waste Code specified in Table I which corresponds to the toxic contaminant causing it to be hazardous.

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Table I

Maximum Concentration of Contaminants
for Characteristic of EP Toxicity

Hazardous Waste Code	Contaminant	Maximum Concentration (milligrams per liter)
D004	Arsenic	5.0
D005	Barium	100.0
D006	Cadmium	1.0
D007	Chromium (total)	5.0
D008	Lead	5.0
D009	Mercury	0.2
D010	Selenium	1.0
D011	Silver	5.0
D012	Endrin (1,2,3,4,10,10-hexachloro-1, 7-epoxy-1,4,4a,5,6,7,8,8a-octahydro-1, 4-endo, endo-5,8-dimethano naphthalene) . . .	0.02
D013	Lindane (1,2,3,4,5,6-hexachlorocyclohexane, gamma isomer)	0.4
D014	Methoxychlor (1,1,1-Trichloro-2, 2-bis (p-methoxyphenyl)ethane).	10.0
D015	Toxaphene ($C_{10}H_{10}Cl_8$, Technical chlorinated camphene, 67-69 percent chlorine)	0.5
D016	2,4-D, (2,4- Dichlorophenoxyacetic acid) .	10.0
D017	2,4,5-TPSilvex(2,4,5-Trichlorophenoxypropionic acid)	1.0

(4) Lists of Hazardous Wastes

(a) General

1. A waste is a hazardous waste if it is listed in this paragraph, unless it has been excluded from this list under Rule 1200-1-11-.01(3).

2. The Commissioner will indicate his basis for listing the classes or types of wastes listed in this paragraph by employing one or more of the following Hazard Codes:

Ignitable Waste	(I)
Corrosive Waste	(C)
Reactive Waste	(R)
EP Toxic Waste	(E)
Acute Hazardous Waste	(H)
Toxic Waste	(T)

Appendix .02/D identifies the constituent which caused the Commissioner to list the waste as an EP Toxic Waste (E) or Toxic Waste (T) in subparagraphs (b) and (c) of this paragraph.

3. Each hazardous waste listed in this paragraph is assigned a Hazardous Waste Code which precedes the name of the waste. This code must be used in complying with certain recordkeeping and reporting requirements under Rules 1200-1-11-.03 through 1200-1-11-.07.

4. The following hazardous wastes listed in subparagraphs (b) and (c) of this paragraph are subject to the exclusion limits for acute hazardous wastes established in subparagraph (1)(e) of this Rule: Hazardous Waste Codes F020, F022, F026, and F027. •

(b) Hazardous Wastes From Nonspecific Sources

Industry and Hazardous Waste Code	Hazardous Waste	Hazard Code
Generic		
F001	The following spent halogenated solvents used in degreasing: tetrachloroethylene, trichloroethylene, methylene chloride. 1,1,1-trichloroethane, carbon tetrachloride, and chlorinated fluorocarbons; and sludges from the recovery of these solvents in degreasing operations.	(T)
F002	The following spent halogenated solvents: tetrachloroethylene, methylene chloride, trichloroethylene, 1,1,1-trichloroethane, chlorobenzene, 1,1,2-trichloro-1,2,2-trifluoroethane, ortho-dicholorobenzene, and trichlorofluoromethane; and the still bottoms from the recovery of these solvents.	(T)
F003	The following spent non-halogenated solvents: xylene, acetone, ethyl acetate, ethyl benzene, ethyl ether, methyl isobutyl ketone, n-butyl alcohol, cyclohexanone, and methanol; and the still bottoms from the recovery of these solvents.	(I)
F004	The following spent non-halogenated solvents: cresols and cresylic acid, and nitrobenzene; and the still bottoms from the recovery of these solvents.	(T)
F005	The following spent non-halogenated solvents: toluene, methyl ethyl ketone, carbon disulfide, isobutanol, and pyridine; and the still bottoms from the recovery of these solvents.	(I,T)
F006	Wastewater treatment sludges from electroplating opera-	(T)

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	tions except from the following processes: (1) sulfuric acid 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; (5) cleaning/stripping associated with tin, zinc and aluminum plating on carbon steel; and (6) chemical etching and milling of aluminum.	
F007	Spent cyanide plating bath solutions from electroplating operations.	(R,T)
F008	Plating bath residues from the bottom of plating baths from electroplating operations where cyanides are used in the process.	(R,T)
F009	Spent stripping and cleaning bath solutions from electroplating operations where cyanides are used in the process.	(R,T)
F010	Quenching bath residues from oil baths from metal heat treating operations where cyanides are used in the process.	(R,T)
F011	Spent cyanide solutions from salt bath pot cleaning from metal heat-treating operations.	(R,T)
F012	Quenching wastewater treatment sludges from metal heat-treating operations where cyanides are used in the process.	(T)
F019	Wastewater treatment sludges from the chemical conversion coating of aluminum.	(T)
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.)	(H)
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.	(H)
F022	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 hexachlorobenzenes under alkaline conditions.	(H)
F023	Wastes (except wastewater and spent carbon from hydrogen chloride purification) from the production of materials on equipment previously used for 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.)	(H)

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F024	Wastes, including but not limited to distillation residues, heavy ends, tars, and reactor clean out wastes, from the production of chlorinated aliphatic hydrocarbons, having carbon content from one to five, utilizing free radical catalyzed processes. (This listing does not include light ends, spent filters and filter aids, spent dessicants, wastewater, wastewater treatment sludges, spent catalysts, and wastes listed in subparagraph (c) of this paragraph).	(T)
F026	Wastes (except wastewater and spent carbon from hydrogen 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.	(H)
F027	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 prepurified 2,4,5-trichlorophenol as the sole component.)	(H)
F028	Residues resulting from the incineration or thermal treatment of soil contaminated with Hazardous Wastes F020, F021, F022, F023, F026, and F027.	(T)

(c) Hazardous Wastes From Specific Sources

Industry and Hazardous Waste Code	Hazardous Waste	Hazard Code
Wood Preservation:		
K001	Bottom sediment sludge from the treatment of wastewaters from wood preserving processes that use creosote and/or pentachlorophenol.	(T)
Inorganic Pigments:		
K002	Wastewater treatment sludge from the production of chrome yellow and orange pigments.	(T)
K003	Wastewater treatment sludge from the production of molybdate orange pigments.	(T) (T)
K004	Wastewater treatment sludge from the production of zinc yellow pigments.	(T)
K005	Wastewater treatment sludge from the production of chrome green pigments.	(T)
K006	Wastewater treatment sludge from the production of chrome oxide green pigments (anhydrous and hydrated).	(T)

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K007	Wastewater treatment sludge from the production of iron blue pigments.	(T)
K008	Oven residue from the production of chrome oxide green pigments.	(T)

Organic Chemicals:

K009	Distillation bottoms from the production of acetaldehyde from ethylene.	(T)
K010	Distillation side cuts from the production of acetaldehyde from ethylene.	(T)
K011	Bottom stream from the wastewater stripper in the production of acrylonitrile.	(R,T)
K013	Bottom stream from the acetonitrile column in the production of acrylonitrile.	(R,T)
K014	Bottoms from the acetonitrile purification column in the production of acrylonitrile.	(T)
K015	Still bottoms from the distillation of benzyl chloride	(T)
K016	Heavy ends or distillation residues from the production of carbon tetrachloride.	(T)
K017	Heavy ends (still bottoms) from the purification column in the production of epichlorohydrin.	(T)
K018	Heavy ends from the fractionation column in ethyl chloride production.	(T)
K019	Heavy ends from the distillation of ethylene dichloride in ethylene dichloride production.	(T)
K020	Heavy ends from the distillation of vinyl chloride in vinyl chloride monomer production.	(T)
K021	Aqueous spent antimony catalyst waste from fluoromethanes production.	(T)
K022	Distillation bottom tars from the production of phenol/acetone from cumene.	(T)
K023	Distillation light ends from the production of phthalic anhydride from naphthalene.	(T)
K024	Distillation bottoms from the production of phthalic anhydride from naphthalene.	(T)
K093	Distillation light ends from the production of phthalic anhydride from ortho-xylene.	(T)
K094	Distillation bottoms from the production of phthalic anhydride from ortho-xylene.	(T)
K025	Distillation bottoms from the production of nitrobenzene by the nitration of benzene.	(T)
K026	Stripping still tails from the production of methyl ethyl pyridines.	(T)
K027	Centrifuge and distillation residues from toluene diisocyanate production.	(R,T)
K028	Spent catalyst from the hydrochlorinator reactor in the production of 1,1,1-trichloroethane.	(T)
K029	Waste from the product steam stripper in the production	(T)

of 1,1,1-trichloroethane.

K095	Distillation bottoms from the production of 1,1,1-trichloroethane.	(T)
K096	Heavy ends from the heavy ends column from the production of 1,1,1, trichloroethane.	(T)
K030	Column bottoms or heavy ends from the combined production of trichloroethylene and perchloroethylene.	(T)
K083	Distillation bottoms from aniline production.	(T)
K103	Process residues from aniline extraction from the production of aniline.	(T)
K104	Combined wastewater streams generated from nitrobenzene/aniline production.	(T)
K105	Separated aqueous stream from the reactor product washing step in production of chlorobenzenes.	(T)
K085	Distillation or fractionating column bottoms from the production of chlorobenzenes.	(T)

Pesticides:

K031	By-product salts generated in the production of MSMA and cacodylic acid.	(T)
K032	Wastewater treatment sludge from the production of chlordane.	(T)
K033	Wastewater and scrub water from the chlorination of cyclopentadiene in the production of chlordane.	(T)
K034	Filter solids from the filtration of hexachlorocyclopentadiene in the production of chlordane.	(T)
K097	Vacuum stripper discharge from the chlordane chlorinator in the production of chlordane.	(T)
K035	Wastewater treatment sludges generated in the production of creosote.	(T)
K036	Still bottoms from toluene reclamation distillation in the production of disulfoton.	(T)
K037	Wastewater treatment sludges from the production of disulfoton.	(T)
K038	Wastewater from the washing and stripping of phorate production.	(T)
K039	Filter cake from the filtration of diethylphosphorodithioic acid in the production of phorate.	(T)
K040	Wastewater treatment sludge from the production of phorate.	(T)
K041	Wastewater treatment sludge from the production of toxaphene.	(T)
K098	Untreated process wastewater from the production of toxaphene.	(T)
K042	Heavy ends or distillation residues from the distillation of tetrachlorobenzene in the production of 2,4,5-T.	(T)
K043	2,6-Dichlorophenol waste from the production of 2,4-D.	(T)

K099	Untreated wastewater from the production of 2,4-D.	(T)

Explosives:

K044	Wastewater treatment sludges from the manufacturing and processing of explosives.	(R)
K045	Spent carbon from the treatment of wastewater containing explosives.	(R)
K046	Wastewater treatment sludges from the manufacturing, formulation and loading of lead based initiating compounds.	(T)
K047	Pink/red water from TNT operations.	(R)

Petroleum Refining:

K048	Dissolved air flotation (DAF) float from the petroleum refining industry.	(T)
K049	Slop oil emulsion solids from the petroleum refining industry.	(T)
K050	Heat exchanger bundle cleaning sludge from the petroleum refining industry.	(T)
K051	API separator sludge from the petroleum refining industry.	(T)
K052	Tank bottoms (leaded) from the petroleum refining industry.	(T)

Iron and Steel:

K061	Emission control dust/sludge from the primary production of steel in electric furnaces.	(T)
K062	Spent pickle liquor from steel finishing operations.	(C,T)

Secondary Lead:

K069	Emission control dust/sludge from secondary lead smelting.	(T)
K100	Waste leaching solution from acid leaching of emission control dust/sludge from secondary lead smelting.	(T)

Coking:

K060	Ammonia still lime sludge from coking operations.	(T)
K087	Decanter tank tar sludge from coking operations.	(T)

Inorganic Chemicals:

K071	Brine purification muds from the mercury cell process in chlorine production, where separately prepurified brine is not used.	(T)
K073	Chlorinated hydrocarbon wastes from the purification step of the diaphragm cell process using graphite anodes in chlorine production.	(T)
K106	Wastewater treatment sludge from mercury cell process in chlorine production.	(T)

Ink Formulation:

K086	Solvent washes and sludges, caustic washes and sludges, or water washes and sludges from cleaning tubs and equipment used	(T)

in the formulation of ink from pigments, driers, soaps, and stabilizers containing chromium and lead.

Veterinary Pharmaceuticals:

K084	Wastewater treatment sludges generated during the production of veterinary pharmaceuticals from arsenic or organoarsenic compounds.	(T)
K101	Distillation tar residues from the distillation of aniline - based compounds in the production of veterinary pharmaceuticals from arsenic or organo - arsenic compounds.	(T)
K102	Residue from the use of activated carbon for decolorization in the production of veterinary pharmaceuticals from arsenic or organo-arsenic compounds.	(T)

(d) Discarded Commercial Chemical Products, Off-specification Species, Container Residues, and Spill Residues Thereof - The following materials or items are hazardous wastes if and when they are discarded or intended to be discarded, when they are mixed with waste oil or used oil or other material and applied to the land for dust suppression or road treatment, or when, in lieu of their original intended use, they are produced for use as (or as a component of) a fuel, distributed for use as a fuel, or burned as a fuel.

1. Any commercial chemical product, or manufacturing chemical intermediate having the generic name listed in parts 5 or 6 of this subparagraph.

2. Any off-specification commercial chemical product or manufacturing chemical intermediate which, if it met specifications, would have the generic name listed in parts 5 or 6 of this subparagraph.

3. Any residue remaining in a container or an inner liner removed from a container that has held any commercial chemical product or manufacturing chemical intermediate having the generic name listed in part 5 of this subparagraph, unless the container is empty as defined in subpart (1)(g)2(iii) of this Rule. (Comment: Unless the residue is being beneficially used or reused, or legitimately recycled or reclaimed; or being accumulated, stored, transported or treated prior to such use, re-use, recycling or reclamation, the Department considers the residue to be intended for discard, and thus a hazardous waste. An example of a legitimate re-use of the residue would be where the residue remains in the container and the container is used to hold the same commercial chemical product or manufacturing chemical intermediate it previously held. An example of the discard of the residue would be where the drum is sent to a drum reconditioner who reconditions the drum but discards the residue.)

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4. Any residue or contaminated soil, water or other debris resulting from the cleanup of a spill, into or on any land or water, of any commercial chemical product or manufacturing chemical intermediate having the generic name listed in part 5 or 6 of this subparagraph, or any residue or contaminated soil, water or other debris resulting from the cleanup of a spill, into or on any land or water, of any off-specification chemical product or manufacturing chemical intermediate which, if it met specifications, would have the generic name listed in part 5 or 6 of this subparagraph.

(Comment: The phrase "commercial chemical product or manufacturing chemical intermediate having the generic name listed in. . ." refers to a chemical substance which is manufactured or formulated for commercial or manufacturing use which consists of the commercially pure grade of the chemical, any technical grades of the chemical that are produced or marketed, and all formulations in which the chemical is the sole active ingredient. It does not refer to a material, such as a manufacturing process waste, that contains any of the substances listed in parts 5 or 6 of this subparagraph. Where a manufacturing process waste is deemed to be a hazardous waste because it contains a substance listed in parts 5 or 6, such waste will be listed in either subparagraphs (b) or (c) of this paragraph or will be identified as a hazardous waste by the characteristics set forth in paragraph (3) of this Rule.

5. The commercial chemical products, manufacturing chemical intermediates, or off-specification commercial chemical products or manufacturing chemical intermediates referred to in parts 1 through 4 of this subparagraph, are identified as acute hazardous wastes (H) and are subject to the small quantity exclusion defined in part (1)(e)5 of this Rule. (Comment: For the convenience of the regulated community the primary hazardous properties of these materials have been indicated by the letters T (Toxicity), and R (Reactivity). Absence of a letter indicates that the compound only is listed for acute toxicity.) These wastes and their corresponding Hazardous Waste Codes are:

Hazardous Waste Code	Substance
P023 . . .	Acetaldehyde, chloro-
P002 . . .	Acetamide, N-(aminothioxomethyl)-
P057 . . .	Acetamide, 2-fluoro-
P058 . . .	Acetic acid, fluoro-, sodium salt
P066 . . .	Acetimidic acid, N-((methylcarbamoyl)oxy)thio-, methyl ester

P001 . . . 3-(alpha-acetonyl-benzyl)-4-hydroxycoumarin and salts
P002 . . . 1-Acetyl-2-thiourea
P003 . . . Acrolein
P070 . . . Aldicarb
P004 . . . Aldrin
P005 . . . Allyl alcohol
P006 . . . Aluminum phosphide (R,T)
P007 . . . 5-(Aminomethyl)-3-isoxazolol
P008 . . . 4-Aminopyridine
P009 . . . Ammonium picrate (R)
P119 . . . Ammonium vanadate
P010 . . . Arsenic acid
P012 . . . Arsenic (III) oxide
P011 . . . Arsenic (V) oxide
P011 . . . Arsenic pentoxide
P012 . . . Arsenic trioxide
P038 . . . Arsine, diethyl-
P054 . . . Aziridine
P013 . . . Barium cyanide
P024 . . . Benzenamine, 4-chloro-
P077 . . . Benzenamine, 4-nitro-
P028 . . . Benzene, (chloromethyl)-
P042 . . . 1,2-Benzenediol, 4-(1-hydroxy-2-(methylamino)ethyl)-
P014 . . . Benzenethiol
P028 . . . Benzyl chloride
P015 . . . Beryllium dust
P016 . . . Bis(chloromethyl) ether
P017 . . . Bromoacetone
P018 . . . Brucine
P021 . . . Calcium cyanide
P123 . . . Camphene, octachloro-
P103 . . . Carbamimidoselenoic acid
P022 . . . Carbon bisulfide
P022 . . . Carbon disulfide
P095 . . . Carbonyl chloride
P033 . . . Chlorine cyanide
P023 . . . Chloroacetaldehyde
P024 . . . p-Chloroaniline
P026 . . . 1-(o-Chlorophenyl)thiourea
P027 . . . 3-Chloropropionitrile
P029 . . . Copper cyanides
P030 . . . Cyanides (soluble cyanide salts), not elsewhere specified
P031 . . . Cyanogen
P033 . . . Cyanogen chloride
P036 . . . Dichlorophenylarsine
P037 . . . Dieldrin
P038 . . . Diethylarsine
P039 . . . O,O-Diethyl S-(2-(ethylthio)ethyl) phosphorodithioate
P041 . . . Diethyl-p-nitrophenyl phosphate

P040 . . . O,O-Diethyl O-pyrazinyl phosphorothioate
P043 . . . Diisopropyl fluorophosphate
P044 . . . Dimethoate
P045 . . . 3,3-Dimethyl-1-(methylthio)-2-butanone, O-((methylamino)carbonyl) oxime
P071 . . . O,O-Dimethyl O-p-nitrophenyl phosphorothioate
P082 . . . Dimethylnitrosamine
P046 . . . alpha, alpha-Dimethylphenethylamine
P047 . . . 4,6-Dinitro-o-cresol and salts
P034 . . . 4,6-Dinitro-o-cyclohexylphenol
P048 . . . 2,4-Dinitrophenol
P020 . . . Dinoseb
P085 . . . Diphosphoramide, octamethyl-
P039 . . . Disulfoton
P049 . . . 2,4-Dithiobiuret
P109 . . . Dithiopyrophosphoric acid, tetraethyl ester
P050 . . . Endosulfan
P088 . . . Endothall
P051 . . . Endrin
P042 . . . Epinephrine
P046 . . . Ethanamine, 1,1-dimethyl-2-phenyl-
P084 . . . Ethenamine, N-methyl-N-nitroso-
P101 . . . Ethyl cyanide
P054 . . . Ethylenimine
P097 . . . Famphur
P056 . . . Fluorine
P057 . . . Fluoroacetamide
P058 . . . Fluoroacetic acid, sodium salt
P065 . . . Fulminic acid, mercury (II) salt (R,T)
P059 . . . Heptachlor
P051 . . . 1,2,3,4,10,10-Hexachloro-6,7-epoxy-1,4,4a,5,6,7,8,8a-octahydro-endo, endo-1,4:5,8-dimethanonaphthalene
P037 . . . 1,2,3,4,10,10-Hexachloro-6,7,epoxy-1,4,4a,5,6,7,8,8a-octahydro-endo, exo-1,4:5,8-dimethanonaphthalene
P060 . . . 1,2,3,4,10,10-Hexachloro-1,4,4a,5,8,8a-hexahydro-1,4:5,8-endo, endo-dimethanonaphthalene
P004 . . . 1,2,3,4,10,10-Hexachloro-1,4,4a,5,8,8a-hexahydro-1,4:5,8-endo, exo-dimethanonaphthalene
P060 . . . Hexachlorohexahydro-endo, endo-dimethanonaphthalene
P062 . . . Hexaethyl tetraphosphate
P116 . . . Hydrazinecarbothioamide
P068 . . . Hydrazine, methyl-
P063 . . . Hydrocyanic acid
P063 . . . Hydrogen cyanide
P096 . . . Hydrogen phosphide
P064 . . . Isocyanic acid, methyl ester
P007 . . . 3(2H)-isoxazolone, 5-(aminomethyl)-
P092 . . . Mercury, (acetato-O) phenyl-
P065 . . . Mercury fulminate (R,T)

P016 . . . Methane, oxybis(chloro-
P112 . . . Methane, tetranitro-(R)
P118 . . . Methanethiol, trichloro-
P059 . . . 4,7-Methano-1H-indene, 1,4,5,6,7,8,8-heptachloro-3a,4,7,7a-tetrahydro-
P066 . . . Methomyl
P067 . . . 2-Methylaziridine
P068 . . . Methyl hydrazine
P064 . . . Methyl isocyanate
P069 . . . 2-Methyllactonitrile
P071 . . . Methyl parathion
P072 . . . alpha-Naphthylthiourea
P073 . . . Nickel carbonyl
P074 . . . Nickel cyanide
P074 . . . Nickel (II) cyanide
P073 . . . Nickel tetracarbonyl
P075 . . . Nicotine and salts
P076 . . . Nitric oxide
P077 . . . p-Nitroaniline
P078 . . . Nitrogen dioxide
P076 . . . Nitrogen (II) oxide
P078 . . . Nitrogen (IV) oxide
P081 . . . Nitroglycerine (R)
P082 . . . N-Nitrosodimethylamine
P084 . . . N-Nitrosomethylvinylamine
P050 . . . 5-Norbornene-2,3-dimethanol, 1,4,5,6,7,7-hexachloro, cyclic sulfite
P085 . . . Octamethylpyrophosphoramide
P087 . . . Osmium oxide
P087 . . . Osmium tetroxide
P088 . . . 7-Oxabicyclo(2,2,1)heptane-2,3-dicarboxylic acid
P089 . . . Parathion
P034 . . . Phenol, 2-cyclohexyl-4, 6-dinitro-
P048 . . . Phenol, 2, 4-dinitro-
P047 . . . Phenol, 2,4-dinitro-6-methyl-, and salts
P020 . . . Phenol, 2,4-dinitro-6-(1-methylpropyl)-
P009 . . . Phenol, 2,4,6-trinitro-, ammonium salt (R)
P036 . . . Phenyl dichloroarsine
P092 . . . Phenylmercuric acetate
P093 . . . N-Phenylthiourea
P094 . . . Phorate
P095 . . . Phosgene
P096 . . . Phosphine
P041 . . . Phosphoric acid, diethyl p-nitrophenyl ester
P044 . . . Phosphorodithioic acid, O.O-dimethyl S-(2-(methylamino)-2-oxoethyl)ester
P043 . . . Phosphorofluoric acid, bis(1-methylethyl)ester
P094 . . . Phosphorothioic acid, O,O-diethyl S-(ethylthio)methyl ester
P089 . . . Phosphorothioic acid, O,O-diethyl O-(p-nitrophenyl) ester
P040 . . . Phosphorothioic acid, O,O-diethyl O-pyrazinyl ester

P097 . . . Phosphorothioic acid, O,O-dimethyl O-(p-((dimethylamino)-sulfonyl)phenyl)ester
P110 . . . Plumbane, tetraethyl-
P098 . . . Potassium cyanide
P099 . . . Potassium silver cyanide
P070 . . . Propanal, 2-methyl-2-(methylthio)-, O-((methylamino)carbonyl)oxime
P101 . . . Propanenitrile
P027 . . . Propanenitrile, 3-chloro-
P069 . . . Propanenitrile, 2-hydroxy-2-methyl-
P081 . . . 1,2,3-Propanetriol, trinitrate-(R)
P017 . . . 2-Propanene, 1-bromo-
P102 . . . Propargyl alcohol
P003 . . . 2-Propenal
P005 . . . 2-Propen-1-ol
P067 . . . 1,2-Propylenimine
P102 . . . 2-Propyn-1-ol
P008 . . . 4-Pyridinamine
P075 . . . Pyridine, (S)-3-(1-methyl-2-pyrrolidinyl),-and salts
P111 . . . Pyrophosphoric acid, tetraethyl ester
P103 . . . Selenourea
P104 . . . Silver cyanide
P105 . . . Sodium azide
P106 . . . Sodium cyanide
P107 . . . Strontium sulfide
P108 . . . Strychnidin-10-one, and salts
P018 . . . Strychnidin-10-one, 2,3-dimethoxy-
P108 . . . Strychnine and salts
P115 . . . Sulfuric acid, thallium(I) salt
P109 . . . Tetraethyldithiopyrophosphate
P110 . . . Tetraethyl lead
P111 . . . Tetraethylpyrophosphate
P112 . . . Tetranitromethane (R)
P062 . . . Tetraphosphoric acid, hexaethyl ester
P113 . . . Thallic oxide
P113 . . . Thallium(III) oxide
P114 . . . Thallium(I) selenide
P115 . . . Thallium(I) sulfate
P045 . . . Thiofanox
P049 . . . Thioimidodicarbonic diamide
P014 . . . Thiophenol
P116 . . . Thiosemicarbazide
P026 . . . Thiourea, (2-chlorophenyl)-
P072 . . . Thiourea, 1-naphthalenyl-
P093 . . . Thiourea, phenyl-
P123 . . . Toxaphene
P118 . . . Trichloromethanethiol
P119 . . . Vanadic acid, ammonium salt
P120 . . . Vanadium pentoxide

P120 . . . Vanadium(V) oxide
P001 . . . Warfarin
P121 . . . Zinc cyanide
P122 . . . Zinc phosphide (R,T)

6. The commercial chemical products, manufacturing chemical intermediates, or off-specification commercial chemical products or manufacturing chemical intermediates referred to in parts 1 through 4 of this subparagraph, are identified as toxic wastes (T) unless otherwise designated and are subject to the small quantity exclusion defined in parts (1)(e)1 and 6 of this Rule. (Comment: For the convenience of the regulated community, the primary hazardous properties of these materials have been indicated by the letters T (Toxicity), R (Reactivity), I (Ignitability), and C (Corrosivity).) These wastes and their corresponding Hazardous Waste Codes are:

Hazardous Waste Code	Substance
U001 . . .	Acetaldehyde (I)
U034 . . .	Acetaldehyde, trichloro
U187 . . .	Acetamide, N-(4-ethoxyphenyl)-
U005 . . .	Acetamide, N-9H-fluoren-2-yl-
U112 . . .	Acetic acid, ethyl ester (I)
U144 . . .	Acetic acid, lead salt
U214 . . .	Acetic acid, thallium(I) salt
U002 . . .	Acetone (I)
U003 . . .	Acetonitrile (I,T)
U004 . . .	Acetophenone
U005 . . .	2-Acetylaminofluorene
U006 . . .	Acetyl chloride (C,R,T)
U007 . . .	Acrylamide
U008 . . .	Acrylic acid (I)
U009 . . .	Acrylonitrile
U150 . . .	Alanine, 3-(p-bis(2-chloroethyl)amino) phenyl-,L-
U011 . . .	Amitrole
U012 . . .	Aniline (I,T)
U014 . . .	Auramine
U015 . . .	Azaserine
U010 . . .	Azirino(2',3':3,4)pyrrolo(1,2-a)indole-4,7-dione, 6-amino-8-(((aminocarbonyl) oxy)methyl)-1,1a,2,8,8a,8b-hexahydro-8a-methoxy-5-methyl-
U157 . . .	Benz(j)aceanthrylene, 1,2-dihydro-3-methyl-
U016 . . .	Benz(c)acridine
U016 . . .	3,4-Benzacridine
U017 . . .	Benzalchloride

U018 . . . Benz(a)anthracene
U018 . . . 1,2-Benzanthracene
U094 . . . 1,2-Benzanthracene, 7,12-dimethyl-
U012 . . . Benzenamine (I,T)
U014 . . . Benzenamine, 4,4'-carbonimidoylbis(N,N-dimethyl-
U049 . . . Benzenamine,4-chloro-2-methyl-
U093 . . . Benzenamine, N,N'-dimethyl-4-phenylazo-
U158 . . . Benzenamine, 4,4'-methylenebis(2-chloro-
U222 . . . Benzenamine, 2-methyl-,hydrochloride
U181 . . . Benzenamine, 2-methyl-5-nitro
U019 . . . Benzene (I,T)
U038 . . . Benzeneacetic acid, 4-chloro-alpha-(4-chlorophenyl)-alpha-hydroxy, ethyl ester
U030 . . . Benzene, 1-bromo-4-phenoxy-
U037 . . . Benzene, chloro-
U190 . . . 1,2-Benzenedicarboxylic acid anhydride
U028 . . . 1,2-Benzenedicarboxylic acid, (bis(2-ethyl-hexyl)) ester
U069 . . . 1,2-Benzenedicarboxylic acid, dibutyl ester
U088 . . . 1,2-Benzenedicarboxylic acid,diethyl ester
U102 . . . 1,2-Benzenedicarboxylic acid, dimethyl ester
U107 . . . 1,2-Benzenedicarboxylic acid, di-n-octyl ester
U070 . . . Benzene, 1,2-dichloro-
U071 . . . Benzene, 1,3-dichloro-
U072 . . . Benzene, 1,4-dichloro-
U017 . . . Benzene, (dichloromethyl)-
U223 . . . Benzene, 1,3-diisocyanatomethyl-(R,T)
U239 . . . Benzene, dimethyl-(I,T)
U201 . . . 1,3-Benzenediol
U127 . . . Benzene, hexachloro-
U056 . . . Benzene, hexahydro-(I)
U188 . . . Benzene, hydroxy-
U220 . . . Benzene, methyl-
U105 . . . Benzene, 1-methyl-1-2,4-dinitro-
U106 . . . Benzene, 1-methyl-2,6-dinitro-
U203 . . . Benzene, 1,2-methylenedioxy-4-allyl-
U141 . . . Benzene, 1,2-methylenedioxy-4-propenyl-
U090 . . . Benzene, 1,2-methylenedioxy-4-propyl-
U055 . . . Benzene, (1-methylethyl)-(I)
U169 . . . Benzene, nitro- (I,T)
U183 . . . Benzene, pentachloro-
U185 . . . Benzene, pentachloro-nitro-
U020 . . . Benzenesulfonic acid chloride (C,R)
U020 . . . Benzenesulfonyl chloride (C,R)
U207 . . . Benzene, 1,2,4,5-tetrachloro-
U023 . . . Benzene', (trichloromethyl)-(C,R,T)
U234 . . . Benzene, 1,3,5-trinitro-(R,T)
U021 . . . Benzidine
U202 . . . 1,2-Benzisothiazolin-3-one, 1,1-dioxide
U120 . . . Benzo(j,k)fluorene

U022 . . . Benzo(a)pyrene
U022 . . . 3,4-Benzopyrene
U197 . . . p-Benzoquinone
U023 . . . Benzotrichloride (C,R,T)
U050 . . . 1,2-Benzphenanthrene
U085 . . . 2,2-Bioxirane (I,T)
U021 . . . (1,1'-Biphenyl)-4,4'-diamine
U073 . . . (1,1'-Biphenyl)-4,4'-diamine, 3,3'-dichloro-
U091 . . . (1,1'-Biphenyl)-4,4'-diamine, 3,3'-dimethoxy-
U095 . . . (1,1'-Biphenyl)-4,4'-diamine,3,3'-dimethyl-
U024 . . . Bis(2-chloroethoxy) methane
U027 . . . Bis(2-chloroisopropyl)ether
U244 . . . Bis(dimethylthiocarbamoyl) disulfide
U028 . . . Bis(2-ethylhexyl) phthalate
U246 . . . Bromine cyanide
U225 . . . Bromoform
U030 . . . 4-Bromophenyl phenyl ether
U128 . . . 1,3-Butadiene, 1,1,2,3,4,4-hexachloro-
U172 . . . 1-Butanamine, N-butyl-N-nitroso-
U035 . . . Butanoic acid, 4-(Bis(2-chloroethyl)amino) benzene-
U031 . . . 1-Butanol (I)
U159 . . . 2-Butanone (I,T)
U160 . . . 2-Butanone peroxide (R,T)
U053 . . . 2-Butenal
U074 . . . 2-Butene, 1,4-dichloro-(I,T)
U031 . . . n-Butyl alchohol (I)
U136 . . . Cacodylic acid
U032 . . . Calcium chromate
U238 . . . Carbamic acid, ethyl ester
U178 . . . Carbamic acid, methylnitroso-, ethyl ester
U176 . . . Carbamide, N-ethyl-N-nitroso-
U177 . . . Carbamide, N-methyl-N-nitroso-
U219 . . . Carbamide, thio-
U097 . . . Carbamoyl chloride, dimethyl-
U215 . . . Carbonic acid, dithallium (I) salt
U156 . . . Carbonochloridic acid, methyl ester (I,T)
U033 . . . Carbon oxyfluoride (R,T)
U211 . . . Carbon tetrachloride
U033 . . . Carbonyl fluoride (R,T)
U034 . . . Chloral
U035 . . . Chlorambucil
U036 . . . Chlordane, technical
U026 . . . Chlornaphazine
U037 . . . Chlorobenzene
U039 . . . 4-Chloro-m-cresol
U041 . . . 1-Chloro-2,3-epoxypropane
U042 . . . 2-Chloroethyl vinyl ether
U044 . . . Chloroform
U046 . . . Chloromethyl methyl ether

U047 . . . beta-Chloronaphthalene
U048 . . . o-Chlorophenol
U049 . . . 4-Chloro-o-toluidine, hydrochloride
U032 . . . Chromic acid, calcium salt
U050 . . . Chrysene
U051 . . . Creosote
U052 . . . Cresols
U052 . . . Cresylic acid
U053 . . . Crotonaldehyde
U055 . . . Cumene (I)
U246 . . . Cyanogen bromide
U197 . . . 1,4-Cyclohexadienediene
U056 . . . Cyclohexane (I)
U057 . . . Cyclohexanone (I)
U130 . . . 1,3-Cyclopentadiene, 1,2,3,4,5,5-hexachloro-
U058 . . . Cyclophosphamide
U240 . . . 2,4-D, salts and esters
U059 . . . Daunomycin
U060 . . . DDD
U061 . . . DDT
U142 . . . Decachlorooctahydro-1,3,4-metheno-2H-cyclobuta(c,d)-pentalen-2-one
U062 . . . Diallate
U133 . . . Diamine (R,T)
U221 . . . Diaminotoluene
U063 . . . Dibenz(a,h)anthracene
U063 . . . 1,2:5,6-Dibenzanthracene
U064 . . . 1,2:7,8-Dibenzopyrene
U064 . . . Dibenz(a,i)pyrene
U066 . . . 1,2-Dibromo-3-chloropropane
U069 . . . Dibutyl phthalate
U062 . . . S-(2,3-Dichloroallyl) diisopropylthiocarbamate
U070 . . . o-Dichlorobenzene
U071 . . . m-Dichlorobenzene
U072 . . . p-Dichlorobenzene
U073 . . . 3,3'-Dichlorobenzidine
U074 . . . 1,4-Dichloro-2-butene (I,T)
U075 . . . Dichlorodifluoromethane
U192 . . . 3,5-Dichloro-N-(1,1-dimethyl-2-propynyl) benzamide
U060 . . . Dichloro diphenyl dichloroethane
U061 . . . Dichloro diphenyl trichloroethane
U078 . . . 1,1-Dichloroethylene
U079 . . . 1,2-Dichloroethylene
U025 . . . Dichloroethyl ether
U081 . . . 2,4-Dichlorophenol
U082 . . . 2,6-Dichlorophenol
U240 . . . 2,4-Dichlorophenoxyacetic acid, salts and esters
U083 . . . 1,2-Dichloropropane
U084 . . . 1,3-Dichloropropene

U085 . . . 1,2:3,4-Diepoxybutane (I,T)
U108 . . . 1,4-Diethylene dioxide
U086 . . . N,N-Diethylhydrazine
U087 . . . O,O-Diethyl-S-methyl-dithiophosphate
U088 . . . Diethyl phthalate
U089 . . . Diethylstilbestrol
U148 . . . 1,2-Dihydro-3,6-pyradizinedione
U090 . . . Dihydrosafrole
U091 . . . 3,3'-Dimethoxybenzidine
U092 . . . Dimethylamine (I)
U093 . . . Dimethylaminoazobenzene
U094 . . . 7,12-Dimethylbenz(a)anthracene
U095 . . . 3,3'-Dimethylbenzidine
U096 . . . alpha,alpha-Dimethylbenzylhydroperoxide (R)
U097 . . . Dimethylcarbamoyl chloride
U098 . . . 1,1-Dimethylhydrazine
U099 . . . 1,2-Dimethylhydrazine
U101 . . . 2,4-Dimethylphenol
U102 . . . Dimethyl phthalate
U103 . . . Dimethyl sulfate
U105 . . . 2,4-Dinitrotoluene
U106 . . . 2,6-Dinitrotoluene
U107 . . . Di-n-octyl phthalate
U108 . . . 1,4-Dioxane
U109 . . . 1,2-Diphenylhydrazine
U110 . . . Dipropylamine (I)
U111 . . . Di-N-propylnitrosamine
U001 . . . Ethanal-(I)
U174 . . . Ethanamine, N-ethyl-N-nitroso-
U067 . . . Ethane 1,2-dibromo-
U076 . . . Ethane, 1,1-dichloro-
U077 . . . Ethane, 1,2-dichloro-
U114 . . . 1,2-Ethanediylbiscarbamodithioic acid
U131 . . . Ethane, 1,1,1,2,2,2-hexachloro-
U024 . . . Ethane, 1,1'-(methylenebis(oxy))bis(2-chloro-
U003 . . . Ethanenitrile (I,T)
U117 . . . Ethane, 1,1'-oxybis- (I)
U025 . . . Ethane, 1,1'-oxybis(2-chloro-
U184 . . . Ethane, pentachloro-
U208 . . . Ethane, 1,1,1,2-tetrachloro-
U209 . . . Ethane 1,1,2,2-tetrachloro-
U218 . . . Ethanethioamide
U227 . . . Ethane, 1,1,2-trichloro-
U247 . . . Ethane, 1, 1, 1,-thrichloro-2, 2-bis (p-methoxyphenyl)
U043 . . . Ethene, chloro-
U042 . . . Ethene, 2-chloroethoxy-
U078 . . . Ethene, 1,1-dichloro-
U079 . . . Ethene trans-1,2-dichloro-
U210 . . . Ethene, 1,1,2,2-tetrachloro-

U173 . . . Ethanol, 2,2'-(nitrosoimino)bis-
U004 . . . Ethanone, 1-phenyl-
U006 . . . Ethanoyl chloride (C,R,T)
U112 . . . Ethyl acetate (I)
U113 . . . Ethyl acrylate (I)
U238 . . . Ethyl carbamate (urethan)
U038 . . . Ethyl 4,4'-dichlorobenzilate
U114 . . . Ethylenebis(dithiocarbamic acid)
U067 . . . Ethylene dibromide
U077 . . . Ethylene dichloride
U115 . . . Ethylene oxide (I,T)
U116 . . . Ethylene thiourea
U117 . . . Ethyl ether (I)
U076 . . . Ethylidene dichloride
U118 . . . Ethylmethacrylate
U119 . . . Ethyl methanesulfonate
U139 . . . Ferric dextran
U120 . . . Fluoranthene
U122 . . . Formaldehyde
U123 . . . Formic acid (C,T)
U124 . . . Furan (I)
U125 . . . 2-Furancarboxaldehyde (I)
U147 . . . 2,5-Furandione
U213 . . . Furan, tetrahydro- (I)
U125 . . . Furfural (I)
U124 . . . Furfuran (I)
U206 . . . D-Glucopyranose, 2-deoxy-2(3-methyl-3-nitrosoureido)-
U126 . . . Glycidylaldehyde
U163 . . . Guanidine, N-nitroso-N-methyl- N'-nitro-
U127 . . . Hexachlorobenzene
U128 . . . Hexachlorobutadiene
U129 . . . Hexachlorocyclohexane (gamma isomer)
U130 . . . Hexachlorocyclopentadiene
U131 . . . Hexachloroethane
U132 . . . Hexachlorophene
U243 . . . Hexachloropropene
U133 . . . Hydrazine (R,T)
U086 . . . Hydrazine 1,2-diethyl-
U098 . . . Hydrazine 1,1-dimethyl-
U099 . . . Hydrazine 1,2-dimethyl-
U109 . . . Hydrazine, 1,2-diphenyl-
U134 . . . Hydrofluoric acid (C,T)
U134 . . . Hydrogen fluoride (C,T)
U135 . . . Hydrogen sulfide
U096 . . . Hydroperoxide, 1-methyl-1-phenylethyl- (R)
U136 . . . Hydroxydimethylarsine oxide
U116 . . . 2-Imidazolidinethione
U137 . . . Indeno(1,2,3-cd)pyrene
U139 . . . Iron dextran

U140 . . . Isobutyl alcohol (I,T)
U141 . . . Isosafrole
U142 . . . Kepone
U143 . . . Lasiocarpine
U144 . . . Lead acetate
U145 . . . Lead phosphate
U146 . . . Lead subacetate
U129 . . . Lindane
U147 . . . Maleic anhydride
U148 . . . Maleic hydrazide
U149 . . . Malononitrile
U150 . . . Melphalan
U151 . . . Mercury
U152 . . . Methacrylonitrile (I,T)
U092 . . . Methanarnine N-methyl- (I)
U029 . . . Methane, bromo-
U045 . . . Methane, chloro- (I,T)
U046 . . . Methane, chloromethoxy-
U068 . . . Methane, Dibromo-
U080 . . . Methane, dichloro-
U075 . . . Methane, dichlorodifluoro-
U138 . . . Methane, iodo-
U119 . . . Methanesulforic acid, ethyl ester
U211 . . . Methane, tetrachloro-
U121 . . . Methane, trichlorofluoro-
U153 . . . Methanethiol (I,T)
U225 . . . Methane, tribromo-
U044 . . . Methane, trichloro-
U121 . . . Methane, trichlorofluoro-
U123 . . . Methanoic acid (C,T)
U036 . . . 4,7-Methanoindan, 1,2,4,5,6,7,8,8-octachloro-3a,4,7,7a-tetrahydro-
U154 . . . Methanol (I)
U155 . . . Methapyrilene
U247 . . . Methoxychlor
U154 . . . Methyl alcohol (I)
U029 . . . Methyl bromide
U186 . . . 1-Methylbutadiene (I)
U045 . . . Methyl chloride (I,T)
U156 . . . Methyl chlorocarbonate (I,T)
U226 . . . Methylchloroform
U157 . . . 3-Methylcholanthrene
U158 . . . 4,4'-Methylenebis(2-chloroaniline)
U132 . . . 2,2'-Methylenebis(3,4,6-trichlorophenol)
U068 . . . Methylene bromide
U080 . . . Methylene chloride
U122 . . . Methylene oxide
U159 . . . Methyl ethyl ketone (I,T)
U160 . . . Methyl ethyl ketone peroxide (R,T)

U138 . . . Methyl iodide
U161 . . . Methyl isobutyl ketone (I)
U162 . . . Methyl Methacrylate
U163 . . . N-Methyl-N-nitro-N-nitrosoguanidine
U161 . . . 4-Methyl-2-pentanone (I)
U164 . . . Methyithiouracil
U010 . . . Mitomycin C
U059 . . . 5,12-Naphthacenedione, (8S-cis)-8-acetyl-10-((3-amino-2,3,6-trideoxy-alpha-L-lyxo-hexopyranosyl)oxyl)-7,8,9,10-tetrahydro-6,8,11-trihydroxy-1-methoxy-
U165 . . . Naphthalene
U047 . . . Naphthalene, 2-chloro-
U166 . . . 1,4- Naphthalenedinone
U236 . . . 2,7-Naphthalenedisulfuric acid, 3,3'-((3,3'-dimethyl-(1,1'-biphenyl)
4,4' diyl))-bis (azo)bis(5-amino-4-hydroxy)-tetrasodium salt
U166 . . . 1,4-Naphthaquinone
U167 . . . 1-Naphthylamine
U168 . . . 2-Naphthylamine
U167 . . . alpha-Naphthylamine
U168 . . . beta-Naphthylamine
U026 . . . 2-Naphthylamine N,N'-bis(2-chloromethyl)-
U169 . . . Nitrobenzene (I,T)
U170 . . . p-Nitrophenol
U171 . . . 2-Nitropropane (I)
U172 . . . N-Nitrosodi-n-butylamine
U173 . . . N-Nitrosodiethanolamine
U174 . . . N-Nitrosodiethylamine
U111 . . . N-Nitroso-N-propylamine
U176 . . . N-Nitroso-N-ethylurea
U177 . . . N-Nitroso-N-methylurea
U178 . . . N-Nitroso-N-methylurethane
U179 . . . N-Nitrosopipendine
U180 . . . N-Nitrosopyrrolidine
U181 . . . 5-Nitro-o-loluidine
U193 . . . 1,2-Oxathiolane, 2,2-dioxide
U058 . . . 2H-1,3,2-Oxazaphosphorine, 2-(bis(2-chloro-ethyl)amino)tetrahydro-oxide 2-
U115 . . . Oxirane (I,T)
U041 . . . Oxirane, 2-(chloromethyl)-
U182 . . . Paraldehyde
U183 . . . Pentachlorobenzene
U184 . . . Pentachloroethane
U185 . . . Pentachloronitrobenzene
See FO27. . Pentachlorophenol
U186 . . . 1,3-Pentadiene (I)
U187 . . . Phenacetin
U188 . . . Phenol
U048 . . . Phenol, 2-chloro-

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U039 . . . Phenol, 4-chloro-3-methyl-
U081 . . . Phenol, 2,4-dichloro-
U082 . . . Phenol, 2,6-dichloro-
U101 . . . Phenol, 2,4-dimethyl-
U170 . . . Phenol, 4-nitro-
See F027 . . Phenol, pentachloro- •
See F027 . . Phenol, 2,3,4,6-tetrachloro- •
See F027 . . Phenol, 2,4,5-trichloro- •
See F027 . . Phenol, 2,4,6-trichloro- •
U137 . . . 1,10-(1,2-phenylene)pyrene
U145 . . . Phosphoric acid, lead salt
U087 . . . Phosphorodithioic acid, 0,0-diethyl-, S-methylester
U189 . . . Phosphorous sulfide (R)
U190 . . . Phthalic-anhydride
U191 . . . 2-Picoline
U192 . . . Pronamide
U194 . . . 1-Propanamine (I,T)
U110 . . . 1-Propanamine, N-propyl-(I)
U066 . . . Propane, 1,2-dibromo-3-chloro-
U149 . . . Propanedinitrile
U171 . . . Propane, 2-nitro- (I)
U027 . . . Propane, 2,2' oxybis(2-chloro-
U193 . . . 1,3-Propane sultone
U235 . . . 1-Propanol, 2,3-dibromo-,phosphate (3:1)
U126 . . . 1-Propanol, 2,3-epoxy-
U140 . . . 1-Propanol, 2-methyl- (I,T)
U002 . . . 2-Propanone (I)
U007 . . . 2-Propenamide
U084 . . . Propene, 1,3-dichloro-
U243 . . . 1-Propene, 1,1,2,3,3,3-hexachloro-
U009 . . . 2-Propenenitrile
U152 . . . 2-Propenentrile, 2-methyl- (I,T)
U008 . . . 2-Propenoic acid (I)
U113 . . . 2-Propenoic acid, ethyl ester (I)
U118 . . . 2-Propenoic acid, 2-methyl-, ethyl ester
U162 . . . 2-Propenoic acid, 2-methyl, methyl ester (I,T)
See F027 . . Propionic acid, 2-(2,4,5-trichlorophenoxy)- •
U194 . . . n-propylamine (I,T)
U083 . . . Propylene dichloride
U196 . . . Pyridine
U155 . . . Pyridine, 2-((2-dimethylamino)-2-thenylamino)-
U179 . . . Pyridine, hexahydro-N-nitroso-
U191 . . . Pyridine, 2-methyl-
U164 . . . 4(1H)-Pyrimidinone, 2,3-dihydro-6-methyl-2-thioxo-
U180 . . . Pyrrole, tetrahydro-N-nitroso-
U200 . . . Reserpine
U201 . . . Resorcinol
U202 . . . Saccharin and salts
U203 . . . Safrole

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U204 . . . Selenious acid
U204 . . . Selenium dioxide
U205 . . . Selenium disulfide (R,T)
U015 . . . L-Serine, diazoacetate (ester)
See F027 . . Silvex •
U089 . . . 4,4'-Stibenediol, alpha, alpha'-diethyl-
U206 . . . Streptozotocin
U135 . . . Sulfur hydride
U103 . . . Sulfuric acid, dimethyl ester
U189 . . . Sulfur phosphide (R)
U205 . . . Sulfur selenide (R,T)
See F027 . . 2,4,5-T •
U207 . . . 1,2,4,5-Tetrachlorobenzene
U208 . . . 1,1,1,2-Tetrachloroethane
U209 . . . 1,1,2,2-Tetrachloroethane
U210 . . . Tetrachloroethylene
See F027 . . 2,3,4,6-Tetrachlorophenol •
U213 . . . Tetrahydrofuran (I)
U214 . . . Thallium (I) acetate
U215 . . . Thallium(I) carbonate
U216 . . . Thallium (I) chloride
U217 . . . Thallium(I) nitrate
U218 . . . Thioacetamide
U153 . . . Thiomethanol (I,T)
U219 . . . Thiourea
U244 . . . Thiram
U220 . . . Toluene
U221 . . . Toluenodiamine
U223 . . . Toluene diisocyanate (R,T)
U222 . . . O-Toluidine hydrochloride
U011 . . . 1H-1,2,4-Triazol-3-amine
U226 . . . 1,1,1-Trichloroethane
U227 . . . 1,1,2-Trichloroethane
U228 . . . Trichloroethene
U228 . . . Trichloroethylene
U121 . . . Trichloromonofluoromethane
See F027 . . 2,4,5-Trichlorophenol •
See F027 . . 2,4,6-Trichlorophenol •
See F027 . . 2,4,5-Trichlorophenoxyacetic acid •
U234 . . . sym-Trinitrobenzene (R,T)
U182 . . . 1,3,5-Trioxana, 2,4,5-trimethyl-
U235 . . . Tris(2,3-dibromopropyl) phosphate
U236 . . . Trypan blue
U237 . . . Uracil, 5(bis(2-chloromethyl)amino)-
U237 . . . Uracil mustard
U043 . . . Vinyl chloride
U239 . . . Xylene (I)
U200 . . . Yohimban-16-carboxylic acid, 11,17-dimethoxy-18-((3,4,5-trimethoxybenzoyl)oxy)-, methyl ester.

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APPENDIX .02/A

REPRESENTATIVE SAMPLING METHODS

The methods and equipment used for sampling waste materials will vary with the form and consistency of the waste materials to be sampled. Samples collected using the sampling protocols listed below, for sampling waste with properties similar to the indicated materials, will be considered by the Department to be representative of the waste.

Extremely viscous liquid - ASTM Standard D140-70

Crushed or powdered material - ASTM Standard D346-75

Soil or rock-like material - ASTM Standard D420-69

Soil-like material - ASTM Standard D 1452-65

Fly Ash-like material - ASTM Standard D2234-76 (ASTM Standards are available from ASTM, 1916 Race St., Philadelphia, PA. 19103)

Containerized liquid wastes - "COLIWASA" described in "Test Methods for the Evaluation of Solid Waste, Physical/Chemical Methods"* (incorporated by reference, see Rule 1200-1-11-.01(2)(b)).

Liquid waste in pits, ponds, lagoons, and similar reservoirs. - "Pond Sampler" described in "Test Methods for the Evaluation of Solid Waste, Physical/Chemical Methods"*

The EPA manual also contains additional information on application of these protocols.

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*These methods are also described in "Samplers and Sampling Procedures for Hazardous Waste Streams, " EPA 600/2-80-018, January 1980.

APPENDIX .02/B

EP TOXICITY TEST PROCEDURE

The procedures utilized must be those established at Appendix II to 40 CFR Part 261 (as those Federal regulations exist on the effective date of this regulation). Any references in that Appendix to other Federal regulations must be considered to refer to the counterparts (if any) of those Federal regulations found in this Rule Chapter, if any.

APPENDIX .02/C

CHEMICAL ANALYSIS TEST METHODS

The methods utilized must be those established at Appendix III to 40 CFR Part 261 (as those Federal regulations exist on the effective date of this regulation). Any references in that Appendix to other Federal regulations must be considered to refer to the counterparts (if any) of those Federal regulations found in this Rule Chapter.

APPENDIX .02/D

BASIS FOR LISTING HAZARDOUS WASTES

Hazardous Waste Code	Hazardous Constituents For Which Listed
F001	Tetrachloroethylene, methylene chloride, trichloroethylene, 1,1,1-trichloroethane, carbon tetrachloride, chlorinated fluorocarbons.
F002	Tetrachloroethylene, methylene chloride, trichloroethylene, 1,1,1-trichloroethane, chlorobenzene, 1,1,2-trichloro-1,2,2-trifluoroethane, ortho-dichlorobenzene, trichlorofluoromethane.
F003	NA.
F004	Cresols and cresylic acid, nitrobenzene.
F005	Toluene, methyl ethyl ketone, carbon disulfide, isobutanol, pyridine.
F006	Cadmium, total chromium, nickel, cyanide (complexed).
F007	Cyanide (salts).
F008	Cyanide (salts).
F009	Cyanide (salts).
F010	Cyanide (salts).
F011	Cyanide (salts).
F012	Cyanide (complexed).
F019	Total chromium, cyanide (complexed).
F020	Tetra- and pentachlorodibenzo-p-dioxins; tetra- and pentachlorodibenzofurans; tri- and tetrachlorophenols and their chlorophenoxy derivative acids, esters, ethers, amines and other salts

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F021	Penta- and hexachlorodibenxo-p-dioxins; penta- and hexachlorodibenzofurans; pentachlorophenol and its derivatives
F022	Tetra-, penta- and hexachlorodibenzo-p-dioxins; tetra- , penta- and hexachlorodibenzofurans
F023	Tetra- and pentachlorodibenzo-p-dioxins; tetra- and pentachlorodibenzofurans; tri- and tetrachlorophenols and their chlorophenoxy derivative acids, esters, ethers, amines and other salts.
F024	Chloromethane, dichloromethane, trichloromethane, carbon tetrachloride, chloroethylene, 1,1-dichloroethane, 1,2-dichloroethane, trans 1,2-dichloroethylene, 1,1-dichloroethylene, 1,1,1-trichloroethane, 1,1,2-trichloroethane, trichloroethylene, 1,1,1,2-tetrachloroethane, 1,1,2,2-tetrachloroethane, tetrachloroethylene, 1,1,1,2-tetrachloroethane, 1,1,2,2-tetrachloroethane, tetrachloroethylene, pentachloroethane, hexachloroethane, allyl chloride (3-chloropropene), dichloropropane, dichloropropene, 2-chloro-1,3-butadiene, hexachloro-1,3-butadiene, hexachlorocyclopentadiene, hexachlorocyclohexane, benzene, chlorobenzene, dichlorobenzenes, 1,2,4-trichlorobenzene, tetrachlorobenezene, pentachlorobenzene, hexachlorobenzene, toluene, naphthalene
F026	Tetra-, penta-, and hexachlorodibenzo-p-dioxins; tetra-, penta- and hexachlorodibenzofurans
F027	Tetra-, penta, and hexachlorodibenzo-p-dioxins, tetra- penta-, and hexachlorodibenzofurans; tri-, tetra-, and pentachlorophenols and their chlorophenoxy derivative acids, esters, ethers, amines and other salts
F028	Tetra-, penta-, and hexachlorodibenzo-p-dioxins, tetra- penta-, and hexachlorodibenzofurans; tri-, tetra-, and pentachlorophenols and their chlorophenoxy derivative acids, esters, ethers, amines and other salts.
K001	Pentachlorophenol, phenol, 2-chlorophenol, p-chloro-m-cresol, 2,4-dimethylphenyl, 2,4-dinitrophenol, trichlorophenols, tetrachlorophenols, 2,4-dinitrophenol, creosote, chrysene, naphthalene, fluoranthene, benzo(b)fluoranthene, benzo(a)pyrene, indeno(1,2,3-cd)pyrene, benz(a)anthracene, dibenz(a)anthracene, acenaphthalene.
K002	Total chromium, lead.
K003	Total chromium, lead.
K004	Total chromium.
K005	Total chromium, lead.
K006	Total chromium.
K007	Cyanide (complexed), total chromium.
K008	Total chromium.
K009	Chloroform, formaldehyde, methylene chloride, methyl chloride, paraldehyde, formic acid.
K010	Chloroform, formaldehyde, methylene chloride, methyl chloride, paraldehyde, formic acid, chloroacetaldehyde.
K011	Acrylonitrile, acetonitrile, hydrocyanic acid.
K013	Hydrocyanic acid, acrylonitrile, acetonitrile.
K014	Acetonitrile, acrylamide.
K015	Benzyl chloride, chlorobenzene, toluene, benzotrichloride.
K016	Hexachlorobenzene, hexachlorobutadiene, carbon tetrachloride, hexachloroethane, perchloroethylene.

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K017	Epichlorohydrin, chloroethers (bis(chloromethyl) ether and bis (2-chloroethyl) ethers), trichloropropane, dichloropropanols.
K018	1,2-dichloroethane, trichloroethylene, hexachlorobutadiene, hexachlorobenzene.
K019	Ethylene dichloride, 1,1,1-trichloroethane, 1,1,2-trichloroethane, tetrachloroethanes (1,1,2,2-tetrachloroethane and 1,1,1,2-tetrachloroethane), trichloroethylene, tetrachloroethylene, carbon tetrachloride, chloroform, vinyl chloride, vinylidene chloride.
K020	Ethylene dichloride, 1,1,1-trichloroethane, 1,1,2-trichloroethane, tetrachloroethanes (1,1,2,2-tetrachloroethane and 1,1,1,2-tetrachloroethane), trichloroethylene, tetrachloroethylene, carbon tetrachloride, chloroform, vinyl chloride, vinylidene chloride.
K021	Antimony, carbon tetrachloride, chloroform.
K022	Phenol, tars (polycyclic aromatic hydrocarbons).
K023	Phthalic anhydride, maleic anhydride.
K024	Phthalic anhydride, 1,4-naphthoquinone.
K025	Meta-dinitrobenzene, 2,4-dinitrotoluene.
K026	Paraldehyde, pyridines, 2-picoline.
K027	Toluene diisocyanate, toluene-2,4-diamine.
K028	1,1,1-trichloroethane, vinyl chloride.
K029	1,2-dichloroethane, 1,1,1-trichloroethane, vinyl chloride, vinylidene chloride, chloroform.
K030	Hexachlorobenzene, hexachlorobutadiene, hexachloroethane, 1,1,1,2-tetrachloroethane, 1,1,2,2,-tetrachloroethane, ethylene dichloride.
K031	Arsenic
K032	Hexachlorocyclopentadiene.
K033	Hexachlorocyclopentadiene.
K034	Hexachlorocyclopentadiene.
K035	Creosote, chrysene, naphthalene, fluoranthene benzo(b)fluoranthene, benzo(a)pyrene, indeno(1,2,3-cd)pyrene, benzo(a)anthracene, dibenzo(a)anthracene, acenaphthalene.
K036	Toluene, phosphorodithioic and phosphorothioic acid esters.
K037	Toluene, phosphorodithioic and phosphorothioic acid esters.
K038	Phorate, formaldehyde, phosphorodithioic and phosphorothioic acid esters.
K039	Phosphorodithioic and phosphorothioic acid esters.
K040	Phorate, formaldehyde, phosphorodithioic and phosphorothioic acid esters.
K041	Toxaphene.
K042	Hexachlorobenzene, ortho-dichlorobenzene.
K043	2,4-dichlorophenol, 2,6-dichlorophenol, 2,4,6-trichlorophenol.
K044	NA
K045	NA
K046	Lead
K047	NA
K048	Total Chromium, lead
K049	Total chromium, lead.
K050	Total chromium.
K051	Total chromium, lead.
K052	Lead.
K060	Cyanide, naphthalene, phenolic compounds, arsenic.

K061	Total chromium, lead, cadmium.
K062	Total chromium, lead, nickel.
K069	Total chromium, lead, cadmium.
K071	Mercury
K073	Chloroform, carbon tetrachloride, hexachloroethane, trichloroethane, tetrachloroethylene, dichloroethylene, 1,1,2,2-tetrachloroethane.
K083	Aniline, nitrobenzene, diphenylamine, phenylenediamine
K084	Arsenic
K085	Benzene, dichlorobenzenes, trichlorobenzenes, tetrachlorobenzenes, pentachlorobenzene, hexachlorobenzene, benzylchloride
K086	Lead, total chromium
K087	Phenol, naphthalene
K093	Phthalic anhydride, maleic anhydride.
K094	Phthalic anhydride.
K095	1,1,2-trichloroethane, 1,1,1,2-tetrachloroethane, 1,1,2,2-tetrachloroethane.
K096	1,2-dichloroethane, 1,1,1-trichloroethane, 1,1,2-trichloroethane.
K097	Chlordane, heptachlor.
K098	Toxaphene.
K099	2,4-dichlorophenol, 2,4,6-trichlorophenol.
K100	Total chromium, lead, cadmium.
K101	Arsenic
K102	Arsenic
K103	Aniline, nitrobenzene, phenylenediamine
K104	Aniline, benzene, diphenylamine, nitrobenzene, phyenylenediamine
K105	Benzene, monochlorobenzene, dichlorobenzenes, 2,4,6 - trichlorophenol
K106	Mercury

NA = Waste is hazardous because it fails the test for the characteristic of ignitability, corrosivity, or reactivity.

APPENDIX .02/E

HAZARDOUS CONSTITUENTS

Acetonitrile
Acetophenenone 3-(alpha-Acetonlybenzyl)-4-hydroxycoumarin and salts 2-
Acetylaminofluorene
Acetyl chloride
1-Acetyl-2-thiourea
Acrolein
Acrylamide
Acrylonitrile
Aflatoxins
Aldrin
Allyl alcohol
Aluminum phosphide
4-Aminobiphenyl
6-Amino-1,1a,2,8,8a,8b-hexahydro-8-(hydroxymethyl)-8a-methoxy-5-methylcarbamate azirino(2',3':3,4) pyrrolo(1,2-a) indole-4,7-dione (ester) (Mitomycin C)
5-(Aminomethyl)-3-isoxazolol
4-Aminopyridine
Amitrole
Antimony and compounds, N.O.S.
Aniline
Aramite
Arsenic and compounds, N.O.S.
Arsenic acid
Arsenic pentoxide
Arsenic trioxide
Auramine
Azaserine
Barium and compounds, N.O.S.
Barium cyanide
Benz(c)acridine
Benz(a)anthracene
Benzene
Benzenearsonic acid
Benzene, (dichloromethyl)
Benzenethiol
Benzidine
Benzo(b)fluoranthene
Benzo(j)fluoranthene
Benzo(a)pyrene
Benzoquinone and isomers
Benzotrichloride
Benzyl chloride
Beryllium and compounds, N.O.S.
Bis(2-chloroethoxy)methane
Bis(2-chloroethyl) ether

N,N-Bis(2-chloroethyl)-2-naphthylamine
Bis(2-chloroisopropyl) ether
Bis(chloromethyl) ether
Bis (2-ethylhexyl) phthalate
Bromoacetone
Bromomethane
4-Bromophenyl phenyl ether
Brucine
2-Butanone peroxide
Butyl benzyl phthalate
2-sec-Butyl-4, 6-dinitrophenol (DNBP)
Cadmium and compounds, N.O.S.
Calcium chromate
Calcium cyanide
Carbon oxyfluoride Carbon disulfide
Chloral Chlorambucil
Chlordane (alpha and gamma isomers)
Chlorinated benzenes, N.O.S.
Chlorinated ethane, N.O.S.
Chlorinated fluorocarbons
Chlorinated naphthalene, N.O.S.
Chlorinated phenol, N.O.S.
Chloroacetaldehyde
Chloroalkyl ethers
p-Chloroaniline
Chlorobenzene
Chlorobenzilate
1-(p-Chlorobenzoyl)-5-methoxy-2-methylindole-3-acetic acid
2 - Chloro-1, 3-butadiene (chloropene)- •
p-Chloro-m-cresol
1-Chloro-2,3-epoxybutane
2-Chloroethyl vinyl ether
Chloroform
Chloromethane
Chloromethyl methyl ether
2-Chloronaphthalene
2-Chlorophenol
1-(o-Chlorophenyl)thiourea
3-Chloropropene (allyl chloride) •
3-Chloropropionitrile
Chromium and compounds, N.O.S.
Chrysene
Citrus red No. 2
Coal tars
Copper cyanide
Creosote
Cresol
Crotonaldehyde
Cyanides (soluble salts and complexes), N.O.S.

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Cyanogen
Cyanogen bromide
Cyanogen chloride
Cycasin
2-Cyclohexyl-4,6-dinitrophenol
Cyclophosphamide
Daunomycin
DDD
DDE
DDT
Diallate
Dibenz(a,h)acridine
Dibenz(a,j)acridine
7H-Dibenzo(c,g)carbazole
Dibenzo(a,e)pyrene
Dibenzo(a,h)pyrene
Dibenzo(a,i)pyrene
1,2-Dibromo-3-chloropropane
1,2-Dibromoethane
Dibromomethane
Di-n-butyl phthalate
o - Dichlorobenzene
m - Dichlorobenzene
p - Dichlorobenzene
Dichlorobenzene, N.O.S.
3,3'-Dichlorobenzidine
1,4-Dichloro-2-butene
Dichlorodifluoromethane
1,1-Dichloroethane
1,2-Dichloroethane
trans-1,2-Dichloroethene
Dichloroethylene, N.O.S.
1,1-Dichloroethylene
Dichloromethane
2,4-Dichlorophenol
2,6-Dichlorophenol
2,4-Dichlorophenoxyacetic acid (2,4-D)
Dichloropropane
Dichlorophenylarsine
1,2-Dichloropropane
Dichloropropanol, N.O.S.
Dichloropropene, N.O.S.
1,3-Dichloropropene
Dieldrin
Diepoxybutane
Diethylarsine
1,2-Diethylhydrazine
0,0-Diethyl-S-methylester phosphorodithioic acid
0,0-Diethylphosphoric acid, O-p-nitrophenyl ester

Diethyl phthalate
0,0-Diethyl-O-(2-pyrazinyl)phosphorothiate
Diethylstilbestrol
Dihydrosafrole
3,4-Dihydroxy-alpha-(methylamino)-methyl benzyl alcohol
Di-isopropylfluorophosphate (DFP)
Dimethoate
3,3'-dimethoxybenzidine
p-Dimethylaminoazobenzene
7,12-Dimethylbenz(a)anthracene
3,3-Dimethylbenzidine
Dimethylcarbamoyl chloride
1,1-Dimethylhydrazine
1,2-Dimethylhydrazine
3,3-Dimethyl-1-(methylthio)-2-butanone-0-((methylamino)carbonyl)oxime
alpha,alpha-Dimethylphenethylamine
2,4-Dimethylphenol
Dimethyl phthalate
Dimethyl sulfate
Dinitrobenzene, N.O.S.
4,6-Dinitro-o-cresol and salts
2,4-Dinitrophenol
2,4-Dinitrotoluene
2,6-Dinitrotoluene
Di-n-octyl phthalate
1,4-Dioxane
Diphenylamine
1,2-Diphenylhydrazine
Di-n-prophylnitrosamine
Disulfoton
2,4-Dithiobiuret
Endosulfan
Endrin and metabolites
Ethyl carbanate (urethan)
Ethyl cyanide
Ethyl Methacrylate
Ethylenebisdithiocarbamate (EBDC)
Ethyleneimine
Ethylene oxide
Ethylenethiourea
Ethyl methanesulfonate
Fluoranthene
Fluorine
2-Fluoroacetamide
Fluoroacetic acid, sodium salt
Formaldehyde
Formic acid
Glycidylaldehyde
Halomethane, N.O.S.

Heptachlor
Heptachlor epoxide (alpha, beta, and gamma isomers)
Hexachlorobenzene
Hexachlorobutadiene
Hexachlorocyclohexane (all isomers)
Hexachlorocyclopentadiene
Hexachlorodibenzo-p-dioxins ——— •
Hexachlorodibenzofurans •
Hexachloroethane
1,2,3,4,10,10-Hexachloro-1,4,4a,5,8,8a-hexahydro-1,4:5,8-endo, endo-dimethanonaphthalene
Hexachlorophene
Hexachloropropene
Hexaethyl tetraphosphate
Hydrazine
Hydrocyanic acid
Hydrofluoric acid
Hydrogen sulfide
Hydroxydimethylarsine oxide
Indeno(1,2,3-c,d)pyrene
Iodomethane
Iron dextran
Iso butyl alcohol
Isocyanic acid, methyl ester
Isosafrole
Kepone
Lasiocarpine
Lead and compounds, N.O.S.
Lead acetate
Lead phosphate
Lead subacetate
Maleic anhydride
Maleic hydrazide
Malononitrile
Melphalan
Mercury fulminate
Mercury and compounds, N.O.S.
Methacrylonitrile
Methanethiol
Methapyrilene
Methomyl
Methoxychlor
2-Methylaziridine
Methyl chlorocarbonate
3-Methylcholanthrene
4,4'-Methylene-bis-(2-chloroaniline)
Methyl ethyl ketone (MEK)
Methyl hydrazine
2-Methyllactonitrile

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Methyl methacrylate
Methyl methanesulfonate
2-Methyl-2-(methylthio)propionaldehyde-o-(methylcarbonyl) oxime
N-Methyl-N'-nitro-N-nitrosoguanidine
Methyl parathion
Methylthiouracil
Mustard gas
Naphthalene
1,4-Naphthoquinone
1-Naphthylamine
2-Naphthylamine
1-Napthyl-2-thiourea
Nickel and compounds, N.O.S.
Nickel carbonyl
Nickel cyanide
Nicotine and salts
Nitric oxide
p-Nitroaniline
Nitrobenzene
Nitrogen dioxide
Nitrogen mustard and hydrochloride salt
Nitrogen mustard N-oxide and hydrochloride salt
Nitroglycerine
4-Nitrophenol
4-Nitroquinoline-1-oxide
Nitrosamine, N.O.S.
N-Nitrosodi-N-butylamine
N-Nitrosodiethanolamine
N-Nitrosodiethylamine
N-Nitrosodimethylamine
N-Nitroso-N-ethylurea
N-Nitrosomethylethylamine
N-Nitroso-N-methylurea
N-Nitroso-N-methylurethane
N-Nitrosomethylvinylamine
N-Nitrosomorpholine
N-Nitrosonornicotine
N-Nitrosopiperidine
N-Nitrosopyrrolidine
N-Nitrososarcosine
5-Nitro-o-toluidine
Octamethylpyrophosphoramide
Osmium tetroxide
7-Oxabicyclo(2.2.1)heptane-2,3-dicarboxylic acid
Paraldehyde
Parathion
Pentachlorobenzene
Pentachlorodibenzo-p-dioxins •
Pentachlorodibenzofurans

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Pentachloroethane
Pentachloronitrobenzene (PCNB)
Pentachlorophenol
Phenacetin
Phenol
Phenylenediamine
Phenylmercury acetate
N-Phenylthiourea
Phosgen
Phosphine
Phosphorodithioic acid, 0,0-diethyl S-((ethylthio)methyl) ester (phorate)
Phosphorothioic acid, O,O-dimethylester, O-ester with N,N-dimethylbenzene sulfonamide
Phthalic acid esters, N.O.S.
Phthalic anhydride
2-Picoline
Polychlorinated biphenyl, N.O.S.
Potassium cyanide
Potassium silver cyanide
Pronamide
1,3-Propane sultone
N-Propylamine
Propylthiouracil
2-Propyn-1-ol
Pyridine
Reserpine
Resorcinol
Saccharin
Safrole
Selenious acid
Selenium and compounds, N.O.S.
Selenium sulfide
Selenourea
Silver and compounds, N.O.S.
Silver cyanide
Sodium cyanide
Streptozotocin
Strontium sulfide
Strychnine and salts
1,2,4,5-Tetrachlorobenzene
2,3,7,8-Tetrachlorodibenzo-p-dioxin (TCDD)
Tetrachlorodibenzo-p-dioxins •
Tetrachlorodibenzofurans
Tetrachloroethane, N.O.S.
1,1,1,2-Tetrachloroethane
1,1,2,2-Tetrachloroethane
Tetrachloroethene (Tetrachloroethylene)
Tetrachloromethane
2,3,4,6-Tetrachlorophenol

• — Revised Effective FEB 2 1986

Tetraethyldithiopyrophosphate
Tetraethyl lead
Tetraethylpyrophosphate
Tetranitromethane
Thallium and compounds, N.O.S.
Thallic oxide
Thallium (I) acetate
Thallium (I) carbonate
Thallium (I) chloride
Thallium (I) nitrate
Thallium selenite
Thallium (I) sulfate
Thioacetamide
Thiosemicarbazide
Thiourea
Thiuram
Toluene
Toluene diamine
o-Toluidine hydrochloride
Tolylene diisocyanate
Toxaphene
Tribromomethane
1,2,4-Trichlorobenzene
1,1,1-Trichloroethane
1,1,2-Trichloroethane
Trichloroethene (Trichloroethylene)
Trichloromethanethiol
Trichloromonofluoromethane
2,4,5-Trichlorophenol
2,4,6-Trichlorophenol
2,4,5-Trichlorophenoxyacetic acid (2,4,5-T)
2,4,5-trichlorophenoxypropionic acid (2,4,5-TP) (Silvex)
Trichloropropane, N.O.S.
1,2,3-Trichloropropane
0,0,0-Triethyl phosphorothioate
Trinitrobenzene
Tris(1-azridinyl) phosphine sulfide
Tris (2,3-dibromopropyl) phosphate
Trypan blue
Uracil mustard
Vanadic acid, ammonium salt
Vanadium pentoxide (dust)
Vinyl chloride
Zinc cyanide
Zinc phosphide

APPENDIX .02/F

METHOD OF ANALYSIS FOR CHLORINATED DIBENZO-p-DIOXINS AND DIBENZOFURANS

The methodology utilized must be that established at Appendix X to 40 CFR Part 261 (as those Federal regulations exist on the effective date of this regulation).

— Revised Effective FEB 2 1986

RULE 1200-1-11-.03 NOTIFICATION REQUIREMENTS AND STANDARDS APPLICABLE TO GENERATORS OF HAZARDOUS WASTES

(1) General

(a) Purpose, Scope, and Applicability.

1. These regulations establish standards for generators of hazardous waste in Tennessee.

2. A generator who treats, stores, or disposes of hazardous waste on-site must only comply with the following portions of this Rule with respect to that waste: subparagraph (1)(b) for determining whether or not he has a hazardous waste, paragraph (2) for notifying and obtaining an installation identification number, subparagraph (4)(e) for accumulation of hazardous waste, parts (5)(a)3 and 4 for recordkeeping, and part (5)(b)2 for annual reporting.

   Note - A generator who treats, stores, or disposes of hazardous waste on-site must comply with the applicable standards and permit requirements set forth in Rules 1200-1-11-.05, 1200-1-11-.06, and 1200-1-11-.07.

3. Any person who imports hazardous waste into the state from a foreign country must comply with the standards applicable to generators established in this Rule.

4. A person who generates a hazardous waste as defined by Rule 1200-1-11-.02 is subject to the compliance requirements and penalties prescribed in Sections 68-46-111 through 68-46-115 of the Act if he does not comply with the requirements of this Rule.

5. An owner or operator who initiates a shipment of hazardous waste from a treatment, storage, or disposal facility must comply with the generator standards established in this Rule. (Note: The provisions of subparagraph (4)(e) are applicable to the on-site accumulation of hazardous waste by generators. Therefore, the provisions of subparagraph (4)(e) only apply to owners or operators who are shipping hazardous waste which they generated at that facility.)

6. A generator who is a small quantity generator as defined in Rule 1200-1-11-.02(1)(e) is subject to the requirements of paragraphs (2) through (6) of this Rule only to the extent set forth in Rule 1200-1-11-.02(1)(e).

(b) Hazardous Waste Determination - A person who generates a waste, as defined in Rule 1200-1-11-.02(1)(b), must determine if that waste is a hazardous waste using the following method:

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1. He must first determine if the waste is excluded from regulation under Rule 1200-1-11-.02(1)(d)1, 2, and 4.

2. He must then determine if the waste is listed as a hazardous waste in Rule 1200-1-11-.02(4).

   Note - Even if the waste is listed, the generator still has an opportunity under Rule 1200-1-11-.01(3)(c) to demonstrate to the Commissioner that the waste from his particular facility or operation is not a hazardous waste.

3. If the waste is not listed as a hazardous waste in Rule 1200-1-11-.02(4), he must determine whether the waste is identified in Rule 1200-1-11-.02(3) by either:

   (i) Testing the waste according to the methods set forth in Rule 1200-1-11-.02(3), or according to an equivalent method approved by the Commissioner under Rule 1200-1-11-.01(3)(b); or

   (ii) Applying knowledge of the hazard characteristic of the waste in light of the materials or the processes used.

(c) Installation Identification Numbers

1. A generator must not treat, store, dispose of, transport, or offer for transportation, hazardous waste without having received an installation identification number from the Commissioner.

2. A generator who has not received an installation identification number may obtain one by notifying the Department pursuant to paragraph (2) of this Rule. Upon receipt of the notification, the Department will assign an installation identification number to the generator.

3. A generator must not offer his hazardous waste to transporters who do not have a valid permit from the Department to transport hazardous waste in Tennessee (see Rule 1200-1-11-.04(2)), or to treatment, storage, or disposal facilities that have not received an installation identification number.

(2) Notification

(a) Applicability

1. Each person who generates a hazardous waste as defined by Rule 1200-1-11-.02(1)(c) must notify the Department, describing his such wastes and his activities regarding them, according to subparagraphs (b) through (e) of this paragraph, except as parts 2 and 3 of this • subparagraph and Rule 1200-1-11-.02(1)(d), (e), and (g) provide otherwise.

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2. A generator shall not be required to notify with regard to each individual hazardous waste stream generated which is piped along with other wastes to an on-site wastewater treatment facility for treatment. However, if the conglomerate waste stream delivered by the collection system to the on-site wastewater treatment facility is a hazardous waste as defined in Rule 1200-1-11-.02, then the generator must notify with regard to that conglomerate waste stream.

3. A generator shall not be required to notify with regard to a hazardous waste if he has already notified the Department with regard to that waste under emergency rules promulgated earlier under the Act.

(b) Existing Generators - Except as subparagraph (a) of this paragraph provides otherwise, a person who is a generator of a waste on the effective date of the regulations established under Rule 1200-1-11-.02 which identify that waste as a hazardous waste subject to the requirements of this paragraph, must notify the Department within 90 days of that date. Such notification must be submitted on generator notification forms provided by the Department. The form must be completed according to the instructions accompanying it.

(c) New Generators - Except as subparagraphs (a) and (e) of this paragraph provide otherwise, a person who becomes a generator of a waste after the effective date of regulations established under Rule 1200-1-11-.02 which identify that waste as a hazardous waste subject to the requirements of this paragraph, must notify the Department within 90 days after the date of initial generation. Such notification must be submitted on generator notification forms provided by the Department. The form must be completed according to the instructions accompanying it.

(d) Changes in Generator Data - The generator shall be responsible for maintaining an up-to-date notification file by notifying the Department in writing of significant changes in the information submitted within 30 days after such changes. (The Department shall, upon request, grant up to 60 days additional time in cases where retesting of the waste is deemed necessary.) Such changes shall include, but certainly not be limited to, changes in ownership or operation of the generating facility or operation, or other reported administrative data.

(e) Special Cases - Except as subparagraph (a) of this paragraph provides otherwise:

1. Persons who generate hazardous wastes at more than one location in Tennessee shall file notification for each such generating location.

2. A group of generating installations located at a single site under the ownership or operation of one person may file a single notification.

3. Generators who operate on a job-shop basis shall file notification on their current operations, indicating on the form that they are a job-

shop type of operation and generally describing their capabilities and operations and the types of wastes they characteristically produce.

(3) The Manifest

(a) General Requirements

1. A generator who transports, or offers for transportation, hazardous waste for off-site treatment, storage, or disposal must prepare a manifest before the waste is transported off-site. The manifest form(s) utilized must be the Uniform Hazardous Waste Manifest established at the Appendix to 40 CFR Part 262 (as published at 49 Federal Register 10500, March 20, 1984, and revised at 50 Federal Register 28742, July 15, 1985) which must be completed according to the instructions also established in that Appendix. + • +

2. A generator must designate on the manifest one facility which is permitted by the Commissioner or Board, EPA, or another State to handle the waste described on the manifest.

3. A generator may also designate on the manifest one alternate facility which is permitted to handle his waste in the event an emergency prevents delivery of the waste to the primary designated facility.

4. If the transporter is unable to deliver the hazardous waste to the designated facility or the alternate facility, the generator must either designate another facility or instruct the transporter to return the waste.

(b) Acquisition of Manifests - If the hazardous waste is to be shipped to another state (the consignment state) and the laws and/or regulations of that state require that the Manifest be supplied by an agency or department of that state's government, then the generator must use that Manifest. If the consignment state does not supply the Manifest, or if the hazardous waste is to be shipped to another location within Tennessee, then the generator may obtain the Manifest from any source. +

(c) Number of Copies - The manifest consists of at least the number of copies which will provide the generator, each transporter, and the owner or operator of the designated facility with one copy each for their records and another copy to be returned to the generator.

(d) Use of the Manifest

1. The generator must:

(i) Sign the manifest certification by hand; and

(ii) Obtain the handwritten signature of the initial transporter and date of acceptance on the manifest; and

+ — Revised Effective DEC 29 1984

• — Revised Effective FEB 2 1986

(iii) Retain one copy, in accordance with part (5)(a) 1 of this Rule.

2. The generator must give the transporter the remaining copies of the manifest.

3. For shipment of hazardous waste within the United States solely by water (bulk shipments only), the generator must send three copies of the manifest dated and signed in accordance with this subparagraph to the owner or operator of the designated facility or the last water (bulk shipment) transporter to handle the waste in the United States if exported by water. Copies of the manifest are not required for each transporter.

4. For rail shipments of hazardous waste within the United States which originate at the site of generation, the generator must send at least three copies of the manifest dated and signed in accordance with this subparagraph to:

(i) The next non-rail transporter, if any; or

(ii) The designated facility if transporter solely by rail; or

(iii) The last rail transporter to handle the waste in the United States if exported by rail.

Note - See Rule 1200-1-11-.04(3)(a)5 and 6 for special provisions for rail or water (bulk shipment) transporters.

(4) Pre-transport Requirements

(a) Packaging - Before transporting hazardous waste or offering hazardous waste for transportation off-site, a generator must package the waste in accordance with the applicable DOT regulations on packaging under 49 CFR Parts 173, 178, and 179 (as those Federal regulations exist on the effective date of this subparagraph). + o

(b) Labeling - Before transporting or offering hazardous waste for transportation off-site, a generator must label each package in accordance with the applicable DOT regulations on hazardous materials under 49 CFR Part 172 (as those Federal regulations exist on the effective date of this subparagraph). + o

(c) Marking +

1. Before transporting or offering hazardous waste for transportation off-site, a generator must mark each package of hazardous waste in accordance with the applicable DOT regulations on hazardous materials under 49 CFR Part 172 (as those Federal regulations exist on the effective date of this part). + o

+ - Revised effective DEC 29, 1984.
o - Repromulgated effective FEB 2, 1986.

2. The generator shall mark or label each container of 110 gallons or less used in transporting hazardous waste off-site with the following words and information: +

HAZARDOUS WASTE - Improper Disposal Prohibited By Law. If found, contact the nearest police or public safety authority, or the U. S. Environmental Protection Agency. +

Generator Name _____ +
and Address _____ +
Manifest Document Number _____ +

The generator shall add as indicated his name and address and the number assigned to the manifest accompanying this container. The marking required in this subparagraph must be (1) durable, in English, and printed on or affixed to the surface of a package or on a label, tag, or sign; (2) displayed on a background of sharply contrasting color; (3) unobscured by labels or attachments; and (4) located away from any other marking (such as advertising) that could substantially reduce its effectiveness. +

(d) Placarding - If the initial transporter fails to provide the appropriate placards, the generator must placard or offer the initial transporter the appropriate placards according to DOT regulations for hazardous materials under 49 CFR Part 172, Subpart F (as those Federal regulations exist on the effective date of this subparagraph) before transporting hazardous waste or offering hazardous waste for transportation off-site. + o

(e) Accumulation Time

1. A generator may accumulate hazardous waste on-site for 90 days or less without a permit or without having interim status provided that:

(i) The waste is placed in containers and the generator complies with Rule 1200-1-11.05(9), or the waste is placed in tanks and the generator complies with Rule 1200-1-11-.05(10) except for subparagraph (c);

(ii) The date upon which each period of accumulation begins is clearly marked and visible for inspection on each container;

(iii) While being accumulated on-site, each container and tank is labeled or marked clearly with the words, "Hazardous Waste";

(iv) The generator complies with the requirements for owners or operators in Rule 1200-1-11-.05(2)(f)1,3, and 4, (2)(g), (3), and (4); and •

(v) Where tanks are used, the generator maintains adequate records to verify that accumulation time is less than 90 days.

+ - Revised effective DEC 29, 1984.
o - Repromulgated effective FEB 2, 1986.
• - Revised effective FEB 2, 1986.

2. A generator who accumulates hazardous waste for more than 90 days is an operator of a storage facility and is subject to the requirements of Rule 1200-1-11-.05 and 1200-1-11-.06 and the permit requirements of Rule 1200-1-11-.07 unless he has been granted an extension to the 90-day period. Such extension may be granted by the Department if hazardous wastes must remain on-site for more than 90 days due to unforeseen, temporary, and uncontrollable circumstances. An extension of up to 30 days may be granted at the discretion of the Commissioner on a case-by-case basis.

3. A generator who removes hazardous waste from a product or new material storage tank, a product or raw material transport vehicle or vessel, a manufacturing process unit or an associated non-waste-treatment manufacturing unit directly into or onto a transport vehicle for immediate transportation to a treatment, storage, or disposal facility shall (for such process) not be considered to be "accumulating" such waste for purposes of this subparagraph.

4. (i) A generator may accumulate as much as 55 gallons of hazardous waste or one quart of acute hazardous waste listed in Rule 1200-1-11-.02(4)(b), (c), or (d)5 in containers at or near any point of generation where wastes initially accumulate, which is under the control of the operator of the process generating the waste, without a permit or interim status and without complying with part 1 of this subparagraph provided he:

   (I) Complies with Rule 1200-1-11-.05(9)(b), (c), and (d)1; and

   (II) Marks his containers either with the words "Hazardous Waste" or with other words that identify the contents of the containers.

   (ii) A generator who accumulates either hazardous waste or acute hazardous waste listed in Rule 1200-1-11-.02(4)(b), (c), or (d)5 in excess of the amount established in subpart (i) of this part at or near any point of generation must, with respect to that amount of excess waste, comply within three days with part 1 of this subparagraph or other applicable provisions of this Rule Chapter. During the three day period the generator must continue to comply with items (i)(I) and (II) of this part. The generator must mark the container holding the excess accumulation of hazardous waste with the date the excess amount began accumulating.

(5) Recordkeeping and Reporting

(a) Recordkeeping

1. A generator must keep a copy of each manifest signed in accordance with part (3)(d)1 of this Rule for three years or until he receives a signed copy from the designated facility which received the waste. This signed copy must be retained as a record for at least three years from the date the waste was accepted by the initial transporter.

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2. A generator must keep a copy of each Annual Report and Exception Report for a period of at least three years from the due date of the report (March 1).

3. A generator must keep records as necessary to demonstrate compliance with subparagraph (1)(b) of this Rule - to include any test results, waste analyses, or other determinations made in accordance with that subparagraph - for at least three years from the date that the waste was last sent to on-site or off-site hazardous or nonhazardous waste treatment, storage, or disposal facilities. Such records must document the basis for the hazardous waste determination, including those determinations based on the generator's knowledge of materials and processes utilized rather than on laboratory analyses.

4. The periods of retention referred to in this section are extended automatically during the course of any unresolved enforcement action regarding the regulated activity or as requested by the Commissioner or Board.

(b) Annual Reporting

1. A generator must submit an Annual Report to the Department by March 1 for the preceding calendar year. Such report must be submitted on forms provided by the Department, and the form must be completed according to the instructions accompanying it. The report must include, but shall not necessarily be limited to, the following information:

(i) The year covered by the report.

(ii) The name, address, telephone number, and Department-assigned installation identification number of the generator.

(iii) For each hazardous waste (Note: each waste, but not necessarily each batch or shipment of such waste) generated by the generator during the reporting year, the following:

(I) A descriptive name of the waste and the appropriate waste code(s) from Rule 1200-1-11-.02;

(II) The methods by which the waste was managed on-site by the generator during the reporting year and the total quantities managed by each method; and

(III) For those wastes managed off-site during the reporting year:

I. The installation identification number of each treatment, storage, or disposal facility, or the name and address of other places, to which the waste was sent;

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II. The total quantity of the waste sent to each place and the method(s) by which it was to be managed; and

III. The installation identification number(s) of those transporters whose services were used during the reporting year.

(iv) A description of the efforts undertaken during the year to reduce the volume and toxicity of waste generated.

(v) A description of the changes in volume and toxicity of waste actually achieved during the year in comparison to previous years to the extent such information is available for years prior to 1984.

(vi) The certification signed by the generator or authorized representative.

2. A generator must also submit the annual report established in part 1 of this subparagraph prior to those events, such as change of ownership or cessation of business, which would make him no longer subject to the annual reporting requirement. In such case, the report would cover the period of time that has elapsed since December 31 of the preceding calendar year.

3. Any generator who treats, stores, or disposes of hazardous waste on-site must submit an Annual Report covering those wastes in accordance with the provisions of Rules 1200-1-11-.05, 1200-1-11-.06, and 1200-1-11-.07.

(c) Exception Reporting

1. A generator who does not receive a copy of the manifest with the handwritten signature of the owner or operator of the designated facility within 35 days of the date the waste was accepted by the initial transporter must contact the transporter and/or the owner or operator of the designated facility to determine the status of the hazardous waste.

2. A generator must submit an Exception Report to the Commissioner if he has not received a copy of the manifest with the handwritten signature of the owner or operator of the designated facility within 45 days of the date the waste was accepted by the initial transporter. The Exception Report must include:

(i) A legible copy of the manifest for which the generator does not have confirmation of delivery; and

(ii) A cover letter signed by the generator or his authorized representative explaining the efforts taken to locate the hazardous waste and the results of those efforts.

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3. The Exception Report required by part 2 of this subparagraph must be submitted to the Commissioner within 5 days after the 45-day period expires.

(6) Special Conditions

(a) International Shipments

1. Any person who exports hazardous waste to a foreign country or imports hazardous waste from a foreign country into the state must comply with the requirements of this Rule and with the special requirements of this subparagraph.

2. When shipping hazardous waste outside the United States, the generator must:

(i) Require that the foreign consignee confirm the delivery of the waste in the foreign country. A copy of the manifest signed by the foreign consignee may be used for this purpose; and

(ii) Meet the requirements under part (3)(a)1 of this Rule for the Manifest, except that: +

(I) In place of the name, address, and installation identification number of the designated facility, the name and address of the foreign consignee must be used; and

(II) The generator must identify the point of departure from the United States through which the waste must travel before entering a foreign country.

Note - An exporter also has the responsibility under 40 CFR 262.50(b)(1) (Federal Register Vol. 45 No. 98 (May 19, 1980) p. 33144) to notify EPA in advance of the initial shipment of hazardous waste to each country in each calendar year.

3. A generator must file an Exception Report, if:

(i) He has not received a copy of the manifest signed by the transporter stating the date and place of departure from the United States within 45 days from the date it was accepted by the initial transporter; or

(ii) Within 90 days from the date the waste was accepted by the initial transporter, the generator has not received written confirmation from the foreign consignee that the hazardous waste was received.

4. Any person exporting hazardous waste identified or listed under Rule 1200-1-11-.02 shall file with the Commissioner no later than March 1 of each year, a report summarizing the types, quantities, frequency, •

and ultimate destination of all such hazardous waste exported during the previous calendar year. •

5. When importing hazardous waste, a person must meet all requirements of part (3)(a)1 of this Rule for the manifest except that: +

   (i) In place of the generator's name, address and installation identification number, the name and address of the foreign generator and the importer's name, address and installation identification number must be used; and

   (ii) In place of the generator's signature on the certification statement, the Tennessee importer or his agent must sign and date the certification and obtain the signature of the initial transporter.

6. A person who exports hazardous waste from a foreign country or imports hazardous waste from a foreign country into Tennessee may obtain the Manifest from any source. + +

• — Revised Effective FEB 2 1986

+ — Revised Effective DEC 2 9 1981

RULE 1200-1-11-.04 PERMIT REQUIREMENTS AND STANDARDS APPLICABLE TO TRANSPORTERS OF HAZARDOUS WASTE

(1) General

(a) Scope

1. These regulations establish standards which apply to persons transporting hazardous waste within Tennessee if the transportation requires a manifest under Rule 1200-1-11-.03.

2. Nothing in this Rule shall exempt a transporter from his responsbilities under the rules and regulations of the U.S. Department of Transportation or the Tennessee Public Service Commission.

3. These regulations do not apply to on-site transportation of hazardous waste by generators or by owners or operators of permitted hazardous waste management facilities.

4. A transporter of hazardous waste must also comply with Rule 1200-1-11-.03 if he:

(i) Transports hazardous waste into the state from a foreign country (except for the notification requirements of Rule 1200-1-11-.03(2)); or

(ii) Mixes hazardous wastes of different DOT shipping decriptions by placing them into a single container.

(b) Installation Identification Number

1. A transporter must not transport hazardous wastes which originates or terminates in Tennessee without having received an installation identification number from the Department.

2. A transporter who has not received an installation identification number from the Department may obtain one by obtaining a permit from the Department pursuant to paragraph (2) of this Rule.

(c) Transfer Facility Requirements - A transporter who stores manifested shipments of hazardous waste in containers meeting applicable DOT and PSC regulations for packaging at a transfer facility for a period of ten days or less is not subject to regulation under Rules 1200-1-11-.05, 1200-1-11-.06, or 1200-1-11-.07 with respect to the storage of those wastes.

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(2) Permitting

(a) Applicability - Each person who transports in Tennessee a hazardous waste that originates or terminates in Tennessee must have a valid transporter permit obtained from the Department in accordance with subparagraph (b) of this paragraph, and is subject to the requirements of subparagraph (c) and (d) of this paragraph.

(b) Obtaining a Permit

1. Any person who wishes to transport hazardous waste to or from locations within Tennessee must apply for and receive a permit from the Department before beginning such transport operations.

2. Application for a permit shall consist of a written notification to the Department identifying the name, business address, and telephone number of the transporter; the docket number (if applicable) assigned to him by the Tennessee Public Service Commission; his capabilities and/or limitations with regard to the types and forms of hazardous waste he can safely and lawfully transport; the names, addresses, and telephone numbers of transfer facilities in Tennessee which he operates or utilizes; and the permit application fee (if any) required under Rule 1200-1-11-.08(2)(a). NOTE: Permit application forms are available from the Department.

3. The Commissioner shall issue the permit within 15 days following his receipt of the permit application, unless such application is by a person that (1) had previously held a permit that was terminated by the Commissioner for violation of the requirements of these Rules, or (2) had been operating as a transporter in violation of the permit requirement of this paragraph. Such persons shall not be issued a permit unless and until they demonstrate, to the satisfaction of the Commissioner, their willingness and capability to comply with the Act and these Rules.

4. A transporter who holds a valid permit (or registration) issued under emergency rules promulgated earlier under the Act shall be deemed to have complied with the requirements of this subparagraph.

5. Transporter permits shall not be transferable.

(c) Permit Duration/Renewal/Termination

1. Unless terminated as set forth in part 3 of this subparagraph, transporter permits shall remain in effect until July 1 of the following calendar year.

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2. Unless he has initiated termination proceedings as set forth in part 3 of this subparagraph, the Commissioner shall automatically renew each transporter permit for another year upon his timely receipt of the annual maintenance fee required under Rule 1200-1-11-.08(3)(a).

3. (i) The Commissioner shall terminate a transporter permit within 10 days of receiving a request from the transporter to do so.

(ii) The Commissioner, after notifying the transporter and providing him with the opportunity to be heard on the matter, may by order terminate the permit of any transporter upon his violation of one or more of the applicable requirements of this Rule Chapter or Rule Chapter 1200-1-13.

(d) General Requirements

1. The permit shall be issued with an installation identification number as required under subparagraph (1)(b) of this Rule. This number must be included on all manifests and other official documents and on correspondence between the transporter and the Department.

2. Transporters shall maintain a copy of their permit application on file, and shall notify the Department in writing within 30 days of any changes in the information submitted or of cessation of hazardous waste transportation services in this state.

3. A motor vehicle transporter shall have a copy of his permit with him and available for inspection whenever he picks up, transports, or delivers a shipment of hazardous waste in Tennessee; and shall provide the generator/shipper with the opportunity to inspect that permit if so requested.

(3) Compliance With the Manifest System and Recordkeeping

(a) The Manifest System

1. A transporter may not accept hazardous waste from a generator unless it is accompanied by a manifest, signed by the generator in accordance with the provisions of Rule 1200-1-11-.03.

2. Before transporting the hazardous waste, the transporter must sign and date the manifest acknowledging acceptance of the hazardous waste from the generator. The transporter must return a signed copy to the generator before leaving the generator's property.

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3. The transporter must ensure that the manifest accompanies the hazardous waste.

4. A transporter who delivers a hazardous waste to another transporter or to the designated facility must:

   (i) Obtain the date of delivery and the handwritten signature of that transporter or of the owner or operator of the designated facility on the manifest; and

   (ii) Retain one copy of the manifest in accordance with subparagraph (c) of this paragraph; and

   (iii) Give the remaining copies of the manifest to the accepting transporter or designated facility.

5. The requirements of parts 3,4, and 6 of this subparagraph do not apply to water (bulk shipment) transporters if:

   (i) The hazardous waste is delivered by water (bulk shipment) to the designated facility; and

   (ii) A shipping paper containing all the information required on the manifest (excluding the installation identification numbers, generator certification, and signatures) accompanies the hazardous waste; and

   (iii) The delivering transporter obtains the date of delivery and handwritten signature of the owner or operator of the designated facility on either the manifest or the shipping paper; and

   (iv) The person delivering the hazardous waste to the initial water (bulk shipment) transporter obtains the date of delivery and signature of the water (bulk shipment) transporter on the manifest and forwards it to the designated facility; and

   (v) A copy of the shipping paper or manifest is retained by each water (bulk shipment) transporter in accordance with subparagraph (c) of this paragraph.

6. For shipments involving rail transportation the requirements of parts 3, 4, and 5 of this subparagraph do not apply and the following requirements do apply:

   (i) When accepting hazardous waste from a non-rail transporter, the initial rail transporter must:

(I) Sign and date the manifest acknowledging acceptance of the hazardous waste;

(II) Return a signed copy of the manifest to the non-rail transporter;

(III) Forward at least three copies of the manifest to:

I. The next non-rail transporter, if any; or,

II. The designated facility, if the shipment is delivered to that facility by rail; or

III. The last rail transporter designated to handle the waste in the United States;

(IV) Retain one copy of the manifest and rail shipping paper in accordance with subparagraph (c) of this paragraph.

(ii) Rail transporters must ensure that a shipping paper containing all the information required on the manifest (excluding the installation identification numbers, generator certification, and signatures) accompanies the hazardous waste at all times.

(iii) When delivering hazardous waste to the designated facility, a rail transporter must:

(I) Obtain the date of delivery and handwritten signature of the owner or operator of the designated facility on the manifest or the shipping paper (if the manifest has not been received by the facility); and

(II) Retain a copy of the manifest or signed shipping paper in accordance with subparagraph (c) of this paragraph.

(iv) When delivering hazardous waste to a non-rail transporter a rail transporter must:

(I) Obtain the date of delivery and the handwritten signature of the next non-rail transporter on the manifest; and

(II) Retain a copy of the manifest in accordance with subparagraph (c) of this paragraph.

(v) Before accepting hazardous waste from rail transporters, a non-rail transporter must sign and date the manifest and provide a copy to the rail transporter.

7. Transporters who transport hazardous waste out of the United States must:

   (i) Indicate on the manifest the date the hazardous waste left the United States; and

   (ii) Sign the manifest and retain one copy in accordance with part (c)3 of this paragraph; and

   (iii) Return a signed copy of the manifest to the generator.

(b) Compliance with the Manifest

1. The transporter must deliver the entire quantity of hazardous waste which he has accepted from a generator or a transporter to:

   (i) The designated facility listed on the manifest; or

   (ii) The alternate designated facility, if the hazardous waste cannot be delivered to the designated facility because an emergency prevents delivery; or

   (iii) The next designated transporter; or

   (iv) The place outside the United States designated by the generator.

2. If the hazardous waste cannot be delivered in accordance with part 1 of this subparagraph the transporter must contact the generator for further directions and must revise the manifest according to the generator's instructions.

(c) Recordkeeping

1. A transporter of hazardous waste must keep a copy of the manifest signed by the generator, himself, and the next designated transporter or the owner or operator of the designated facility for a period of three years from the date the hazardous waste was accepted by the initial transporter.

2. For shipments delivered to the designated facility by water (bulk shipment), each water (bulk shipment) transporter must retain a copy of the shipping paper containing all the information required in subpart (a)5(ii) of this paragraph for a period of three years from the date the hazardous waste was accepted by the initial transporter.

3. For shipments of hazardous waste by rail within the United States:

(i) The initial rail transporter must keep a copy of the manifest and shipping paper with all the information required in subpart (a)6(ii) for a period of three years from the date the hazardous waste was accepted by the initial transporter; and

(ii) The final rail transporter must keep a copy of the signed manifest (or the shipping paper if signed by the designated facility in lieu of the manifest) for a period of three years from the date the hazardous waste was accepted by the initial transporter.

(NOTE: Intermediate rail transporters are not required to keep records pursuant to these regulations.)

4. A transporter who transports hazardous waste out of the United States must keep a copy of the manifest indicating that the hazardous waste left the United States for a period of three years from the date the hazardous waste was accepted by the initial transporter.

5. The periods of retention referred to in this subparagraph are extended automatically during the course of any unresolved enforcement action regarding the regulated activity or as requested by the Commissioner.

6. Any person who holds or has held a transporter permit in Tennessee pursuant to paragraph (2) of this Rule must furnish upon request, and make available at all reasonable times for inspection, by any officer, employee, or representative of the Department who is duly designated by the Commissioner, all records required under this subparagraph. •

(4) Hazardous Waste Discharges

(a) Immediate Action

1. In the event of a discharge of hazardous waste during transportation, the transporter must take appropriate immediate action to protect public health and the environment (e.g., notify local authorities, dike the discharge area).

2. If a discharge of hazardous waste occurs during transportation and an official (State or local government or a Federal Agency) acting within the scope of his official responsibilities determines that immediate removal of the waste is necessary to protect public health or the environment, that official may authorize the removal of the waste by transporters who do not have installation identification numbers and without the preparation of a manifest.

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3. A transporter who has discharged hazardous waste in Tennessee must immediately telephone the 24-hour toll-free number of the Tennessee Emergency Management Agency, which is 800-262-3300 for in-state callers or 800-258-3300 for out-of-state callers, and furnish the following information:

   (i) Name of person reporting the spill;

   (ii) Name and address of transporter involved;

   (iii) Name and address of generator;

   (iv) Telephone number where reporter can be contacted;

   (v) Date, time, and location of incident (indicate pollution of land, water, air, or public water supply, if known);

   (vi) Type of incident (e.g., fire, spillage);

   (vii) Description (including hazard class) and quantity of hazardous waste involved; to the extent available;

   (viii) Type of transport vehicle and mode; and

   (ix) The extent of injuries, if any.

   Note: Under DOT regulations (49 CFR 171.15 and 171.16), the transporter may also be required to give notice to the National Response Center at 800-424-8802 or 202-426-2675 and report in writing to DOT.

4. Within fifteen days of occurrence, the transporter shall send a written report to the Department on each hazardous waste discharge during transportation that occurs in this state. Such report shall include the information required in paragraph (a) above, a discussion of the cause of the emergency, and a summary of the emergency response (including the treatment or disposition of any spilled waste or contaminated material). A copy of the accompanying manifest shall be included with the report. NOTE: A copy of the U.S. Department of Transportation (DOT) form F5800.1 shall suffice for this report provided that it is properly completed and supplemented as necessary to include all information required by this paragraph.

5. A water (bulk shipment) transporter who has discharged hazardous waste must give the same notice as required by 33 CFR 153.203 (as that Federal regulation exists on the effective date of this part) for oil and hazardous substances. +

+ — Revised Effective DEC 29 1984

(b) Discharge Clean Up - A transporter must clean up any hazardous waste discharge that occurs during transportation or take such action as may be required or approved by Federal, State, or local officials so that the hazardous waste discharge no longer presents a hazard to public health or the environment.

RULE 1200-1-11-.05 INTERIM STATUS STANDARDS FOR OWNERS AND OPERATORS OF EXISTING HAZARDOUS WASTE TREATMENT, STORAGE, AND DISPOSAL FACILITIES

(1) General

(a) Purpose - The purpose of this Rule is to establish minimum standards that define the acceptable management of hazardous waste during the period of interim status and until certification of final closure or, if the facility is subject to post-closure requirements, until post-closure responsibilities are fulfilled.

(b) Applicability

1. The standards of this Rule apply to owners and operators of facilities that treat, store, or dispose of hazardous waste who have fully complied with the requirements for interim status under Rule 1200-1-11-.07(3) until either a permit is issued under Rule 1200-1-11-.07(7) or until applicable closure and post-closure responsibilities under this Rule are fulfilled, and to those owners and operators of facilities in existence on November 19, 1980 who have failed to file Part A of the permit application as required by Rule 1200-1-11-.07(2)(b) and (d). These standards apply to all treatment, storage, and disposal of hazardous waste at these facilities after the effective date of this Rule Chapter, except as specifically provided otherwise in this Rule or Rule 1200-1-11-.02.

Note: Rule Chapter 1200-1-11 became effective as rulemaking hearing rules on March 2, 1981.

2. The requirements of this Rule do not apply to:

(i) The owner or operator of a facility permitted or registered by the Commissioner or Board, as appropriate, pursuant to the "Tennessee Solid Waste Disposal Act" (TCA 68-31-101 through 68-31-115, and 68-31-301 to manage municipal or industrial waste, if the only hazardous waste the facility treats, stores, or disposes of is excluded from regulation under this Rule by Rule 1200-1-11-.02(1)(e) as a "small quantity";

(ii) The addition of absorbent material to waste in a container (as defined in Rule 1200-1-11-.01(2)) or the addition of waste to the absorbent material in a container, provided that these actions occur at the time waste is first placed in the container and part (2)(h)2, subparagraph (9)(b), and subparagraph (9)(c) of this Rule are complied with.

(iii) The owner and operator of a facility managing recyclable materials described in Rule 1200-1-11-.02(1)(f)1(ii) and (iii) (except to the extent that requirements of this Rule are referred to in Rule 1200-1-11-.09(3), (4), (6), or (7).

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(iv) A generator accumulating waste on-site in compliance with Rule 1200-1-11-.03(4)(b), except to the extent the requirements are included in Rule 1200-1-11-.03(4)(b);

(v) The owner or operator of a totally enclosed treatment facility, as defined in Rule 1200-1-11-.01(2);

(vi) The owner or operator of an elementary neutralization unit or an on-site wastewater treatment unit as defined in Rule 1200-1-11-.01(2); (Comment: On-site wastewater treatment units are, however, subject to permits-by-rule as set forth at Rule 1200-1-11-.07(1)(c)1(iii).)

(vii) (I) Except as provided in item (II) of this subpart, a person engaged in treatment or containment activities during immediate response to any of the following situations:

I. A discharge of a hazardous waste;

II. An imminent and substantial threat of a discharge of hazardous waste;

III. A discharge of a material which, when discharged, becomes a hazardous waste.

(II) An owner or operator of a facility otherwise regulated by this Rule must comply with all applicable requirements of paragraphs (3) and (4) of this Rule.

(III) Any person who is covered by item (I) of this subpart and who continues or initiates hazardous waste treatment or containment activities after the immediate response is over is subject to all applicable requirements of this Rule and Rules 1200-1-11-.06 and 1200-1-11-.07 for those activities.

(viii) A transporter storing manifested shipmentsof hazardous waste in containers meeting applicable DOT and PSC regulations for packaging at a transfer facility for a period of ten days or less;

(ix) A person disposing of hazardous waste by means of underground injection subject to permits issued under Chapter 1200-4-6 of the Rules of the State of Tennessee and under Part C of the Federal Safe Drinking Water Act (42 U.S.C. 3001 et seq.); or

(Comment: This Rule does apply to the aboveground treatment or storage of hazardous waste before it is injected underground.)

(x) The owner or operator of a POTW which treats, stores, or disposes of hazardous waste.

(Comment: The owner or operator of a facility under subparts (ix) and (x) of this part is subject to the requirements of Rule 1200-1-11-.06 to the

extent those requirements are included in a permit-by-rule granted to such a person under Rule 1200-1-11-.07(1)(c).

(c) Prohibitions

1. The following hazardous wastes must not be managed at facilities subject to regulation under this Rule:

(i) Wastes included under hazardous waste listings F020, F021, F022, F023, F026, or F027, unless:

(I) The waste is a wastewater treatment sludge generated in a surface impoundment as part of the plant's wastewater treatment system; or

(II) The waste is stored in tanks or containers; or

(III) The waste is stored or treated in waste piles that meet the requirements of Rule 1200-1-11-.06(12)(a)3 as well as all other applicable requirements of paragraph (12) of this Rule.

(2) General Facility Standards

(a) Applicability - The regulations in this paragraph apply to owners and operators of all hazardous waste facilities, except as subparagraph (1)(b) of this Rule provides otherwise.

(b) Installation Identification Number - Every facility owner or operator must apply to the Department for an installation identification number in accordance with the permit application procedures of Rule 1200-1-11-.07 (2).

(c) Required Notices

1. The owner or operator of a facility that has arranged to receive hazardous waste from a foreign source must notify the Commissioner in writing at least four weeks in advance of the date the waste is expected to arrive at the facility. Notice of subsequent shipments of the same waste from the same foreign source is not required.

2. Before transferring ownership or operation of a facility during its operating life, or of a disposal facility during the post-closure care period, the owner or operator must notify the new owner or operator in writing of the requirements of this Rule, Rule 1200-1-11-.07, and Rule 1200-1-11-.08. (Also see Rule 1200-1-11-.07 (3).)

(Comment: An owner's or operator's failure to notify the new owner or operator of the requirements of this Rule in no way relieves the new owner or operator of his obligation to comply with all applicable requirements.)

(d) General Waste Analysis

1. (i) Before an owner or operator treats, stores, or disposes of any hazardous waste, he must obtain a detailed chemical and physical analysis of a representative sample of the waste. At a minimum, this analysis must contain all information which must be known to treat, store, or dispose of the waste in accordance with the requirements of this Rule.

(ii) The analysis may include data developed under Rule 1200-1-11-.02, and existing published or documented data on the hazardous waste or on waste generated from similar processes.

(Comment: For example, the facility's records of analyses performed on the waste before the effective date of these regulations, or studies conducted on hazardous waste generated from processes similar to that which generated the waste to be managed at the facility, may be included in the data base required to comply with subpart 1(i) of this subparagraph. The owner or operator of an off-site facility may arrange for the generator of the hazardous waste to supply part or all of the information required by subpart 1(i) of this subparagraph. If the generator does not supply the information, and the owner or operator chooses to accept a hazardous waste, the owner or operator is responsible for obtaining the information required to comply with this subparagraph.)

(iii) The analysis must be repeated as necessary to ensure that it is accurate and up to date. At a minimum, the analysis must be repeated:

(I) When the owner or operator is notified, or has reason to believe, that the process or operation generating the hazardous waste has changed; and

(II) For off-site facilities, when the results of the inspection required in subpart 1(iv) of this subparagraph indicate that the hazardous waste received at the facility does not match the waste designated on the accompanying manifest or shipping paper.

(iv) The owner or operator of an off-site facility must inspect and, if necessary, analyze each hazardous waste movement received at the facility to determine whether it matches the identity of the waste specified on the accompanying manifest or shipping paper.

2. The owner or operator must develop and follow a written waste analysis plan which describes the procedures which he will carry out to comply with part 1 of this subparagraph. He must keep this plan at the facility. At a minimum, the plan must specify:

(i) The parameters for which each hazardous waste will be analyzed and the rationale for the selection of these parameters (i.e., how analysis for these parameters will provide sufficient information on the waste's properties to comply with part 1 of this subparagraph);

(ii) The test methods which will be used to test for these parameters;

(iii) The sampling method which will be used to obtain a representative sample of the waste to be analyzed. A representative sample may be obtained using either:

(I) One of the sampling methods described in Appendix .02/A of Rule 1200-1-11-.02; or

(II) An equivalent sampling method.

(Comment: See Rule 1200-1-11-.01(3)(b) for related discussion.)

(iv) The frequency with which the initial analysis of the waste will be reviewed or repeated to ensure that the analysis is accurate and up to date;

(v) For off-site facilities, the waste analyses that hazardous waste generators have agreed to supply; and

(vi) Where applicable, the methods which will be used to meet the additional waste analysis requirements for specific waste management methods as specified in subparagraphs (10)(c), (11)(d), (12)(c), (13)(c), (14)(h), (15)(c), (16)(c), and (17)(c) of this Rule.

3. For off-site facilities, the waste analysis plan required in part 2 of this subparagraph must also specify the procedures which will be used to inspect and, if necessary, analyze each movement of hazardous waste received at the facility to ensure that it matches the identity of the waste designated on the accompanying manifest or shipping paper. At a minimum, the plan must describe:

(i) The procedures which will be used to determine the identity of each movement of waste managed at the facility; and

(ii) The sampling method which will be used to obtain a representative sample of the waste to be identified, if the identification method includes sampling.

4. As part of the waste stream analysis for each hazardous waste handled at the facility, the facility operator shall determine the appropriate waste codes to be used when recording and reporting shipments of such waste received as per subparagraphs (5)(d) and (5)(f) of this Rule. If the waste was generated in this state, the facility operator shall obtain the appropriate waste codes from the generator at the time of initiating management of the waste. If the waste was generated in another state, the facility operator shall obtain and use the EPA Hazardous Waste Numbers (from 40 CFR 261) which apply to the waste.

(e) Security

1. The owner or operator must prevent the unknowing entry, and minimize the possibility for the unauthorized entry, of persons or livestock onto the active portion of his facility, unless:

   (i) Physical contact with the waste, structures, or equipment within the active portion of the facility will not injure unknowing or unauthorized persons or livestock which may enter the active portion of a facility, and

   (ii) Disturbance of the waste or equipment, by the unknowing or unauthorized entry of persons or livestock onto the active portion of a facility, will not cause a violation of the requirements of this Rule.

2. Unless exempt under subparts 1(i) and 1(ii) of this subparagraph, a facility must have:

   (i) A 24-hour surveillance system (e.g., television monitoring or surveillance by guards or facility personnel) which continuously monitors and controls entry onto the active portion of the facility; or

   (ii) (I) An artificial or natural barrier (e.g.,a fence in good repair or a fence combined with a cliff), which completely surrounds the active portion of the facility; and

   (II) A means to control entry, at all times, through the gates or other entrances to the active portion of the facility (e.g., an attendant, television monitors, locked entrance, or controlled roadway access to the facility).

   (Comment: The requirements of part 2 of this subparagraph are satisfied if the facility or plant within which the active portion is located itself has a surveillance system, or a barrier and a means to control entry, which complies with the requirements of subparts 2(i) or 2(ii) of this subparagraph).

3. Unless exempt under subparts 1(i) and 1(ii) of this subparagraph, a sign with the legend, "Danger - Unauthorized Personnel Keep Out," must be posted at each entrance to the active portion of a facility, and at other locations, in sufficient numbers to be seen from any approach to this active portion. The legend must be written in English, and must be legible from a distance of at least 25 feet. Existing signs with a legend other than "Danger - Unauthorized Personnel Keep Out" may be used if the legend on the sign indicates that only authorized personnel are allowed to enter the active portion, and that entry onto the active portion can be dangerous.

   (Comment: See part (7)(g)2 of this Rule for discussion of security requirements at disposal facilities during the post-closure care period.)

(f) General Inspection Requirements

1. The owner or operator must inspect his facility for malfunctions and deterioration, operator errors, and discharges which may be causing--or may lead to--(1) release of hazardous waste constituents to the environment or (2) a threat to public health. The owner or operator must conduct these inspections often enough to identify problems in time to correct them before they harm public health or the environment.

2. (i) The owner or operator must develop and follow a written schedule for inspecting all monitoring equipment, safety and emergency equipment, security devices, and operating and structural equipment (such as dikes and sump pumps) that are important to preventing, detecting, or responding to environmental or public health hazards.

   (ii) He must keep this schedule at the facility.

   (iii) The schedule must identify the types of problems (e.g., malfuntions or deterioration) which are to be looked for during the inspection (e.g., inoperative sump pump, leaking fitting, eroding dike, etc.).

   (iv) The frequency of inspection may vary for the items on the schedule. However, it should be based on the rate of possible deterioration of the equipment and the probability of an environmental or public health incident if the deterioration or malfunction or any operator error goes undetected between inspections. Areas subject to spills, such as loading and unloading areas, must be inspected daily when in use. At a minimum, the inspection schedule must include the items and frequencies called for in subparagraphs (9)(e), (10)(d), (11)(e), (15)(d), (16)(d), and (17)(d) of this Rule.

3. The owner or operator must 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 public health hazard. Where a hazard is imminent or has already occurred, remedial action must be taken immediately.

4. The owner or operator must record inspections in an inspection log or summary. He must keep these records for at least three years from the date of inspection. At a minimum, these records must include the date and time of the inspection, the name of the inspector, a notation of the observations made, and the date and nature of any repairs or other remedial actions.

(g) Personnel Training

1. (i) Facility personnel must successfully complete a program of classroom instruction or on-the-job training that teaches them to

perform their duties in a way that ensures the facility's compliance with the requirements of this Rule. The owner or operator must ensure that this program includes all the elements described in the document required under subpart 4(iii) of this subparagraph.

(ii) This program must be directed by a person trained in hazardous waste management procedures, and must include instruction which teaches facility personnel hazardous waste management procedures (including contingency plan implementation) relevant to the positions in which they are employed.

(iii) At a minimum, the training program must be designed to ensure that facility personnel are able to respond effectively to emergencies by familiarizing them with emergency procedures, emergency equipment, and emergency systems, including, where applicable:

(I) Procedures for using, inspecting, repairing, and replacing facility emergency and monitoring equipment;

(II) Key parameters for automatic waste feed cut-off systems;

(III) Communications or alarm systems;

(IV) Response to fires or explosions;

(V) Response to ground-water contamination incidents; and

(VI) Shutdown of operations.

2. Facility personnel must successfully complete the program required in part 1 of this subparagraph within six months after the effective date of these Rules or six months after the date of their employment or assignment to a facility, or to a new position at a facility, whichever is later. Employees hired after the effective date of these Rules must not work in unsupervised positions until they have completed the training requirements of part 1 of this subparagraph.

3. Facility personnel must take part in an annual review of the initial training required in part 1 of this subparagraph.

4. The owner or operator must maintain the following documents and records at the facility:

(i) The job title for each position at the facility related to hazardous waste management, and the name of the employee filling each job;

(ii) A written job description for each position listed under subpart 4(i) of this subparagraph. This description may be consistent in its degree of specificity with descriptions for other similar

positions in the same company location or bargaining unit, but must include the requisite skill, education, or other qualifications, and duties of facility personnel assigned to each position;

(iii) A written description of the type and amount of both introductory and continuing training that will be given to each person filling a position listed under subpart 4(i) of this subparagraph;

(iv) Records that document that the training or job experience required under parts 1, 2, and 3 of this subparagraph has been given to, and completed by, facility personnel.

5. Training records on current personnel must be kept until closure of the facility. Training records or former employees must be kept for at least three years from the date the employee last worked at the facility. Personnel training records may accompany personnel transferred within the same company.

(h) General Requirements for Ignitable, Reactive, or Incompatible Wastes

1. The owner or operator must take precautions to prevent accidental ignition or reaction of ignitable or reactive waste. This waste must 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 owner or operator must confine smoking and open flame to specially designated locations. "No Smoking" signs must be conspicuously placed wherever there is a hazard from ignitable or reactive waste.

2. Where specifically required by other subparagraphs of this Rule, the treatment, storage, or disposal of ignitable or reactive waste, and the mixture or commingling of incompatible wastes, or incompatible wastes and materials, must be conducted so that it does not:

(i) Generate extreme heat or pressure, fire or explosion, or violent reaction;

(ii) Produce uncontrolled toxic mists, fumes, dusts, or gases in sufficient quantities to threaten public health;

(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 containing the waste; or

(v) Through other like means threaten public health or the environment.

(i) Location Standards

1. The placement of any hazardous waste in a salt dome, salt bed formation, underground mine or cave is prohibited.

(3) Preparedness and Prevention

(a) Applicability - The regulations in this paragraph apply to owners and operators of all hazardous waste facilities, except as subparagraph (1)(b) of this Rule provides otherwise.

(b) Maintenance and Operation of Facility - Facilities must be maintained and operated to minimize the possibility of a fire, explosion, or any unplanned sudden or non-sudden release of hazardous waste or hazardous waste constituents to air, soil, or surface water which could threaten public health or the environment.

(c) Required Equipment - All facilities must be equipped with the following, unless none of the hazards posed by waste handled at the facility could require a particular kind of equipment specified below:

1. An internal communications or alarm system capable of providing immediate emergency instruction (voice or signal) to facility personnel;

2. 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;

3. 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

4. Water at adequate volume and pressure to supply water hose streams, or foam producing equipment, or automatic sprinklers, or water spray systems.

(d) Testing and Maintenance of Equipment - All facility communications or alarm systems, fire protection equipment, spill control equipment, and decontamination equipment, where required, must be tested and maintained as necessary to assure its proper operation in time of emergency.

(e) Access to Communications or Alarm System

1. Whenever hazardous waste is being poured, mixed, spread, or otherwise handled, all personnel involved in the operation must have

immediate access to an internal alarm or emergency communication device, either directly or through visual or voice contact with another employee, unless such a device is not required under subparagraph (c) above.

2. If there is ever just one employee on the premises while the facility is operating, he must 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, unless such a device is not required under subparagraph (c) above.

(f) Required Aisle Space - The owner or operator must maintain aisle space to allow the unobstructed movement of personnel, fire protection equipment, spill control equipment, and decontamination equipment to any area of facility operation in an emergency, unless aisle space is not needed for any of these purposes.

(g) Arrangements with Local Authorities

1. The owner or operator must attempt to make the following arrangements, as appropriate for the type of waste handled at his facility and the potential need for the services of these organizations:

   (i) Arrangements to familiarize police, fire departments, and emergency response teams with the layout of the facility, properties of hazardous waste handled at the facility and associated hazards, places where facility personnel would normally be working, entrances to roads inside the facility, and possible evacuation routes;

   (ii) Where more than one police and fire department might respond to an emergency, agreements designating primary emergency authority to a specific police and a specific fire department, and agreements with any others to provide support to the primary emergency authority;

   (iii) Agreements with State emergency response teams, emergency response contractors, and equipment suppliers; and

   (iv) Arrangements to familiarize local hospitals with the properties of hazardous waste handled at the facility and the types of injuries or illnesses which could result from fires, explosions, or releases at the facility.

2. Where State or local authorities decline to enter into such arrangements, the owner or operator must document the refusal in the operating record.

(4) Contingency Plan and Emergency Procedures

(a) Applicability - The regulations in this paragraph apply to owners and operators of all hazardous waste facilities, except as subparagraph (1)(b) of this Rule provides otherwise.

(b) Purpose and Implementation of Contingency Plan

1. Each owner or operator must have a contingency plan for his facility. The contingency plan must be designed to minimize hazards to public health or the environment from fires, explosions, or any unplanned sudden or non-sudden release of hazardous waste or hazardous waste constituents to air, soil, or surface water.

2. The provisions of the plan must be carried out immediately whenever there is a fire, explosion, or release of hazardous waste or hazardous waste constituents which could threaten public health or the environment.

(c) Content of Contingency Plan

1. The contingency plan must describe the actions facility personnel must take to comply with subparagraphs (b) and (g) of this paragraph in response to fires, explosions, or any unplanned sudden or non-sudden release of hazardous waste or hazardous waste contituents to air, soil, or surface water at the facility.

2. If the owner or operator has already prepared a Spill Prevention, Control, and Countermeasures (SPCC) Plan in accordance with 40 CFR 112 or 40 CFR 1510, or some other emergency or contingency plan, he need only amend that plan to incorporate hazardous waste management provisions that are sufficient to comply with the requirements of this Part.

3. The plan must describe arrangements agreed to by local police departments, fire departments, hospitals, contractors, and State and local emergency response teams to coordinate emergency services, pursuant to subparagraph (3)(g) of this Rule.

4. The plan must list names, addresses, and phone numbers (office and home) of all persons qualified to act as emergency coordinator (see subparagraph (f) of this paragraph), and this list must be kept up to date. Where more than one person is listed, one must be named as primary emergency coordinator and others must be listed in the order in which they will assume responsibility as alternates.

5. The plan must include a list of all emergency equipment at the facility (such as fire extinguishing systems, spill control equipment, communications and alarm systems (internal and external), and decontamination equipment), where this equipment is required. This list must be kept up to date. In addition, the plan must include the location and a physical description of each item on the list, and a brief outline of its capabilities.

6. The plan must include an evacuation plan for facility personnel where there is a possibility that evacuation could be necessary. This plan must describe signal(s) to be used to begin evacuation, evacuation routes, and alternate evacuation routes (in cases where the primary routes could be blocked by releases of hazardous waste or fires).

(d) Copies of Contingency Plan - A copy of the contingency plan and all revisions to the plan must be:

1. Maintained at the facility; and

2. 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.

(e) Amendment of Contingency Plan - The contingency plan must be reviewed, and immediately amended, if necessary, whenever:

1. Applicable regulations are revised;

2. The plan fails in an emergency;

3. The facility 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;

4. The list of emergency coordinators changes; or

5. The list of emergency equipment changes.

(f) Emergency Coordinator - At all times, there must be 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 must be thoroughly familiar with all aspects of the facility's contingency plan, all operations and activities at the facility, the location and characteristics of waste handled, the location of all records within the facility, and the facility layout. In addition, this person must have the authority to commit the resources needed to carry out the contingency plan.

(Comment: The emergency coordinator's responsibilities are more fully spelled out in subparagraph (g) below. Applicable responsibilities for the emergency coordinator vary, depending on factors such as type and variety of waste(s) handled by the facility, and type and complexity of the facility.)

(g) Emergency Procedures

1. Whenever there is an imminent or actual emergency situation, the emergency coordinator (or his designee when the emergency

coordinator is on call) must immediately:

(i) Activate internal facility alarms or communication systems, where applicable, to notify all facility personnel; and

(ii) Notify appropriate State or local agencies with designated response roles if their help is needed.

2. Whenever there is a release, fire, or explosion, the emergency coordinator must immediately identify the character, exact source, amount, and areal extent of any released materials. He may do this by observation or review of facility records or manifests and, if necessary, by chemical analysis.

3. Concurrently, the emergency coordinator must assess possible hazards to public health or the environment that may result from the release, fire, or explosion. This assessment must consider both direct and indirect effects of any toxic, irritating, or asphyxiating gases that are generated, or the effects of any hazardous surface water run-off from water or chemical agents used to control fire and heat-induced explosions).

4. If the emergency coordinator determines that the facility has had a release, fire, or explosion which could threaten public health, or the environment, outside the facility, he must report his findings as follows:

(i) If his assessment indicates that evacuation of local areas may be advisable, he must immediately notify appropriate local authorities. He must be available to help appropriate officials decide whether local areas should be evacuated; and

(ii) He must immediately notify the Tennessee Emergency Management Agency (using their 24-hour toll free number 800/262-3300) and/or the National Response Center (using their 24-hour toll free number 800/424-8802). The report must include:

(I) Name and telephone number of reporter;

(II) Name and address of facility;

(III) Time and type of incident (e.g., release, fire);

(IV) Name and quantity of material(s) involved, to the extent known;

(V) The extent of injuries, if any; and

(VI) The possible hazards to public health, or the environment, outside the facility.

5. During an emergency, the emergency coordinator must take all reasonable measures necessary to ensure that fires, explosions, and releases do not occur, recur, or spread to other hazardous waste at the facility. These measures must include, where applicable, stopping processes and operations, collecting and containing released waste, and removing or isolating containers.

6. If the facility stops operations in response to a fire, explosion, or release, the emergency coordinator must monitor for leaks, pressure buildup, gas generation, or ruptures in valves, pipes, or other equipment, wherever this is appropriate.

7. Immediately after an emergency, the emergency coordinator must provide for treating, storing, or disposing of recovered waste, contaminated soil or surface water, or any other material that results from a release, fire, or explosion at the facility.

   (Comment: Unless the owner or operator can demonstrate, in accordance with Rule 1200-1-11-.02(1)(c)3 or 4, that the recovered material is not a hazardous waste, the owner or operator becomes a generator of hazardous waste and must manage it in accordance with all applicable requirements of Rules 1200-1-11-.03, 1200-1-11-.04, and 1200-1-11-.05).

8. The emergency coordinator must ensure that, in the affected area(s) of the facility:

   (i) No waste that may be incompatible with the released material is treated, stored, or disposed of until cleanup procedures are completed; and

   (ii) All emergency equipment listed in the contingency plan is cleaned and fit for its intended use before operations are resumed.

9. The owner or operator must notify the Commissioner, and appropriate local authorities, that the facility is in compliance with part 8 of this subparagraph before operations are resumed in the affected area(s) of the facility.

10. The owner or operator must note in the operating record the time, date, and details of any incident that requires implementing the contingency plan. Within 15 days after the incident, he must submit a written report on the incident to the Commissioner. The report must 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 (e.g., fire, explosion);

(iv) Name and quantity of material(s) involved;

(v) The extent of injuries, if any;

(vi) An assessment of actual or potential hazards to public health or the environment, where this is applicable; and

(vii) Estimated quantity and disposition of recovered material that resulted from the incident.

(5) Manifest System, Recordkeeping, and Reporting

(a) Applicability - The regulations in this paragraph apply as specified to owners and operators of both on-site and off-site facilities, except as subparagraph (1)(b) of this Rule provides otherwise. Subparagraphs (b), (c), and (g) of this paragraph do not apply to owners or operators of on-site facilities that do not receive any hazardous waste from off-site sources.

(b) Use of Manifest System

1. If a facility receives hazardous waste accompanied by a manifest, the owner or operator, or his agent, must:

(i) Sign and date each copy of the manifest to certify that the hazardous waste covered by the manifest was received;

(ii) Note any significant discrepancies in the manifest (as defined in part (c)1 of this paragraph) on each copy of the manifest;

(Comment: The Department does not intend that the owner or operator of a facility whose procedures under part (2)(d)3 of this Rule include waste analysis must perform that analysis before signing the manifest and giving it to the transporter. Part (c)2 of this paragraph, however, requires reporting an unreconciled discrepancy discovered during later analysis.)

(iii) Immediately give the transporter at least one copy of the signed manifest;

(iv) Within 30 days after the delivery, send a copy of the manifest to the generator; and

(v) Retain at the facility a copy of each manifest for at least three years from the date of delivery.

2. If a facility receives, from a rail or water (bulk shipment) transporter, hazardous waste which is accompanied by a shipping paper containing all the information required on the manifest (excluding the installation identification numbers, generator's certification, and signatures), the owner or operator, or his agent, must:

(i) Sign and date each copy of the manifest or shipping paper (if the manifest has not been received) to certify that the hazardous waste covered by the manifest or shipping paper was received;

(ii) Note any significant discrepancies (as defined in part (c)1 of this paragraph) in the manifest or shipping paper (if the manifest has not been received) on each copy of the manifest or shipping paper;

(Comment: The Department does not intend that the owner or operator of a facility whose procedures under part (2)(d)3 of this Rule include waste analysis must perform that analysis before signing the shipping paper and giving it to the transporter. Part (c)2 of this paragraph, however, requires reporting an unreconciled discrepancy discovered during later analysis.)

(iii) Immediately give the rail or water (bulk shipment) transporter at least one copy of the manifest or shipping paper (if the manifest has not been received);

(iv) Within 30 days after the delivery send a copy of the signed and dated manifest to the generator; however, if the manifest has not been received within 30 days after delivery, the owner or operator, or his agent, must send a copy of the shipping paper signed and dated to the generator; and

(Comment: Rule 1200-1-11-.03(3)(d)3 requires the generator to send three copies of the manifest to the facility when hazardous waste is sent by rail or water (bulk shipment).)

(v) Retain at the facility a copy of the manifest and shipping paper (if signed in lieu of the manifest at the time of delivery) for at least three years from the date of delivery.

3. Whenever a shipment of hazardous waste is initiated from a facility, the owner or operator of that facility must comply with the requirements of Rule 1200-1-11-.03. (Comment: The provisions of Rule 1200-1-11-.03(4)(e) are applicable to the on-site accumulation of hazardous wastes by generators. Therefore, the provisions of Rule 1200-1-11-.03(4)(e) only apply to owners or operators who are shipping hazardous waste which they generated at that facility.)

(c) Manifest Discrepancies

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 a 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.

2. Upon discovering a significant discrepancy, the owner or operator 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 owner or operator must immediately submit to the Commissioner a letter describing the discrepancy and attempts to reconcile it, and a copy of the manifest or shipping paper at issue.

3. It shall be the responsibility of the owner or operator 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 a hazardous waste. The owner or operator may 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 owner or operator believes that the material shipped is indeed not a hazardous waste, then the owner or operator 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 subparagraph (5)(d) of this Rule.

(d) Operating Record

1. The owner or operator must keep a written operating record at his facility.

2. The following information must be recorded, as it becomes available, and maintained in the operating record until closure of the facility:

(i) A description and the quantity of each hazardous waste received, and the method(s) and date(s) of its treatment, storage, or disposal at the facility as required by Appendix .05/A;

(ii) The location of each hazardous waste within the facility and the quantity at each location. For disposal facilities, the location and quantity of each hazardous waste must be recorded on a map or diagram of each cell or disposal area. For all facilities, this information must include cross-references to specific manifest document numbers, if the waste was accompanied by a manifest;

(Comment: See subparagraphs (7)(i), (13)(f), and (14)(c) of this Rule for related requirements.)

(iii) Records and results of waste analyses and trial tests performed as specified in subparagraphs (2)(d), (10)(c), (11)(d), (12)(c), (13)(c), (14)(h), (15)(b), (16)(c), and (17)(c) of this Rule;

(iv) Summary reports and details of all incidents that require implementing the contingency plan as specified in part (4)(g)10 of this Rule;

(v) Records and results of inspections as required by part (2)(f)4 of this Rule (except these data need be kept only three years);

(vi) Monitoring, testing, or analytical data where required by subparagraphs (6)(b), (6)(e), (13)(d), (13)(e), (15)(d), and (16)(d) and subpart (13)(g)4(i) of this Rule; and

(Comment: As required by subparagraph (6)(e) of this Rule, monitoring data at disposal facilities must be kept throughout the post-closure period.)

(vii) All closure cost estimates under subparagraph (8)(b) of this Rule and, for disposal facilities, all post-closure cost estimates under subparagraph (8)(c) of this Rule.

(e) Availability, Retention, and Disposition of Records

1. All records, including plans, required under this Rule must 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.

2. The retention period for all records required under this Rule is extended automatically during the course of any unresolved enforcement action regarding the facility or as requested by the Commissioner.

3. A copy of records of waste disposal locations and quantities under subpart (d)2(ii) of this paragraph must be submitted to the Commissioner and local land authority upon closure of the facility (see subparagraph (7)(i) of this Rule).

(f) Annual Report - The owner or operator must prepare and submit a single copy of an annual report to the Commissioner by March 1 of each year. Such reports must be submitted on forms provided by the Department, and the report forms must be completed as specified in the accompanying instructions. The annual report must cover facility activities during the previous calendar year and must include, but shall not necessarily be limited to, the following information:

1. The installation identification number, name, address, and telephone number of the facility;

2. The calendar year covered by the report;

3. For each hazardous waste (Note: each waste, but not each shipment of such waste) received by the facility during the reporting year, the following:

(i) The installation identification number of the generator of the waste; or, for imported shipments, the name and address of the foreign generator;

(ii) A description of the waste;

(iii) The waste code determined for use pursuant to part (2)(d)4 of this Rule;

(iv) The total quantity of such waste received; and

(v) The methods by which the waste was treated, stored, or disposed of;

4. Monitoring data under items (6)(e)1(ii)(II) and (III) and subpart (6)(e)2(ii) of this Rule, where required;

5. The most recent closure cost estimate under subparagraph (8)(b) of this Rule and, for disposal facilities, the most recent post-closure cost estimate under subparagraph (8)(c) of this Rule; and

6. The certification signed by the owner or operator of the facility or his authorized representative.

(g) Unmanifested Waste Report - If a facility accepts for treatment, storage, or disposal any hazardous waste from an off-site source without an accompanying manifest, or without an accompanying shipping paper as described in Rule 1200-1-11-.04(3)(a)5(ii), and if the waste is not excluded from the manifest requirement by Rule 1200-1-11-.02(1)(e), then the owner or operator must prepare and submit a single copy of a report to the Commissioner within 15 days after receiving the waste. Such reports must be submitted on forms provided by the Department. The report must include, but shall not necessarily be limited to, the following information:

1. The installation identification number, name, and address of the facility;

2. The date the facility received the waste;

3. The installation identification number, name, and address of the generator and the transporter, if available;

4. A description and the quantity of each unmanifested hazardous waste the facility received;

5. The method of treatment, storage, or disposal for each hazardous waste;

6. The certification signed by the owner or operator of the facility or his authorized representative; and

7. A brief explanation of why the waste was unmanifested, if known.

(Comment: Small quantities of hazardous waste are excluded from regulation under this Rule and do not require a manifest. Where a facility receives unmanifested hazardous wastes, the Department suggests that the owner or operator obtain from each generator a certification that the waste qualifies for exclusion. Otherwise, the Department suggests that the owner or operator file an unmanifested waste report for the hazardous waste movement.)

(h) Additional Reports - In addition to submitting the annual report and unmanifested waste reports described in subparagraphs (f) and (g) of this paragraph, the owner or operator must also report to the Commissioner:

1. Releases, fires, and explosions as specified in part (4)(g)10 of this Rule;

2. Ground-water contamination and monitoring data as specified in subparagraphs (6)(d) and (6)(e) of this Rule; and

3. Facility closure as specified in subparagraph (7)(f) of this Rule.

(6) Ground-Water Monitoring

(a) Applicability

1. By November 19, 1981, the owner or operator of a surface impoundment, landfill, or land treatment facility which is used to manage hazardous waste must implement a ground-water monitoring program capable of determining the facility's impact on the quality of ground water in the uppermost aquifer underlying the facility, except as subparagraph (1)(b) of this Rule and part 3 of this subparagraph provide otherwise.

2. Except as parts 3 and 4 of this subparagraph provide otherwise, the owner or operator must install, operate, and maintain a ground-water monitoring system which meets the requirements of subparagraph (b) of this paragraph, and must comply with subparagraphs (c), (d), and (e) of this paragraph. This ground-water monitoring program must be carried out during the active life of the facility, and for disposal facilities, during the post-closure care period as well.

3. All or part of the ground-water monitoring requirements of this paragraph may be waived if the owner or operator can demonstrate, to the satisfaction of the Commissioner, that the potential for migration for hazardous waste or hazardous waste constituents from the facility into the uppermost aquifer is so low as to present no significant threat of degradation to the quality of groundwater in that aquifer. This demonstration must be in writing, and must be kept at the facility. A copy of this written demonstration must be submitted to the Commissioner upon his request. This demonstration must be certified by a qualified geologist or engineer and must establish the following:

(i) The potential for migration of hazardous waste or hazardous waste constituents from the facility to the uppermost aquifer, by an evaluation of:

(I) A water balance of precipitation, evapotranspiration, runoff, and infiltration; and

(II) Unsaturated zone characteristics (i.e., geologic materials, physical properties, and depth to ground water); and

(ii) The potential for hazardous waste or hazardous waste constituents which enter the uppermost aquifer to migrate to a water supply well or surface water, by an evaluation of:

(I) Saturated zone characteristics (i.e., geologic materials, physical properties, and rate of ground-water flow); and

(II) The proximity of the facility to water supply wells or surface water.

4. If an owner or operator assumes (or knows) that ground-water monitoring of indicator parameters in accordance with subparagraphs (b) and (c) of this paragraph would show statistically significant increases (or decreases in the case of pH) when evaluated under part (d)2 of this paragraph, he may, install, operate, and maintain an alternate ground-water monitoring system (other than the one described in subparagraphs (b) and (c) of this paragraph. If the owner or operator decides to use an alternate ground-water monitoring system he must:

(i) By November 19, 1981, submit to the Commissioner a specific plan, certified by a qualified geologist or engineer, which satisfies the requirements of subpart (d)4(iii) of this paragraph, for an alternate ground-water monitoring system;

(ii) Not later than November 19, 1981, initiate the determinations specified in subpart (d)4(iv) of this paragraph;

(iii) Prepare and submit a written report in accordance with subpart (d)4(v) of this paragraph;

(iv) Continue to make the determinations specified in subpart (d)4(iv) of this paragraph on a quarterly basis until final closure of the facility; and

(v) Comply with the recordkeeping and reporting requirements in part (e)2 of this paragraph.

5. The ground-water monitoring requirements of this paragraph may be waived with respect to any surface impoundment that (1) is used to neutralize wastes which are hazardous solely because they exhibit the corrosivity characteristic under Rule 1200-1-11-.02(3)(c) or are listed as

hazardous wastes in Rule 1200-1-11-.02(4) only for this reason, and (2) contains no other hazardous wastes, if the owner or operator can demonstrate, to the satisfaction of the Commissioner, that there is no potential for migration of hazardous wastes from the impoundment. The demonstration must establish, based upon consideration of the characteristics of the wastes and the impoundment, that the corrosive wastes will be neutralized to the extent that they no longer meet the corrosivity characteristic before they can migrate out of the impoundment. The demonstration must be in writing and must be certified by a qualified professional.

(b) Ground-water Monitoring System

1. A ground-water monitoring system must be capable of yielding ground-water samples for analysis and must consist of:

   (i) Monitoring wells (at least one) installed hydraulically upgradient (i.e., in the direction of increasing static head) from the limit of the waste management area. Their number, locations, and depths must be sufficient to yield ground-water samples that are:

      (I) Representative of background ground-water quality in the uppermost aquifer near the facility; and

      (II) Not affected by the facility; and

   (ii) Monitoring wells (at least three) installed hydraulically downgradient (i.e., in the direction of decreasing static head) at the limit of the waste management area. Their number, locations, and depths must ensure that they immediately detect any statistically significant amounts of hazardous waste or hazardous waste constituents that migrate from the waste management area to the uppermost aquifer.

2. Separate monitoring systems for each waste management component of a facility are not required provided that provisions for sampling upgradient and downgradient water quality will detect any discharge from the waste management area.

   (i) In the case of a facility consisting of only one surface impoundment, landfill, or land treatment area, the waste management area is described by the waste boundary (perimeter).

   (ii) In the case of a facility consisting of more than one surface impoundment, landfill, or land treatment area, the waste management area is described by an imaginary boundary line which circumscribes the several waste management components.

3. All monitoring wells must be cased in a manner that maintains the integrity of the monitoring well bore hole. This casing must be

screened or perforated, and packed with gravel or sand where necessary, to enable sample collection at depths where appropriate aquifer flow zones exist. The annular space (i.e., the space between the bore hole and well casing) above the sampling depth must be sealed with a suitable material (e.g., cement grout or bentonite slurry) to prevent contamination of samples and the ground water.

4. The location and construction of all monitoring wells must be approved by a Department staff geologist.

(c) Sampling and Analysis

1. The owner or operator must obtain and analyze samples from the installed ground-water monitoring system. The owner or operator must develop and follow a ground-water sampling and analysis plan. He must keep this plan at the facility. The plan must include procedures and techniques for:

   (i) Sample collection;

   (ii) Sample preservation and shipment;

   (iii) Analytical procedures; and

   (iv) Chain of custody control.

   (Comment: See "Procedures Manual For Ground-water Monitoring At Solid Waste Disposal Facilities," EPA-530/SW-611, August 1977 and "Methods for Chemical Analysis of Water and Wastes,"EPA-600/4-79-020, March 1979 for discussions of sampling and analysis procedures.)

2. The owner or operator must determine the concentration or value of the following parameters in ground-water samples in accordance with parts 3 and 4 of this subparagraph:

   (i) Parameters characterizing the suitability of the ground water as a drinking water supply, as specified in Appendix .05/B.

   (ii) Parameters establishing ground-water quality:

      (I) Chloride

      (II) Iron

      (III) Manganese

      (IV) Phenols

      (V) Sodium

      (VI) Sulfate

(Comment: These parameters are to be used as a basis for comparison in the event a ground-water quality assessment is required under part (d)4 of this paragraph.)

(iii) Parameters used as indicators of ground-water contamination:

(I) pH

(II) Specific Conductance

(III) Total Organic Carbon

(IV) One of the following, as approved by the Commissioner:

I. Total Organic Halogen; or

II. Not more than three hazardous constituents, or indicators thereof, found in the hazardous wastes handled by, or to be handled by the facility; to be selected by the owner or operator and approved by the Department considering such factors as quantity handled, degree of hazard, mobility, persistence, etc.

3. (i) For all monitoring wells, the owner or operator must establish initial background concentrations or values of all parameters specified in part 2 of this subparagraph. He must do this quarterly for one year.

(ii) For each of the indicator parameters specified in items 2(iii)(I), (II), and (III) and in subitem 2(iii)(IV)I of this subparagraph, at least four replicate measurements must be obtained for each sample.

4. After the first year, all monitoring wells must be sampled and the samples analyzed with the following frequencies:

(i) Samples collected to establish ground-water quality must be obtained and analyzed for the parameters specified in subpart 2(ii) of this subparagraph at least annually.

(ii) Samples collected to indicate ground-water contamination must be obtained and analyzed for the parameters specified in subpart 2(iii) of this subparagraph at least once every six months. For the parameters of items (I), (II), and (III) and subitem (IV)I of that subpart, at least four replicate measurements shall be obtained for each sample.

5. Elevation of the ground-water surface at each monitoring well must be determined each time a sample is obtained, but prior to any pumping of the well.

(d) Preparation, Evaluation, and Response

1. By November 19, 1981, the owner or operator must prepare an outline of a ground-water quality assessment program. The outline must describe a more comprehensive ground-water monitoring program (than that described in subparagraphs (b) and (c) of this paragraph) capable of determining:

   (i) Whether hazardous waste or hazardous waste constituents have entered the ground water;

   (ii) The rate and extent of migration of hazardous waste or hazardous waste constituents in the ground water; and

   (iii) The concentrations of hazardous waste or hazardous waste constituents in the ground water.

2. The owner or operator must compare the analytical results from subpart (c)4(ii) of this paragraph to the initial background data from part (c)3 of this paragraph according to the procedures of Appendix .05/C in order to determine:

   (i) If any well exhibits statistically significant increases in parameter values (and decreases, in the case of pH) over the initial background values established for that well; and

   (ii) If any downgradient well exhibits statistically significant increases in parameter values (and decreases, in the case of pH) over the initial "pooled upgradient" background values established by pooling data from all upgradient wells (refer to Procedures Step One (b) of Appendix .05/C for calculation of "pooled upgradient" background values).

3. (i) If the comparisons for the upgradient wells made under subpart 2(i) of this subparagraph show a significant increase (or pH decrease), the owner or operator must note that fact in a cover letter attached to the information submitted in accordance with subpart (e)1(ii) of this paragraph.

   (ii) If the comparisons for the downgradient wells made under subparts 2(i) or 2(ii) of this subparagraph show a significant increase (or pH decrease), the owner or operator must then immediately obtain additional ground-water samples from those downgradient wells where a signficant difference was detected, split the samples in two, and obtain analyses of all additional samples to determine whether the significant difference was a result of laboratory error.

4. (i) If the analyses performed under subpart 3(ii) of this subparagraph confirm the significant increase (or pH decrease), the owner or operator must provide written notice to the Commissioner -- within seven days of the date of such confirmation--that the facility may be affecting ground-water quality.

(ii) Within 15 days after the notification under subpart (i) of this part, the owner or operator must develop and submit to the Commissioner a specific plan, based on the outline required under part 1 of this subparagraph and certified by a qualified geologist or engineer, for a ground-water quality assessment program at the facility.

(iii) The plan to be submitted under subpart (a)4(i) of this paragraph or subpart (ii) of this part must specify:

(I) The number, location, and depth of wells;

(II) Sampling and analytical methods for those hazardous wastes or hazardous waste constituents in the facility;

(III) Evaluation procedures, including any use of previously-gathered ground-water quality information; and

(IV) A schedule of implementation.

(iv) The owner or operator must implement the ground-water quality assessment plan which satisfies the requirements of subpart (iii) of this part, and, at a minimum, determine:

(I) The rate and extent of migration of the hazardous waste or hazardous waste constituents in the ground water; and

(II) The concentrations of the hazardous waste or hazardous waste constituents in the ground water.

(v) The owner or operator must make his first determination under subpart (iv) of this part as soon as technically feasible, and, within 15 days after that determination, submit to the Commissioner a written report containing an assessment of the ground-water quality.

(vi) If the owner or operator determines, based on the results of the first determination under subpart (iv) of this part, that no hazardous waste or hazardous waste constituents from the facility have entered the ground water, then he may reinstate the indicator evaluation program described in subparagraph (c) of this paragraph and part 2 of this subparagraph. If the owner or operator reinstates the indicator evaluation program, he must so notify the Commissioner in the report submitted under subpart (v) of this part.

(vii) If the owner or operator determines, based on the first determination under subpart (iv) of this part, that hazardous waste or hazardous waste constituents from the facility have entered the ground water, then he:

(I) Must continue to make the determinations required under subpart (iv) of this part on a quarterly basis until final closure of the facility, if the ground-water quality assessment plan was implemented prior to final closure of the facility; or

(II) May cease to make the determinations required under subpart (iv) of this part, if the ground-water quality assessment plan was implemented during the post-closure care period.

5. Notwithstanding any other provision of this paragraph, any ground-water quality assessment to satisfy the requirements of subpart 4(iv) of this subparagraph which is initiated prior to final closure of the facility must be completed and reported in accordance with subpart 4(v) of this subparagraph.

6. Unless the ground water is monitored to satisfy the requirements of subpart 4(iv) of this subparagraph, at least annually the owner or operator must evaluate the data on ground-water surface elevations obtained under part (c)5 of this paragraph to determine whether the requirements under part (b)1 of this paragraph for locating the monitoring wells continues to be satisfied. If the evaluation shows that part (b)1 of this paragraph is no longer satisfied, the owner or operator must immediately modify, with the approval of a Department staff geologist, the number, location, or depth of the monitoring wells to bring the ground-water monitoring system into compliance with this requirement.

(e) Recordkeeping and Reporting

1. Unless the ground water is monitored to satisfy the requirements of subpart (d)4(iv) of this paragraph, the owner or operator must:

(i) Keep records of the analyses required in parts (c)3 and (c)4 of this paragraph, the associated ground-water surface elevations required in part (c)5 of this paragraph, and the evaluations required in part (d)2 of this paragraph throughout the active life of the facility, and, for disposal facilities, throughout the post-closure care period as well; and

(ii) Report the following ground-water monitoring information to the Commissioner:

(I) During the first year when initial background concentrations are being established for the facility: concentrations or values of the parameters listed in part (c)2 of this paragraph for each ground-water monitoring well within 15 days after completing each quarterly analysis. The owner or operator must separately identify for each monitoring well any parameters listed in subpart (c)2(i) of this paragraph whose concentration or value has been found to exceed the maximum contaminant levels listed in Appendix .05/B.

(II) Annually: concentrations or values of the parameters listed in subparts (c)2(ii) and (iii) of this paragraph for each ground-water monitoring well, along with the required evaluations for the subpart (c)2(iii) parameters under part (d)2 of this paragraph. The owner or operator must separately identify any significant differences from initial background found in the upgradient wells, in accordance with subpart (d)3(i) of this paragraph. During the active life of the facility, this information must be submitted as part of the annual report required under subparagraph (5)(f) of this Rule.

(III) As a part of the annual report required under subparagraph (5)(f) of this Rule: results of the evaluation of ground-water surface elevations under part (d)6 of this paragraph, and a description of the response to that evaluation, where applicable.

2. If the ground water is monitored to satisfy the requirements of subpart (d)4(iv) of this paragraph, the owner or operator must:

(i) Keep records of the analyses and evaluations specified in the plan, which satisfies the requirements of subpart (d)4(iii) of this paragraph, throughout the active life of the facility, and, for disposal facilities, throughout the post-closure care period as well; and

(ii) Annually, until final closure of the facility, submit to the Commissioner a report containing the results of his ground-water quality assessment program which includes, but is not limited to, the calculated (or measured) rate of migration of hazardous waste or hazardous waste constituents in the ground water during the reporting period. This report must be submitted as part of the annual report required under subparagraph (5)(f) of this Rule.

(7) Closure and Post-closure

(a) Applicability - Except as paragraph (1) of this Rule provides otherwise:

1. Subparagraphs (b)-(f) of this paragraph (which concern closure) apply to the owners and operators of all hazardous waste management facilities; and

2. Subparagraphs (g)-(j) of this paragraph (which concern post-closure care) apply to the owners and operators of all hazardous waste disposal facilities.

(b) Closure Performance Standard - The owner or operator must close his facility in a manner that:

1. Minimizes the need for further maintenance, and

2. Controls, minimizes or eliminates to the extent necessary to protect human health and 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.

(c) Closure Plan; Amendment of Plan

1. By May 19, 1981, the owner or operator must have a written closure plan. He must keep a copy of the closure plan and all revisions to the plan at the facility until closure is completed and certified in accordance with subparagraph (f) of this paragraph. This plan must identify the steps necessary to completely or partially close the facility at any point during its intended operating life and to completely close the facility at the end of its intended operating life. The closure plan must include at least:

   (i) A description of how and when the facility will be partially closed, if applicable, and finally closed. The description must identify the maximum extent of the operation which will be unclosed during the life of the facility, and how the requirements of subparagraphs (b), (d), (e), and (f) of this paragraph and the applicable closure requirements of subparagraphs (10)(e), (11)(f), (13)(g), (14)(d), (15)(e), (16)(e), and (17)(e) of this Rule will be met;

   (ii) An estimate of the maximum inventory of wastes in storage and in treatment at any time during the life of the facility;

   (iii) A description of the steps needed to decontaminate facility equipment during closure; and

   (iv) An estimate of the expected year of closure and a schedule for final closure. The schedule must include, at a minimum, the total time required to close the facility and the time required for intervening closure activities which will allow tracking of the progress of closure. (For example, in the case of a landfill, estimates of the time required to treat and dispose of all waste inventory and of the time required to place a final cover must be included.)

2. The owner or operator may amend his closure plan at any time during the active life of the facility. (The active life of the facility is that period during which wastes are periodically received.) The owner or operator must amend the plan whenever changes in operating plans or facility design affect the closure plan, or whenever there is a change in the expected year of closure of the facility. The plan must be amended within 60 days of the changes.

3. The owner or operator must submit his closure plan to the Commissioner at least 180 days before the date he expects to begin closure. The owner or operator must submit his closure plan to the Commissioner no later than 15 days after:

(i) Termination of interim status (except when a permit is issued to the facility simultaneously with termination of interim status); or

(ii) Issuance of a judicial decree or compliance order under the Act to cease receiving wastes or close.

(Comment: The date when closure commences should be within 30 days after the date on which the owner or operator expects to receive the final volume of wastes.)

4. The Commissioner will provide the owner or operator and the public, through a newspaper notice, the opportunity to submit written comments on the plan and request modifications of the plan within 30 days of the date of the notice. He will also, in response to a request or at his own discretion, hold a public hearing whenever such a hearing might clarify one or more issues concerning a closure plan. The Commissioner will give public notice of the hearing at least 30 days before it occurs. (Public notice of the hearing may be given at the same time as notice of the opportunity for the public to submit written comments, and the two notices may be combined.) The Commissioner will approve or disapprove the plan within 90 days of its receipt. If the Commissioner does not approve the plan, he will notify the owner or operator of its deficiencies, and the owner or operator must modify the plan or submit a new plan for approval, as necessary to make the required changes, within 30 days. The Commissioner will approve the plan, provided it has been corrected to the Commissioner's satisfaction, in writing within 60 days. The Commissioner's decision must assure that the approved closure plan is consistent with subparagraphs (b), (d), (e), and (f) of this paragraph and the applicable closure requirements of subparagraphs (10)(e), (11)(f), (13)(g), (14)(d), (15)(e), (16)(e), and (17)(e) of this Rule.

(d) Closure; Time Allowed for Closure

1. Within 90 days after receiving the final volume of hazardous wastes, or 90 days after approval of the closure plan, if that is later, the owner or operator must treat, remove from the site, or dispose of on-site all hazardous wastes in accordance with the approved closure plan. The Commissioner may approve a longer period using the procedures under part (c)4 of this paragraph if the owner or operator demonstrates that:

(i) (I) The activities required to comply with this paragraph will, of necessity, take him longer than 90 days to complete; or

(II) I. The facility has the capacity to receive additional wastes;

II. There is a reasonable likelihood that a person other than the owner or operator will recommence operation of the site; and

III. Closure of the facility would be incompatible with continued operation of the site; and

(ii) He has taken and will continue to take all steps to prevent threats to human health and the environment.

2. The owner or operator must complete closure activites in accordance with the approved closure plan and within 180 days after receiving the final volume of wastes or 180 days after approval of the closure plan, if that is later. The Commissioner may approve a longer closure period using the procedures under part (c)4 of this paragraph if the owner or operator demonstrates that:

(i) (I) The closure activities will, of necessity, take him longer than 180 days to complete; or

(II) I. The facility has the capacity to receive additional waste;

II. There is a reasonable likelihood that a person other than the owner or operator will recommence operation of the site; and

III. Closure of the facility would be incompatible with continued operation of the site; and

(ii) He has taken and will continue to take all steps to prevent threats to human health and the environment from the unclosed but inactive facility.

3. If the facility is being totally closed (all units) or otherwise closed such that the annual reporting requirement of subparagraph (5)(f) of this Rule will no longer apply, within 120 days after receiving the final volume of hazardous wastes (or within 30 days after the end of a longer period alternatively approved by the Commissioner pursuant to part 1 of this subparagraph) the owner or operator must submit to the Commissioner the annual report required by subparagraph (5)(f) of this Rule. This report shall cover the calendar year during which the final volume of hazardous wastes was received.

(Comment: Under items 1(i)(II) and 2(i)(II) of this subparagraph, if operation of the facility is recommenced, the Commissioner may defer completion of closure activities until the new operation is terminated.)

(e) Disposal or Decontamination of Equipment - When closure is completed, all facility equipment and structures must have been properly disposed of or decontaminated by removing all hazardous waste and residues.

(f) Certification of Closure - Within 30 days of completion of closure, the owner or operator must submit to the Commissioner certification both by the owner or operator and by an independent registered professional engineer that the facility has been closed in accordance with the specifications in the approved closure plan.

(g) Post-closure Care and Use of Property

1. Post-closure care must continue for 30 years after the date of completing closure and must consist of at least the following:

   (i) Ground-water monitoring and reporting in accordance with the requirements of paragraph (6) of this Rule, and

   (ii) Maintenance of monitoring and waste containment systems as specified in subparagraphs (6)(b), (11)(c), (11)(f), (13)(g), and (14)(d) of this Rule, where applicable.

2. The Commissioner may require continuation of any of the secutiry requirements of subparagraph (2)(e) of this Rule for 30 years after the date closure has been completed when:

   (i) Wastes may remain exposed after completion of closure; or

   (ii) Access by the public or domestic livestock may pose a hazard to human health.

   Note: In extending any of these requirements the Commissioner will use the procedures of part (h)3 of this paragraph.

3. Post-closure use of property on or in which hazardous wastes remain after closure must never be allowed to disturb the integrity of the final cover, liner(s), or any other components of any containment system, or the function of the facility's monitoring systems, unless the owner or operator can demonstrate to the Commissioner, either in the post-closure plan or by petition, through the procedures in parts (h)3 or 6 of this paragraph, as appropriate, that the disturbance:

   (i) Is necessary to the proposed use of the property, and will not increase the potential hazard to human health or the environment; or

   (ii) Is necessary to reduce a threat to human health or the environment.

4. All post-closure care activities must be performed in accordance with the provisions of the approved post-closure plan as specified in subparagraph (h) of this paragraph.

(h) Post-closure Plan; Amendment of Plan

1. By May 19, 1981, the owner or operator of a disposal facility must have a written post-closure plan. He must keep a copy of the post-closure plan and all revisions to the plan at the facility until the post-closure care period begins. The post-closure plan must identify the activites which will be carried on after closure and the frequency of these activities, and include at least:

(i) A description of the planned ground-water monitoring activities and frequencies at which they will be performed to comply with paragraph (6) of this Rule during the post-closure period;

(ii) A description of the planned maintenance activities and frequencies at which they will be performed to ensure:

(I) The integrity of the cap and final cover or other containment structures as specified in subparagraphs (11)(c), (11)(f), (13)(g), and (14)(d) of this Rule, where applicable; and

(II) The function of the facility monitoring equipment as specified in subparagraph (6)(b) of this Rule; and

(iii) The name, address, and phone number of the person or office to contact about the disposal facility during the post-closure care period. This person or office must keep an updated post-closure plan during the post-closure care period.

2. The owner or operator may amend his post-closure plan at any time during the active life of the disposal facility. The owner or operator must amend his plan any time changes in operating plans or facility design, or events which occur during the active life of the facility, affect his post-closure plan. The plan must be amended within 60 days after the changes or events occur.

3. The owner or operator of a disposal facility must submit his post-closure plan to the Commissioner at least 180 days before the date he expects to begin closure. The date when he "expects to begin closure" should be immediately after the date on which he expects to receive the final volume of wastes. The owner or operator must submit his closure plan to the Commissioner no later than 15 days after:

(i) Termination of interim status (except when a permit is issued to the facility simultaneously with termination of interim status); or

(ii) Issuance of a judicial decree or compliance order under the Act to cease receiving wastes or close.

(Comment: The date when closure commences should be within 30 days after the date on which the owner or operator expects to receive the final volume of wastes.)

4. The Commissioner will provide the owner or operator and the public through a newspaper notice the opportunity to submit written comments on the plan and request modifications of the plan, including modification of the 30 year post-closure period required in subparagraph (g) of this paragraph, within 30 days of the date of the notice. He may also, in response to a request or at his own discretion, hold a public hearing whenever a hearing might clarify one

or more issues concerning the post-closure plan. The Commissioner will give the public notice of the hearing at least 30 days before it occurs. (Public notice of the hearing may be given at the same time as notice of the opportunity for written public comments, and the two notices may be combined.) The Commissioner will approve or disapprove the plan within 90 days of its receipt. If the Commissioner does not approve the plan, he will notify the owner or operator of its deficiencies and the owner or operator must modify the plan or submit a new plan for approval, as necessary to make the required changes, within 30 days. The Commissioner will approve the plan, provided it has been corrected to the Commissioner's satisfaction, in writing within 60 days. The Commissioner must base his decision upon the criteria required of petitions under item 6(i)(I) of this subparagraph.

5. The owner or operator may amend his post-closure plan during the post-closure care period. The owner or operator must amend his plan any time changes in monitoring or maintenance plans or events which occur during the post-closure care period affect the post-closure plan. The owner or operator must petition the Commissioner within 60 days of the changes or events, under the procedures of part 6 of this subparagraph, to allow the plan to be modified.

6. The post-closure plan (or period) may be modified during the post-closure care period or at the end of the post-closure care period in either of the following two ways:

   (i) The owner or operator or any member of the public may petition the Commissioner to extend or reduce the post-closure care period based on cause, or alter the requirements of the post-closure care period based on cause.

      (I) The petition must include evidence demonstrating that:

         I. The secure nature of the facility makes the post-closure care requirement(s) unnecessary or supports reduction of the post-closure care period specified in the current post-closure plan (e.g., leachate or groundwater monitoring results, characteristics of the waste, application of advanced technology, or alternative disposal, treatment, or re-use techniques indicate that the facility is secure), or

         II. The requested extension in the post-closure care period or alteration of post-closure care requirements is necessary to prevent threats to human health and the environment.

      (II) These petitions will be considered by the Commissioner only when they present new and relevant information not previously considered by the Commissioner. Whenever the Commissioner is considering a petition, he will provide the

owner or operator and the public, through a newspaper notice, the opportunity to submit written comments within 30 days of the date of the notice. He will also, in response to a request or at his own discretion, hold a public hearing whenever a hearing might clarify one or more issues concerning the post-closure plan. The Commissioner will give the public notice of the hearing at least 30 days before it occurs. (Public notice of the hearing may be given at the same time as notice of the opportunity for written public comments, and the two notices may be combined.) After considering the comments, he will issue a final determination, based upon the criteria set forth in item (I) of this subpart.

(III) If the Commissioner denies the petition he will send the petitioner a brief written response giving a reason for the denial.

(ii) The Commissioner may tentatively decide to modify the post-closure plan if he deems it necessary to prevent threats to human health and the environment. He may propose to extend or reduce the post-closure care period based on cause or alter the requirements of the post-closure care period based on cause.

(I) The Commissioner will provide the owner or operator and the affected public, through a newspaper notice, the opportunity to submit written comments within 30 days of the date of the notice and the opportunity for a public hearing as in item (i) (II) of this part. After considering the comments he will issue a final determination.

(II) The Commissioner will base his final determination upon the same criteria as required for petitions under item (i)(I) of this part.

(Comment: A modification of the post-closure plan may include where appropriate the temporary suspension rather than permanent deletion of one or more post-closure care requirements. At the end of the specified period of suspension, the Commissioner would then determine whether the requirement(s) should be permanently discontinued or reinstated to prevent threats to human health and the environment.)

(i) Notice to Local Land Authority - Within 90 days after closure is completed, the owner or operator of a disposal facility must submit to the local land authority and to the Commissioner a survey plat indicating the location and dimensions of landfill cells or other disposal areas with respect to permanently surveyed benchmarks. This plat must be prepared and certified by a professional land surveyor. The plat filed with the local land authority must contain a note, prominently displayed, which states the owner's or operator's obligation to restrict disturbance of the site as specified in part (g)3 of this paragraph. In addition, the owner or operator

must submit to the Commissioner and to the local land authority a record of the type, location, and quantity of hazardous wastes disposed of within each cell or area of the facility. The owner or operator must identify the type, location, and quantity of hazardous wastes disposed of within each cell or area of the facility. For wastes disposed of before these regulations were promulgated, the owner or operator must identify the type, location, and quantity of the wastes to the best of his knowledge and in accordance with any records he has kept.

(j) Notice in Deed to Property - The owner of the property on which a disposal facility is located must record, in accordance with State law, a notation on the deed to the facility property--or on some other instrument which is normally examined during title search--that will in perpetuity notify any potential purchaser of the property that: (1) the land has been used to manage hazardous waste, and (2) its use is restricted under part (g)3 of this paragraph.

(8) Financial Requirements

(a) Applicability

1. The requirements of subparagraphs (c),(d),(g),(h),(i), and (k) through (o) of this paragraph apply to owners and operators of all hazardous waste facilities, except as provided otherwise in this subparagraph or in subparagraph (1)(b) of this Rule.

2. The requirements of subparagraphs (e),(f), and (j) of this paragraph apply only to owners and operators of disposal facilities.

3. The State and the Federal government are exempt from the requirements of this paragraph.

(b) Definitions Of Terms Used In This Paragraph

1. "Closure plan" means the plan for closure prepared in accordance with the requirements of subparagraph (7)(c) of this Rule.

2. "Current closure cost estimate" means the most recent of the estimates prepared in accordance with parts (c)1, 2, and 3 of this paragraph.

3. "Current post-closure cost estimate" means the most recent of the estimates prepared in accordance with parts (e)1, 2, and 3 of this paragraph.

4. "Division Director" means the Director of the Division of Solid Waste Management of the Department. This person also serves as the Technical Secretary to the Board, and functions as the chief of staff to both the Commissioner and the Board in matters relating to these Rules and their implementation.

5. "Parent corporation" means a corporation which directly owns at least 50 percent of the voting stock of the corporation which is the facility owner or operator; the latter corporation is deemed a "subsidiary" of the parent corporation.

6. "Post-closure plan" means the plan for post-closure care prepared in accordance with the requirements of subparagraphs (7)(g)-(j) of this Rule.

7. The following terms are used in the specifications for financial assurance for closure and post-closure care, and for liability coverage. The definitions are intended to assist in the understanding of these regulations and are not intended to limit the meanings of terms in a way that conflicts with generally accepted accounting practices.

   "Assets" means all existing and all probable future economic benefits obtained or controlled by a particular entity.

   "Current assets" means cash or other assets or resources commonly identified as those which are reasonably expected to be realized in cash or sold or consumed during the normal operating cycle of the business.

   "Current liabilities" means obligations whose liquidation is reasonably expected to require the use of the existing resources properly classifiable as current assets or the creation of other current liabilities.

   "Independently audited" refers to an audit performed by an independent certified public accountant in accordance with generally accepted auditing standards.

   "Liabilities" means probable future sacrifices of economic benefits arising from present obligations to transfer assets or provide services to other entities in the future as a result of past transactions or events.

   "Net working capital" means current assets minus current liabilities.

   "Net worth" means total assets minus total liabilities and is equivalent to owner's equity.

   "Tangible net worth" means the tangible assets that remain after deducting liabilities; such assets would not include intangibles such as goodwill and rights to patents or royalties.

8. In the liability insurance requirements the terms "bodily injury" and "property damage" shall have the meanings given these terms by applicable Tennessee law. However, these terms do not include those liabilities which, consistent with standard industry practice, are excluded from coverage in liability policies for bodily injury and

property damage. The Department intends the meanings of other terms used in the liability insurance requirements to be consistent with their common meanings within the insurance industry. The definitions given below of several of the terms are intended to assist in the understanding of these regulations and are not intended to limit their meanings in a way that conflicts with general insurance industry usage.

"Accidental occurrence" means an accident, including continuous or repeated exposure to conditions, which results in bodily injury or property damage neither expected nor intended from the standpoint of the insured.

"Legal defense costs" means any expenses that an insurer incurs in defending against claims of third parties brought under the terms and conditions of an insurance policy.

"Nonsudden accidental occurrence" means an occurrence which takes place over time and involves continuous or repeated exposure.

"Sudden accidental occurrence" means an occurrence which is not continuous or repeated in nature.

(c) Cost Estimate For Closure

1. The owner or operator must prepare a written estimate, in current dollars, of the costs a second party would face in closing the facility if the owner or operator abandoned it or became insolvent. This cost estimate:

   (i) Must equal the cost of closure at the point in the facility's operating life when the extent and manner of its operation would make closure the most expensive, as indicated by its closure plan and/or the factors of subpart (ii) and (iii) of this part;

   (ii) Must assume that any hazardous wastes or hazardous waste residues in storage or in treatment will be shipped off-site for treatment, storage, or disposal at an authorized hazardous waste management facility; and

   (Note: This means that the cost estimate cannot assume that the second party will reduce the waste inventory by continued operation of any on-site treatment or disposal operations.)

   (iii) Must equal the costs that would accrue if such closure were performed under contract by a capable person independent of the owner or operator.

2. The owner or operator must adjust the closure cost estimate for inflation within 30 days after each anniversary of the date on which the first closure cost estimate was prepared. The adjustment must be made as specified in subparts (i) and (ii) of this part, using an

inflation factor derived from the annual Implicit Price Deflator for Gross National Product as published by the U.S. Department of Commerce in its Survey of Current Business. The inflation factor is the result of dividing the latest published annual Deflator by the Deflator for the previous year.

(i) The first adjustment is made by multiplying the closure cost estimate by the inflation factor. The result is the adjusted closure cost estimate.

(ii) Subsequent adjustments are made by multiplying the latest adjusted closure cost estimate by the latest inflation factor.

3. The owner or operator must revise the closure cost estimate whenever a change in the closure plan increases the cost of closure. The revised closure cost estimate must be adjusted for inflation as specified in part 2 of this subparagraph.

4. The owner or operator must keep the following at the facility during the operating life of the facility: the latest closure cost estimate prepared in accordance with parts 1 and 3 of this subparagraph and, when this estimate has been adjusted in accordance with part 2 of this subparagraph, the latest adjusted closure cost estimate. Such cost estimates must address all closure activities and be of sufficient detail to enable the State to assess the accuracy and reasonableness of the estimates.

(d) Financial Assurance for Closure - By 90 days after the effective date of these regulations*, an owner or operator of each facility must file and maintain with the Division Director financial assurance for closure of the facility in accordance with the requirements of this subparagraph.

1. The owner or operator must choose from the financial assurance mechanisms as specified in subparagraph (g) of this paragraph. (NOTE: See also subparagraphs (h),(i),(j), and (k) of this paragraph.)

2. The owner or operator must file and maintain financial assurance in an amount at least equal to the current closure cost estimate.

(i) Whenever the closure cost estimate increases to an amount greater than the amount of financial assurance currently filed with the Division Director, the owner or operator must, within 60 days after the increase, file additional financial assurance at least equal to this increase.

(ii) Whenever the current closure cost estimate decreases, and upon the written request of the owner or operator, the Division Director shall, provided he validates the decrease, reduce the amount of financial assurance required for the facility to the amount of the current closure cost estimate. Upon such occurrence, the Division Director shall, as appropriate considering the financial assurance mechanism(s) on file, either

* - These regulations became effective MAR 2, 1983.

cause to be released to the owner or operator cash or collateral equal to this reduction or allow the owner or operator to substitute for the mechanism(s) on file a new mechanism(s) in the reduced amount.

3. The financial assurance must be maintained until the Commissioner or Board releases the owner or operator from the requirements of this subparagraph, as specified in this part, or until the Commissioner or Board orders forfeiture of the financial assurance as provided in part 4 of this subparagraph.

   (i) Within 60 days after receiving certifications from the owner or operator and an independent registered professional engineer that closure has been accomplished in accordance with the closure plan, the Division Director will notify the owner or operator in writing that he is no longer required by this subparagraph to maintain financial assurance for closure of the particular facility, unless the Commissioner or Board has reason to believe that closure has not been in accordance with the closure plan. At the time of such notifications, the Division Director shall also cause to be released to the owner or operator (or issuing institution, if appropriate) the financial assurance filed to provide for such closure.

   (ii) Financial assurance will normally be released in the form(s) it was submitted. However, where such release involves an amount equal to only a portion of the funds assured by a financial assurance mechanism (see subparagraphs (i) and (j) of this paragraph), the Commissioner shall, as appropriate considering the type of mechanism involved, either cause to be released to the owner or operator cash or collateral equal to that amount or allow the owner or operator to substitute for the mechanism on file a new mechanism(s) reduced by that amount.

4. The Commissioner or Board, as appropriate, may order that any financial assurance filed by an owner or operator pursuant to this subparagraph be forfeited to the State if the Commissioner or Board determines that the owner or operator has failed to perform final closure in accordance with the closure plan and other interim status requirements when required to do so. Any such forfeiture action shall follow the procedures provided in subparagraph (m) of this paragraph.

(e) <u>Cost Estimate For Post-Closure Care</u>

1. The owner or operator of a disposal facility must prepare a written estimate, in current dollars, of the annual cost of post-closure monitoring and maintenance of the facility in accordance with the applicable post-closure regulations in subparagraphs (7)(g)-(j) of this Rule. The post-closure cost estimate is calculated by multiplying the annual post-closure cost estimate by the number of years of post-closure care required under paragraph (7) of this Rule. The post-

closure cost estimate must equal the cost of post-closure care if it were performed under contract by a capable person independent of the owner or operator.

2. During the operating life of the facility, the owner or operator must adjust the post-closure cost estimate for inflation within 30 days after each anniversary of the date on which the first post-closure cost estimate was prepared. The adjustment must be made as specified in subparts (i) and (ii) of this part, using an inflation factor derived from the annual Implicit Price Deflator for Gross National Product as published by the U.S. Department of Commerce in its Survey of Current Business. The inflation factor is the result of dividing the latest published annual Deflator by the Deflator for the previous year.

   (i) The first adjustment is made by multiplying the post-closure cost estimate by the inflation factor. The result is the adjusted post-closure cost estimate.

   (ii) Subsequent adjustments are made by multiplying the latest adjusted post-closure cost estimate by the latest inflation factor.

3. The owner or operator must revise the post-closure cost estimate during the operating life of the facility whenever a change in the post-closure plan increases the cost of post-closure care. The revised post-closure cost estimate must be adjusted for inflation as specified in part 2 of this subparagraph.

4. The owner or operator must keep the following at the facility during the operating life of the facility: the latest post-closure cost estimate prepared in accordance with parts 1 and 3 of this subparagraph and, when this estimate has been adjusted in accordance with part 2 of this subparagraph, the latest adjusted post-closure cost estimate. Such cost estimates shall address all post-closure care activities and be of sufficient detail to enable the State to assess the accuracy and reasonableness of the estimates.

(f) Financial Assurance for Post-Closure Care - By 90 days after the effective date of these regulations*, an owner or operator of each disposal facility must file and maintain with the Division Director financial assurance for post-closure care of the facility in accordance with the requirements of this subparagraph.

1. The owner or operator must choose from the financial assurance mechanisms as specified in subparagraph (g) of this paragraph. (NOTE: See also subparagraphs (h),(i),(j), and (k) of this paragraph).

2. The owner or operator must file and maintain financial assurance in an amount at least equal to the current post-closure cost estimate.

* - These regulations became effective MAR 2, 1983.

(i) Whenever the current post-closure cost estimate increases to an amount greater than the amount of financial assurance currently filed with the Division Director, the owner or operator must, within 60 days after the increase, file additional financial assurance at least equal to this increase.

(ii) Whenever the current post-closure cost estimate decreases during the operating life of the facility, and upon the written request of the owner or operator, the Division Director shall, provided he validates the decrease, reduce the amount of financial assurance required for the facility to the amount of the current post-closure cost estimate. Upon such occurrence, the Division Director shall, as appropriate considering the financial assurance mechanism(s) on file, either cause to be released to the owner or operator cash or collateral equal to this reduction or allow the owner or operator to substitute for the mechanism(s) on file a new mechanism(s) in the reduced amount.

(iii) During the period of post-closure care, the Division Director may reduce the amount of financial assurance required for the facility if the owner or operator demonstrates to the Division Director that the amount currently filed exceeds the remaining cost of post-closure care. Upon such occurrence, the Division Director shall, as appropriate considering the financial assurance mechanism(s) on file, either cause to be released to the owner or operator cash or collateral equal to this reduction or allow the owner or operator to substitute for the mechanism(s) on file a new mechanism(s) in the reduced amount.

3. The financial assurance must be maintained until the Commissioner or Board releases the owner or operator from the requirements of this subparagraph, as specified in this part, or until the Commissioner or Board orders forfeiture of the financial assurance as provided in part 4 of this subparagraph.

(i) When an owner or operator has completed, to the satisfaction of the Commissioner, all post-closure care requirements in accordance with the post-closure plan, the Commissioner will, at the request of the owner or operator, notify him in writing that he is no longer required by this subparagraph to maintain financial assurance for post-closure care of the particular facility. At such time the Commissioner shall also cause to be released to the owner or operator (or issuing institution, if appropriate) the financial assurance filed to provide for such post-closure care.

(ii) Financial assurance will normally be released in the form(s) it was submitted. However, where such release involves an amount equal to only a portion of the funds assured by a financial assurance mechanism (see subparagraphs (i) and (j) of this paragraph), the Commissioner shall, as appropriate considering the type of mechanism involved, either cause to be released to

the owner or operator cash or collateral equal to that amount or allow the owner or operator to substitute for the mechanism on file a new mechanism(s) reduced by that amount.

4. The Commissioner or Board, as appropriate, may order that any financial assurance filed by an owner or operator pursuant to this subparagraph be forfeited to the State if the Commissioner or Board determines that the owner or operator has failed to perform post-closure care in accordance with the post-closure plan and other interim status requirements. Any such forfeiture action shall follow the procedures provided in subparagraph (m) of this paragraph.

(g) Mechanisms of Financial Assurance

1. Personal Bond Supported by a Letter of Credit - An owner or operator may satisfy the requirements of subparagraphs (d) and/or (f) of this paragraph by filing his personal performance guarantee accompanied by collateral in the form of an irrevocable standby letter of credit. He must guarantee to perform final closure in accordance with the closure plan and other requirements of interim status whenever required to do so, and/or guarantee to perform post-closure care in accordance with the post-closure plan and other requirements of interim status. The irrevocable standby letter of credit supporting this guarantee must conform to the following requirements:

(i) The institution issuing the letter of credit must be an entity which has the authority to issue letters of credit and whose letter-of-credit operations are regulated and examined by a Federal or State agency.

(ii) The wording of the letter of credit must be identical to the wording specified in Rule 1200-1-11-.06(8)(n)2.

(iii) The letter of credit must be accompanied by a letter from the owner or operator referring to the letter of credit by number, issuing institution, and date, and providing the following information: the installation identification number, name, and address of the facility, and the amount of funds assured for closure and/or post-closure care of the facility by the letter of credit. (NOTE: This letter from the owner or operator may also contain his personal performance guarantee.)

(iv) The letter of credit must be irrevocable and issued for a period of at least one year. The letter of credit must provide that the expiration date will be automatically extended for a period of at least one year unless, at least 120 days before the current expiration date, the issuing institution notifies both the owner or operator and the Division Director by certified mail of a decision not to extend the expiration date. Under the terms of the letter of credit, the 120 days will begin on the date when both the owner or operator and the Division Director have received the notice, as evidenced by the return receipts.

(v) The letter of credit must be issued in an amount at least adequate to provide the necessary financial assurance.

(vi) The Division Director may draw on the letter of credit upon forfeiture as provided in parts (d)4 and (f)4 of this paragraph. The Division Director will also draw on the letter of credit if the owner or operator does not establish alternate financial assurance as specifed in this paragraph and obtain written approval of such alternate assurance from the Division Director within 90 days after receipt by both the owner or operator and the Division Director of a notice from the issuing institution that it has decided not to extend the letter of credit beyond the current expiration date. The Division Director may delay the drawing if the issuing institution grants an extension of the term of the credit. During the last 30 days of any such extension the Division Director will draw on the letter of credit if the owner or operator has failed to provide alternate financial assurance as specified in this paragraph and obtain written approval of such assurance from the Division Director.

2. Personal Bond Supported by Insurance - An owner or operator may satisfy the requirements of subparagraphs (d) and/or (f) of this paragraph by filing his personal performance guarantee accompanied by collateral in the form of an insurance policy. The owner or operator may obtain an extension of the time allowed in subparagraphs (d) or (f) of this paragraph for submission of the performance guarantee and insurance policy if, by 90 days after the effective date of these regulations*, the owner or operator submits to the Division Director a letter from an insurer stating that the insurer is considering issuance of closure and/or post-closure insurance conforming to the requirements of this part to the owner or operator. The extension will end no later than 180 days after the effective date of these regulations*, by which time the owner or operator must have filed his performance guarantee and insurance policy or establish other financial assurance as specified in this paragraph. He must guarantee to perform final closure in accordance with the closure plan and other requirements of interim status whenever required to do so, and/or guarantee to perform post-closure care in accordance with the post-closure plan and other requirements of interim status. The insurance policy supporting this guarantee must conform to the following requirements:

(i) The insurer must be licensed to transact the business of insurance, or eligible to provide insurance as an excess or surplus lines insurer, in the State of Tennessee.

(ii) The insurance policy must be accompanied by a certificate of insurance whose wording is identical to the wording specified in Rule 1200-1-11-.06(8)(n)3.

(iii) The insurance policy must be for a face amount at least adequate to provide the necessary financial assurance. The term

* - These regualtions became effective MAR 2, 1983.

"face amount" means the total amount the insurer is obligated to pay under the policy. Actual payments by the insurer will not change the face amount, although the insurer's future liability will be lowered by the amount of the payments.

(iv) The insurance policy must guarantee that funds will be available to close the facility whenever final closure occurs and/or to provide post-closure care of the facility whenever the post-closure period begins. The policy must also guarantee that once final closure and/or the post-closure care period begins, the insurer will be responsible for paying out funds, up to an amount equal to the face amount of the policy, upon the direction of the Division Director, to such party or parties as the Division Director specifies.

(v) Under an insurance policy which guarantees the availability of funds for final closure, after final closure begins an owner or operator or any other person authorized to perform closure may request reimbursement from the insurer for closure expenditures by submitting itemized bills to the Division Director. Within 60 days after receiving bills for closure activities, the Division Director will determine whether the closure expenditures are in accordance with the closure plan or otherwise justified, and if so, he will instruct the insurer to make reimbursement in such amounts as the Division Director specifies in writing. If the Division Director has reason to believe that the cost of closure will be significantly greater than the face amount of the policy, he may withhold reimbursement of such amounts as he deems prudent until the owner or operator is released from the financial assurance requirement as provided in part (d)4 of this paragraph.

(vi) Under an insurance policy which guarantees the availability of funds for post-closure care, an owner or operator or any other person authorized to perform post-closure care may request reimbursement from the insurer for post-closure expenditures by submitting itemized bills to the Division Director. Within 60 days after receiving bills for post-closure activities, the Division Director will determine whether the post-closure expenditures are in accordance with the post-closure plan or otherwise justified, and if so, he will instruct the insurer to make reimbursement in such amounts as the Division Director specifies in writing.

(vii) Upon forfeiture of financial assurance as provided in parts (d)4 and (f)4 of this paragraph, the Division Director will direct the insurer to pay the full face amount to the State.

(viii) The owner or operator must maintain the policy in full force and effect until the Division Director, Commissioner, or Board releases the financial assurance mechanism as provided in this paragraph. Failure to pay the premium, without substitution of

alternate financial assurance as specified in this paragraph, will constitute a significant violation of these regulations, warranting such remedy as the Commissioner deems necessary. Such violation will be deemed to begin upon receipt by the Division Director of a notice of future cancellation, termination, or failure to renew due to nonpayment of the premium, rather than upon the date of expiration.

(ix) Each policy must contain a provision allowing assignment of the policy to a successor owner or operator. Such assignment may be conditional upon consent of the insurer, provided such consent is not unreasonably refused.

(x) The policy must provide that the insurer may not cancel, terminate, or fail to renew the policy except for failure to pay the premium. The automatic renewal of the policy must, at a minimum, provide the insured with the option of renewal at the face amount of the expiring policy. If there is a failure to pay the premium, the insurer may elect to cancel, terminate, or fail to renew the policy by sending notice by certified mail to the owner or operator and the Division Director. Cancellation, termination, or failure to renew may not occur, however, during the 120 days beginning with the date of receipt of the notice by both the Division Director and the owner or operator, as evidenced by the return receipts. Cancellation, termination, or failure to renew may not occur and the policy will remain in full force and effect in the event that on or before the date of expiration:

(I) The Division Director deems the facility abandoned; or

(II) Interim status is terminated or revoked; or

(III) Closure is ordered by the Commissioner, the Board, or a court of competent jurisdiction; or

(IV) The owner or operator is named as debtor in a voluntary or involuntary proceeding under Title 11 (Bankruptcy), U.S. Code; or

(V) The premium due is paid.

(xi) Commencing on the date that liability to make payments pursuant to the policy accrues, the insurer will thereafter annually increase the face amount of the policy. Such increase must be equivalent to the face amount of the policy, less any payments made, multiplied by an amount equivalent to 85 percent of the most recent investment rate or of the equivalent coupon-issue yield announced by the U.S. Treasury for 26-week Treasury securities.

3. Personal Bond Supported by Securities -An owner or operator may satisfy the requirements of subparagraphs (d) and/or (f) of this paragraph by filing his personal performance guarantee accompanied by collateral in the form of securities. He must guarantee to perform final closure in accordance with the closure plan and other requirements of interim status whenever required to do so, and/or guarantee to perform post-closure care in accordance with the post-closure plan and other requirements of interim status. The securities supporting this guarantee must be fully registered as to principal and interest in such manner as to identify the State and the Department as holder of such collateral and to also identify that person filing such collateral. These securities must have a current market value at least adequate to provide the necessary financial assurance, and must be included among the following types:

   (i) Negotiable certificates of deposit assigned irrevocably to the State.

      (I) Such certificates of deposit must be automatically renewable and must be assigned to the State in writing and recorded as such in the records of the financial institution issuing such certificate.

      (II) Such certificates of deposit must also include a statement signed by an officer of the issuing financial institution which waives all rights of lien which the institution has or might have against the certificate.

   (ii) Negotiable United States Treasury securities assigned irrevocably to the State.

   (iii) Negotiable general obligation municipal or corporate bonds which have at least an "A" rating by Moody's and/or Standard and Poor's rating services and which are assigned irrevocably to the State.

4. Personal Bond Supported by Cash - An owner or operator may satisfy the requirements of subparagraphs (d) and/or (f) of this paragraph by filing his personal performance guarantee accompanied by cash in an amount at least adequate to provide the necessary financial assurance. He must guarantee to perform final closure in accordance with the closure plan and other requirements of interim status whenever required to do so, and/or guarantee to perform post-closure care in accordance with the post-closure plan and other requirements of interim status.

5. Financial Test and Corporate Guarantee

   (i) An owner or operator may satisfy the requirements of subparagraphs (d) and/or (f) of this paragraph by demonstrating that he passes a financial test as specified in this part. To pass this test the owner or operator must meet the criteria of either item (I) or (II) of this subpart as follows:

(I) The owner or operator must have:

I. Two of the following three ratios: a ratio of total liabilities to net worth less than 2.0, a ratio of the sum of net income plus depreciation, depletion, and amortization to total liabilities greater than 0.1, and a ratio of current assets to current liabilities greater than 1.5; and

II. Net working capital and tangible net worth each at least six times the sum of the current closure and post-closure cost estimates; and

III. Tangible net worth of at least $10 million; and

IV. Assets in the United States amounting to at least 90 percent of his total assets or at least six times the sum of the current closure and post-closure cost estimates.

(II) The owner or operator must have:

I. A current rating for his most recent bond issuance of AAA, AA, A, or BBB as issued by Standard and Poor's or Aaa, Aa, A, or Baa as issued by Moody's; and

II. Tangible net worth at least six times the sum of the current closure and post-closure cost estimates; and

III. Tangible net worth of at least $10 million; and

IV. Assets located in the United States amounting to at least 90 percent of his total assets or at least six times the sum of the current closure and post-closure cost estimates.

(ii) The phrase "current closure and post-closure cost estimates" as used in subpart (i) of this part refers to the cost estimates required to be shown in paragraphs 1-4 of the letter from the owner's or operator's chief financial officer (see Rule 1200-1-11-.06(8)(n)4).

(iii) To demonstrate that he meets this test, the owner or operator must submit the following items to the Division Director:

(I) A letter signed by the owner's or operator's chief financial officer and worded as specified in Rule 1200-1-11-.06(8)(n)4; and

(II) A copy of the independent certified public accountant's report on examination of the owner's or operator's financial statements for the latest completed fiscal year; and

(III) A special report from the owner's or operator's independent certified public accountant to the owner or operator stating that:

I. He has compared the data which the letter from the chief financial officer specifies as having been derived from the independently audited, year-end financial statements for the latest fiscal year with the amounts in such financial statements; and

II. In connection with that procedure, no matters came to his attention which caused him to believe that the specified data should be adjusted.

(iv) The owner or operator may obtain an extension of the time allowed in subparagraphs (d) and (f) of this paragraph for submission of the documents specified in subpart (iii) of this part if the fiscal year of the owner or operator ends during the 90 days following the effective date of these regulations* and if the year-end financial statements for that fiscal year will be audited by an independent certified public accountant. The extension will end no later than 90 days after the end of the owner's or operator's fiscal year. To obtain the extension, the owner's or operator's chief financial officer must send, by 90 days after the effective date of these regulations*, a letter to the Division Director which must:

(I) request the extension;

(II) certify that he has grounds to believe that the owner or operator meets the criteria of the financial test;

(III) specify for each facility to be covered by the test the Installation Identification Number, name, address, and current closure and post-closure cost estimates to be covered by the test;

(IV) specify the date ending the owner's or operator's last complete fiscal year before the date 90 days after the effective date of these regulations*;

* - These regulations became effective MAR 2, 1983.

(V) specify the date, no later than 90 days after the end of such fiscal year, when he will submit the documents specified in subpart (iii) of this part; and

(VI) certify that the year-end financial statements of the owner or operator for such fiscal year will be audited by an independent certified public accountant.

(v) After the initial submission of items specified in subpart (iii) of this part, the owner or operator must send updated information to the Division Director within 90 days after the close of each succeeding fiscal year. This information must consist of all three items specified in subpart (iii) of this part.

(vi) If the owner or operator no longer meets the requirements of subpart (i) of this part, he must send notice to the Division Director of intent to establish alternate financial assurance as specified in this paragraph. The notice must be sent by certified mail within 90 days after the end of the fiscal year for which the year-end financial data show that the owner or operator no longer meets the requirements. The owner or operator must provide the alternate financial assurance within 120 days after the end of such fiscal year.

(vii) The Division Director may, based on a reasonable belief that the owner or operator may no longer meet the requirements of subpart (i) of this part, require reports of financial condition at any time from the owner or operator in addition to those specified in subpart (iii) of this part. If the Division Director finds, on the basis of such reports or other information, that the owner or operator no longer meets the requirements of subpart (i) of this part, the owner or operator must provide alternate financial assurance as specified in this paragraph within 30 days after notification of such a finding.

(viii) The Division Director may disallow use of this test on the basis of qualifications in the opinion expressed by the independent certified public accountant in his report on examination of the owner's or operator's financial statements (see item (iii)(II) of this part). An adverse opinion or a disclaimer of opinion will be cause for disallowance. The Division Director will evaluate other qualifications on an individual basis. The owner or operator must provide alternate financial assurance as specified in this paragraph within 30 days after notification of the disallowance.

(ix) An owner or operator may meet the requirements of subparagraphs (d) and/or (f) of this paragraph by obtaining a written guarantee, hereafter referred to as "corporate guarantee". The guarantor must be the parent corporation of the owner or operator. The guarantor must meet the requirements for owners or operators in subparts (i) through (viii) of this part and must comply with the terms of the corporate guarantee. The wording of the corporate guarantee must be identical to the

wording specified in Rule 1200-1-11-.06(8)(n)5. The corporate guarantee must accompany the items sent to the Division Director as specified in subpart (iii) of this part. The terms of the corporate guarantee must provide that:

(I) If the owner or operator fails to perform final closure of a facility covered by a corporate guarantee for closure in accordance with the closure plan and other interim status requirements whenever required to do so, the guarantor will do so or forfeit to the State monies in an amount equal to the current closure cost estimate for the facility, as provided in part (d)4 of this paragraph. If the owner or operator fails to perform post-closure care of a facility covered by a corporate guarantee for post-closure care in accordance with the post-closure plan and other interim status requirements, the guarantor will do so or forfeit to the State monies in an amount equal to the current post-closure cost estimate for the facility, as provided in part (f)4 of this paragraph.

(II) The corporate guarantee will remain in force unless the guarantor sends notice of cancellation by certified mail to the owner or operator and to the Division Director. Cancellation may not occur, however, during the 120 days beginning on the date of receipt of the notice of cancellation by both the owner or operator and the Division Director, as evidenced by the return receipts.

(III) If the owner or operator fails to provide alternate financial assurance as specified in this paragraph and obtain the written approval of such alternate assurance from the Division Director within 90 days after receipt by both the owner or operator and the Division Director of a notice of cancellation of the corporate guarantee from the guarantor, the guarantor will provide such alternative financial assurance in the name of the owner or operator.

(h) Use of Multiple Financial Mechanisms - In meeting the requirements of subparagraphs (d) or (f) of this paragraph, an owner or operator may utilize more than one financial assurance mechanism per facility. These mechanisms are limited to personal bonds supported by letters of credit, insurance, securities, or cash. The mechanisms must be as specified in subparagraph (g) of this paragraph, except that it is the combination of mechanisms, rather than the single mechanism, which must provide financial assurance for the necessary amount.

(i) Use of a Financial Mechanism for Multiple Facilities - An owner or operator may use a financial assurance mechanism specified in subparagraph (g) of this paragraph to meet the requirments of subparagraphs (d) or (f) of this paragraph for more than one facility he owns or operates in Tennessee. If so, the mechanism submitted to the Division Director must include a list showing, for each facility, the installation identification number, name, address, and amount of funds for closure and/or post-closure care assured by the mechanism. The amount

of funds available through the mechanism must be no less than the sum of funds that would be available if a separate mechanism had been filed and maintained for each facility. In a financial assurance forfeiture action taken under parts (d)4 and (f)4 of this paragraph for closure and/or post-closure care of any of the facilities covered by the mechanism, the Commissioner or Board may order forfeiture of only the amount of funds designated for that facility, unless the owner or operator agrees to the use of additional funds available under the mechanism.

(j) Use of a Mechanism for Financial Assurance for Both Closure and Post-Closure Care - An owner or operator may satisfy the requirements for financial assurance for both closure and post-closure care for one or more facilities by using a mechanism from subpargraph (g) of this paragraph which meets the requirements of both subparagraphs (d) and (f) of this paragraph. The amount of funds available through the mechanism must be no less than the sum of funds that would be available if a separate mechanism had been established and maintained for financial assurance for closure and for post-closure care.

(k) Substituting Alternate Financial Assurance - In meeting the requirements of subparagraphs (d) or (f) of this paragraph, an owner or operator may substitute alternate financial assurance meeting the requirements of this paragraph for the financial assurance already filed with the Division Director for the facility. However, the existing financial assurance shall not be released by the Division Director until the substitute financial assurance has been received and approved by him.

(l) Procedures for Forfeiture of Financial Assurance

1. Upon his determination that the owner or operator has failed to perform final closure in accordance with the closure plan and other interim status requirements when required to do so, or has failed to perform post-closure care in accordance with the post-closure plan and other interim status requirements, the Division Director shall cause a notice of non-compliance to be served upon the owner or operator. Such notice shall be hand delivered or forwarded by certified mail. The notice of non-compliance shall specify in what respects the owner or operator has failed to perform as required, and shall establish a schedule of compliance leading to compliance with the plan and other permit requirements as soon as possible.

2. If the Division Director determines that the owner or operator has failed to perform as specified in the notice of non-compliance, or as specified in any subsequent compliance agreement which may have been reached by the owner or operator and the Division Director, the Division Director shall cause a notice of show cause meeting to be served upon the owner or operator. Such notice shall be signed by the Division Director and either hand-delivered or forwarded by certified mail to the owner or operator. The notice of show cause meeting shall establish the date, time, and location of a meeting scheduled to provide the owner or operator with the opportunity to show cause why the Division Director should not pursue forfeiture of the financial assurance filed to guarantee such performance.

3. If no mutual compliance agreement is reached at the show cause meeting, or upon the Division Director's determination that the owner or operator has failed to perform as specified in such agreement that was reached, the Division Director shall request the Commissioner or Board, as appropriate, to order forfeiture of the financial assuance filed to guarantee such performance.

4. The Commissioner or Board, as appropriate, shall order forfeiture of the financial assurance upon his or its validation of the Division Director's determinations and upon his or its determination that the procedures of this subparagraph have been followed. The Commissioner or Board may however, at his or its discretion, provide opportunity for the owner or operator to be heard before himself or it before issuing such order. Upon issuance a copy of the order shall be hand delivered or forwarded by certified mail to the owner or operator. Any such order issued by the Commissioner or Board shall become effective 30 days after receipt by the owner or operator unless it is appealed to the Board as provided in Section 68-46-113 of the Act.

5. If necessary, upon the effective date of the order of forfeiture, the Commissioner shall give notice to the State Attorney General who shall collect the forfeiture.

6. All forfeited funds shall be deposited in the State's hazardous waste trust fund account for use by the Commissioner as set forth in Section 68-46-108(c)(6) of the Act.

(m) Management of Collateral Filed With the State - The Division Director shall obtain posession of and deposit with the Treasurer of the State of Tennessee all collateral filed under this paragraph, in accordance with Tennessee Code Annotated Section 8-5-110. At the owner or operator's request, the State Treasurer shall release to the operator any interest income from deposited securities as the same becomes due and payable.

(n) Liability Requirements

1. Coverage for Sudden Accidental Occurrences - By ninety days after the effective date of these regulations*, an owner or operator of a hazardous waste treatment, storage, or disposal facility, or a group of such facilities, must demonstrate financial responsibility for bodily injury and property damage to third parties caused by sudden accidental occurrences arising from operations of the facility or group of facilities. The owner or operator must have and maintain liability coverage for sudden accidental occurrences in the amount of at least $1 million per occurrence (for bodily injury and property damage combined) with an annual aggregate of at least $2 million, exclusive of legal defense costs. This liability coverage may be demonstrated in one of three ways, as specified in subparts (i), (ii), and (iii) of this part.

   (i) An owner or operator may demonstrate the required liability coverage by having liability insurance as specified in this subpart.

* - These regulations became effective MAY 1, 1984.

(I) Each insurance policy must be amended by attachment of the Hazardous Waste Facility Liability Endorsement or evidenced by a Certificate of Liability Insurance. The wording of the endorsement must be identical to the wording specified in Rule 1200-1-11-.06(8)(p)6. The wording of the certificate of insurance must be identical to the wording specificed in Rule 1200-1-11-.06(8)(p)7. The owner or operator must submit a signed duplicate original of the endorsement or the certificate of insurance to the Division Director. If requested by the Division Director, the owner or operator must provide a signed duplicate original of the insurance policy.

(II) Each insurance policy must be issued by an insurer which, at a minimum, is licensed to transact the business of insurance, or eligible to provide insurance as an excess or surplus lines insurer, in Tennessee.

(ii) An owner or operator may meet the requirements of this part by passing a financial test for liability coverage as specified in part 6 of this subparagraph.

(iii) An owner or operator may demonstrate the required liability coverage through use of both the financial test and insurance as these mechanisms are specified in this subparagraph. The amounts of coverage demonstrated must total at least the minimum amounts required by this part.

2. Coverage for Nonsudden Accidental Occurrences - An owner or operator of a surface impoundment, landfill, or land treatment facility which is used to manage hazardous waste, or a group of such facilities, must demonstrate financial responsibility for bodily injury and property damage to third parties caused by nonsudden accidental occurrences arising from operations of the facility or group of facilities. The owner or operator must have and maintain liability coverage for nonsudden accidental occurrences in the amount of at least $3 million per occurrence (for bodily injury and property damage combined) with an annual aggregate of at least $6 million, exclusive of legal defense costs. This liability coverage may be demonstrated in one of three ways, as specified in subparts (i), (ii), and (iii) of this part.

(i) An owner or operator may demonstrate the required liability coverage by having liability insurance as specified in this subpart.

(I) Each insurance policy must be amended by attachment of the Hazardous Waste Facility Liability Endorsement or evidenced by a Certificate of Liability Insurance. The wording of the endorsement must be identical to the wording specified in Rule 1200-1-11-.06(8)(p)6. The wording of the certificate of insurance must be identical to the wording specified in Rule 1200-1-11-.06(8)(p)7. The owner or operator must submit a signed duplicate original of the endorsement or the certificate of insurance to the Division Director or, if requested by the Division Director, the owner or operator must provide a signed

duplicate original of the insurance policy.

(II) Each insurance policy must be issued by an insurer which, at a minimum, is licensed to transact the business of insurance, or eligible to provide insurance as an excess or surplus lines insurer, in Tennessee.

(ii) An owner or operator may meet the requirements of this part by passing a financial test for liability coverage as specified in part 6 of this subparagraph.

(iii) An owner or operator may demonstrate the required liability coverage through use of both the financial test and insurance as these mechanisms are specified in this subparagraph. The amounts of coverage must total at least the minimum amounts required by this part.

(iv) The required liability coverage for nonsudden accidental occurrences must be demonstrated by the dates listed below. The total sales or revenues of the owner or operator in all lines of business, in the fiscal year preceding the effective date of these regulations, will determine which of the dates applies. If the owner and operator of a facility are two different parties, or if there is more than one owner or operator, the sales or revenues of the owner or operator with the largest sales or revenues will determine the date by which the coverage must be demonstrated. The dates are as follows:

(I) For an owner or operator with sales and revenue totalling $5 million or more, 6 months after the effective date of these regulations*.

(II) All other owners or operators, January 16, 1985.

(v) By the date 6 months after the effective date of these regulations* an owner or operator who is within the last category (item (iv)(II) of this part) must, unless he has demonstrated liability coverage for nonsudden accidental occurrences, send a letter to the Division Director stating the date by which he plans to establish such coverage.

3. Request for Variance - If an owner or operator can demonstrate to the satisfaction of the Commissioner that the levels of financial responsibility required by parts 1 and 2 of this subparagraph are not consistent with the degree and duration of risk associated with treatment, storage, and disposal at the facility or group of facilities, the owner or operator may obtain a variance from the Commissioner. The request for a variance must be submitted in writing to the Commissioner. If granted, the variance will take the form of an adjusted level of required liability coverage, such level to be based on the Commissioner's assessment of the degree and duration of risk associated with the ownership or operation of the facility or group of facilities. The Commissioner may require an owner or operator who requests a variance to provide such technical and engineering information as is deemed necessary by the Commissioner to

* - These regulations became effective MAY 1, 1984.

determine a level of financial responsiblity other than that required by parts 1 and 2 of this subparagraph. The Commissioner will process a variance request as if it were a permit modification request under Rule 1200-1-11-.07(9)(c)3(xiii) and subject to the procedures of Rule 1200-1-11-.07(9)(c)2. Notwithstanding any other provision, the Commissioner may hold a public hearing at his discretion or whenever he finds, on the basis of requests for a public hearing, a significant degree of public interest in a tentative decision to grant a variance.

4. Adjustments by the Commissioner - If the Commissioner determines that the levels of financial responsbility required by parts 1 or 2 of this subparagraph are not consistent with the degree and duration of risk associated with treatment, storage, or disposal at the facility or group of facilities, the Commissioner may adjust the level of financial responsibility required under parts 1 or 2 of this subparagraph as may be necessary to protect human health and the environment. This adjusted level will be based on the Commissioner's assessment of the degree and duration of risk associated with the ownership or operation of the facility or group of facilities. In addition, if the Commissioner determines that there is a significant risk to human health and the environment from nonsudden accidental occurrences resulting from the operations of a facility that is not a surface impoundment, landfill, or land treatment facility, he may require that an owner or operator of the facility comply with part 2 of this subparagraph. An owner or operator must furnish to the Commissioner within a reasonable time, any information which the Commissioner requests to determine whether cause exists for such adjustments of level or type of coverage. The Commissioner will process an adjustment of the level of required coverage as if it were a permit modification under Rule 1200-1-11-.07(9)(c)3(xiii) and subject to the procedures of Rule 1200-1-11-.07(9)(c)2. Notwithstanding any other provision, the Commissioner may hold a public hearing at his discretion or whenever he finds, on the basis of requests for a public hearing, a significant degree of public interest in a tentative decision to adjust the level or type of required coverage.

5. Period of Coverage - An owner or operator must continuously provide liability coverage for a facility as required by this subparagraph until certifications of closure of the facility, as specified in Rule 1200-1-11-.05(7)(f), are received by the Commissioner.

6. Financial Test for Liability Coverage

(i) An owner or operator may satisfy the requirements of this subparagraph by demonstrating that he passes a financial test as specified in this part. To pass this test the owner or operator must meet the criteria of items (I) or (II) of this subpart.

(I) The owner or operator must have:

I. Net working capital and tangible net worth each at least six times the amount of liability coverage to be demonstrated by this test; and

II. Tangible net worth of at least $10 million; and

III. Assets in the United States amounting to either:

A. At least 90 percent of his total assets; or

B. At least six times the amount of liability coverage to be demonstrated by this test.

(II) The owner or operator must have:

I. A current rating for his most recent bond issuance of AAA, AA, A, or BBB as issued by Standard and Poor's, or Aaa, Aa, A, or Baa as issued by Moody's; and

II. Tangible net worth of at least $10 million; and

III. Tangible net worth at least six times the amount of liability coverage to be demonstrated by this test; and

IV. Assets in the United States amounting to either:

A. At least 90 percent of his total assets; or

B. At least six times the amount of liability coverage to be demonstrated by this test.

(ii) The phrase "amount of liabilty coverage" as used in subpart (i) of this part refers to the annual aggregated amounts for which coverage is required under parts 1 and 2 of this subparagraph.

(iii) To demonstrate that he meets this test, the owner or operator must submit the following three items to the Division Director:

(I) A letter signed by the owner's or operator's chief financial officer and worded as specified in Rule 1200-1-11-.06(8)(p)8. If an owner or operator is using the financial test to demonstrate both assurance for closure or post-closure care (as specified by Rule 1200-1-11-.06(8)(d), (f), and (g)6 and subparagraphs (d) and (f) and part (g)5 of this Rule) and liability coverage, he must submit the letter specified in 1200-1-11-.06(8)(p)8 to cover both forms of financial responsibility; a separate letter as specified in Rule 1200-1-11-.06(8)(p)4 is not required.

(II) A copy of the independent certified public accountant's report on examination of the owner's or operator's financial statements for the latest completed fiscal year.

(III) A special report from the owner's or operator's independent certified public accountant to the owner or operator stating that:

I. He has compared the data which the letter from the chief financial officer specifies as having been derived from the independently audited, year-end financial statements for the latest fiscal year with the amounts in such financial statements; and

II. In connection with that procedure, no matters came to his attention which caused him to believe that the specified data should be adjusted.

(iv) The owner or operator may obtain a one-time extension of the time allowed for submission of the documents specified in subpart (iii) of this part if the fiscal year of the owner or operator ends during the 90 days prior to the effective date of these regulations* and if the year-end financial statements for that fiscal year will be audited by an independent certified public accountant. The extension will end no later than 90 days after the end of the owner's or operator's fiscal year. To obtain the extension, the owner's or operator's chief financial officer must send, by 30 days after the effective date of these regulations*, a letter to the Division Director. This letter from the chief financial officer must:

(I) Request the extension;

(II) Certify that he has grounds to believe that the owner or operator meets the criteria of the financial test;

(III) Specify for each facility to be covered by the test the Installation Identification Number, name, address, the amount of liability coverage, and, when applicable, current closure and post-closure cost estimates to be covered by the test;

(IV) Specify the date ending the owner's or operator's last complete fiscal year before the effective date of these regulations*;

(V) Specify the date, no later than 90 days after the end of such fiscal year, when he will submit the documents specified in subpart (iii) of this part; and

* - These regulations became effective MAY 1, 1984.

(VI) Certify that the year-end financial statements of the owner or operator for such fiscal year will be audited by an independent certified public accountant.

(v) After the initial submission of items specified in subpart (iii) of this part, the owner or operator must send updated information to the Division Director within 90 days after the close of each succeeding fiscal year. This information must consist of all three items specified in subpart (iii) of this part.

(vi) If the owner or operator no longer meets the requirements of subpart (i) of this part, he must obtain insurance for the entire amount of required liability coverage as specified in this subparagraph. Evidence of insurance must be submitted to the Division Director within 90 days after the end of the fiscal year for which the year-end financial data show that the owner or operator no longer meets the test requirements.

(vii) The Commissioner may disallow use of this test on the basis of qualifications in the opinion expressed by the independent certified public accountant in his report on examination of the owner's or operator's financial statements (see item (iii) (II) of this part). An adverse opinion or a disclaimer of opinion will be cause for disallowance. The Commissioner will evaluate other qualifications on an individual basis. The owner or operator must provide evidence of insurance for the entire amount of required liability coverage as specified in this subparagraph within 30 days after notification of disallowance.

(o) Incapacity of Owners or Operators, Guarantors, or Financial Institutions

1. An owner or operator must notify the Division Director by certified mail of the commencement of a voluntary or involuntary proceeding under Title 11 (Bankruptcy), U.S. Code, naming the owner or operator as debtor, within 10 days after commencement of the proceeding. A guarantor of a corporate guarantee as specified in part (g)5 of this paragraph must make such a notification if he is named as debtor, as required under the terms of the corporate guarantee (see Rule 1200-1-11-.06(8)(n)5).

2. An owner or operator who fulfills the requirements of subparagraphs (d), (f), or (n) of this paragraph by obtaining a letter of credit or insurance policy will be deemed to be without the required financial assurance or liability coverage in the event of bankruptcy of the issuing institution, or a suspension or revocation of the authority of the institution issuing the letter of credit or insurance policy to issue such instruments. The owner or operator must establish other financial assurance or liability coverage within 60 days after such an event.

(9) Use and Management of Containers

(a) Applicability - The regulations in this paragraph apply to owners and operators of all hazardous waste facilities that store containers of

hazardous waste, except as subparagraph (1)(b) of this Rule provides otherwise.

(b) Condition of Containers - If a container holding hazardous waste is not in good condition, or if it begins to leak, the owner or operator must transfer the hazardous waste from this container to a container that is in good condition, or manage the waste in some other way that complies with the requirements of this Rule.

(c) Compatibility of Waste With Container - The owner or operator must 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

1. A container holding hazardous waste must always be closed during storage, except when it is necessary to add or remove waste.

2. A container holding hazardous waste must not be opened, handled, or stored in a manner which may rupture the container or cause it to leak.

(Comment: Re-use of containers in transportation is governed by U.S. Department of Transportation regulations, including those set forth in 49 CFR 173.28.)

(e) Inspections - The owner or operator must inspect areas where containers are stored, at least weekly, looking for leaks and for deterioration caused by corrosion or other factors.

(Comment: See subparagraph (b) of this paragraph for remedial action required if deterioration or leaks are detected.)

(f) Special Requirements For Ignitable or Reactive Waste - Containers holding ignitable or reactive waste must be located at least 15 meters (50 feet) from the facility's property line.

(Comment: See part (2)(h)1 of this Rule for additional requirements.)

(g) Special Requirements For Incompatible Wastes

1. Incompatible wastes, or incompatible wastes and materials, (see Appendix .05/D for examples) must not be placed in the same container, unless part (2)(h)2 of this Rule is complied with.

2. Hazardous waste must not be placed in an unwashed container that previously held an incompatible waste or material (see Appendix .05/D for examples), unless part (2)(h)2 of this Rule is complied with.

3. A storage container holding a hazardous waste that is incompatible with any waste or other materials stored nearby in other containers, piles, open tanks, or surface impoundments must be separated from the other materials or protected from them by means of a dike, berm, wall, or other device.

(Comment: The purpose of this is to prevent fires, explosions, gaseous emissions, leaching, or other discharge of hazardous waste or hazardous waste constituents which could result from the mixing of incompatible wastes or materials if containers break or leak.)

(10) Tanks

(a) Applicability - The regulations in this paragraph apply to owners and operators of facilities that use tanks to treat or store hazardous waste, except as subparagraph (1)(b) of this Rule provides otherwise.

(b) General Operating Requirements

1. Treatment or storage of hazardous waste in tanks must comply with part (2)(h)2 of this Rule.

2. Hazardous wastes or treatment reagents must not be placed in a tank if they could cause the tank or its inner liner to rupture, leak, corrode, or otherwise fail before the end of its intended life.

3. Uncovered tanks must be operated to ensure at least 60 centimeters (2 feet) of freeboard, unless the tank is equipped with a containment structure (e.g., dike or trench), a drainage control system, or a diversion structure (e.g., standby tank) with a capacity that equals or exceeds the volume of the top 60 centimeters (2 feet) of the tank.

4. Where hazardous waste is continuously fed into a tank, the tank must be equipped with a means to stop this inflow (e.g., a waste feed cutoff system or by-pass system to a stand-by tank).

(Comment: These systems are intended to be used in the event of a leak or overflow from the tank due to a system failure (e.g., a malfunction in the treatment process, a crack in the tank, etc.).

(c) Waste Analysis and Trial Tests - In addition to the waste analysis required by subparagraph (2)(d) of this Rule, whenever a tank is to be used to:

(1) Chemically treat or store a hazardous waste which is substantially different from waste previously treated or stored in that tank; or

(2) Chemically treat hazardous waste with a substantially different process than any previously used in that tank;

the owner or operator must, before treating or storing the different waste or using the different process:

(1) Conduct waste analyses and trial treatment or storage tests (e.g., bench scale or pilot plant scale tests); or

(2) Obtain written, documented information on similar storage or treatment of similar waste under similar operating conditions;

to show that this proposed treatment or storage will meet all applicable requirements of parts (b)1 and 2 of this paragraph.

(Comment: As required by subparagraph (2)(d) of this Rule, the waste analysis plan must include analyses needed to comply with subparagraphs (f) and (g) of this paragraph. As required by subparagraph (5)(d) of this Rule, the owner or operator must place the results from each waste analysis and trial test, or the documented information, in the operating record of the facility.)

(d) Inspections - The owner or operator of a tank must inspect, where present:

1. Discharge control equipment (e.g., waste feed cut-off systems, by-pass systems, and drainage systems), at least once each operating day, to ensure that it is in good working order;

2. Data gathered from monitoring equipment (e.g., pressure and temperature gauges), at least once each operating day, to ensure that the tank is being operated according to its design;

3. The level of waste in the tank, at least once each operating day, to ensure compliance with part (b)3 of this paragraph;

4. The construction materials of the tank, at least weekly, to detect corrosion or leaking of fixtures or seams; and

5. The construction materials of, and the area immediately surrounding, discharge confinement structures (e.g., dikes), at least weekly, to detect erosion or obvious signs of leakage (e.g., wet spots or dead vegetation).

(Comment: As required by part (2)(f)3 of this Rule, the owner or operator must remedy any deterioration or malfunction he finds.)

(e) Closure - At closure, all hazardous waste and hazardous waste residues must be removed from tanks, discharge control equipment, and discharge confinement structures.

(Comment: At closure, as throughout the operating period, unless the owner or operator can demonstrate, in accordance with Rules 1200-1-11-.02(1)(c)3 or 4, that any waste removed from his tank is not a hazardous waste, the owner or operator becomes a generator of hazardous waste and must manage it in accordance with all applicable requirements of this Rule and Rules 1200-1-11-.03 and 1200-1-11-.04.)

(f) Special Requirements For Ignitable or Reactive Waste

1. Ignitable or reactive waste must not be placed in a tank, unless:

(i) The waste is treated, rendered, or mixed before or immediately after placement in the tank so that (1) the resulting waste, mixture, or dissolution of material no longer meets the definition of ignitable or reactive waste under Rule 1200-1-11-.02(3)(b) or (d), and (2) part (2)(h)2 of this Rule is complied with; or

(ii) The waste is stored or treate in such a way that it is protected from any material or conditions which may cause the waste to ignite or react; or

(iii) The tank is used solely for emergencies.

2. The owner or operator of a facility which treats or stores ignitable or reactive waste in covered tanks must comply with the buffer zone requirements for tanks required in Tables 2-1 through 2-6 of the National Fire Protection Association's "Flammable and Combustible Liquids Code" (1977 or 1981), (incorporated by reference, see Rule 1200-1-11-.01(2)(b)).

(Comment: See part (2)(h)1 of this Rule for additional requirements.)

(g) Special Requirements For Incompatible Wastes

1. Incompatible wastes, or incompatible wastes and materials, (see Appendix .05/D for examples) must not be placed in the same tank, unless part (2)(h)2 of this Rule is complied with.

2. Hazardous waste must not be placed in an unwashed tank which previously held an incompatible waste or material, unless part (2)(h)2 of this Rule is complied with.

(11) Surface Impoundments

(a) Applicability - The regulations in this paragraph apply to owners and operators of facilities that use surface impoundments to treat, store, or dispose of hazardous waste, except as subparagraph (1)(b) of this Rule provides otherwise.

(b) Design Requirements

1. The owner or operator of a surface impoundment must install two or more liners and leachate collection system in accordance with part 3 of this subparagraph, with respect to each new unit, replacement of an existing unit, or lateral expansion of an existing unit that is within the area identified in the Part A permit application, and with respect to waste received beginning the effective date of this regulation.

2. The owner or operator of each unit referred to in part 1 of this subparagraph must notify the Commissioner at least sixty days prior to receiving waste. The owner or operator of each facility submitting notice must file a Part B application within six months of the receipt of such notice.

3. Part 1 of this subparagraph will not apply if the owner or operator demonstrates to the Commissioner, and the Commissioner finds for

such surface impoundment, that alternative design and operating practices, together with location characteristics, will prevent the migration of any hazardous constitutent into the ground water or surface water at least as effectively as such liners and leachate collection systems.

4. The double liner requirement set forth in part 1 of this subparagraph may be waived by the Commissioner for any monofill, if:

(i) The monofill contains only hazardous wastes from foundry furnace emission controls or metal casting molding sand, and such wastes do not contain constituents which would render the wastes hazardous for reasons other than the EP toxicity characteristics in Rule 1200-1-11-.02(3)(e); and

(ii) (I) I. The monofill has at least one liner for which there is no evidence that such liner is leaking. For the purposes of this paragraph the term "liner" means a liner designed, constructed, installed, and operated to prevent hazardous waste from passing into the liner at any time during the active life of the facility, or a liner designed, constructed, installed, and operated to prevent hazardous waste from migrating beyond the liner to adjacent subsurface soil, ground water, or surface water at any time during the active life of the facility. In the case of any surface impoundment which has been exempted from the requirements of part 1 of this subparagraph on the basis of a liner designed, constructed, installed, and operated to prevent hazardous waste from passing beyond the liner, at the closure of such impoundment the owner or operator must remove or decontaminate all waste residues, all contaminated liner material, and contaminated soil to the extent practicable. If all contaminated soil is not removed or decontaminated, the owner or operator of such impoundment must comply with appropriate post-closure requirements, including but not limited to groundwater monitoring and corrective action;

II. The monofill is located more than one-quarter mile from an underground source of drinking water (as that term is defined in 40 CFR 144.3; and

III. The monofill is in compliance with generally applicable ground-water monitoring requirements for facilities with permits under Section 68-46-108 of the Act; or

(II) The owner or operator demonstrates that the monofill is located, designed and operated so as to assure that there will be no migration of any hazardous constituent into ground water or surface water at any future time.

5. In the case of any unit in which the liner and leachate collection system has been installed pursuant to the requirements of part 1 of

this subparagraph and which is in good faith compliance with that part and with guidance documents governing liners and leachate collection systems under that part, no liner or leachate collection system which is different from that which was so installed pursuant to part 1 of this subparagraph will be required for such unit by the Commissioner when issuing the first permit to such facility, except that the Commissioner will not be precluded from requiring installation of a new liner when the Commissioner has reason to believe that any liner installed pursuant to the requirements of part 1 of this subparagraph is leaking.

(c) General Operating Requirements

1. A surface impoundment must maintain enough freeboard to prevent any overtopping of the dike by overfilling, wave action, or a storm. Except as provided in part 2 of this subparagraph, there must be at least 60 centimeters (two feet) of freeboard.

2. A freeboard level less than 60 centimeters (two feet) may be maintained if the owner or operator obtains certification by a registered engineer that alternate design features or operating plans will, to the best of his knowledge and opinion, prevent overtopping of the dike. The certification, along with a written identification of alternate design features or operating plans preventing overtopping, must be maintained at the facility.

(d) Containment System - All earthen dikes must have a protective cover, such as grass, shale, or rock, to minimize wind and water erosion and to preserve their structural integrity.

(e) Waste Analysis and Trial Tests - In addition to the waste analyses required by subparagraph (2)(d) of this Rule, whenever a surface impoundment is to be used to:

(1) Chemically treat a hazardous waste which is substantially different from waste previously treated in that impoundment; or

(2) Chemically treat hazardous waste with a substantially different process than any previously used in that impoundment;

the owner or operator must, before treating the different waste or using the different process:

(1) Conduct waste analyses and trial treatment tests (e.g., bench scale or pilot plant scale tests); or

(2) Obtain written, documented information on similar treatment of similar waste under similar operating conditions;

to show that this treatment will comply with part (2)(h)2 of this Rule.

(Comment: As required by subparagraph (2)(d) of this Rule, the waste analysis plan must include analyses needed to comply with subparagraphs (g) and (h) of this paragraph. As required by subparagraph (5)(d) of this

Rule, the owner or operator must place the results from each waste analysis and trial test, or the documented information, in the operating record of the facility.)

(f) Inspections - The owner or operator must inspect:

1. The freeboard level at least once each operating day to ensure compliance with subparagraph (b) of this paragraph, and

2. The surface impoundment, including dikes and vegetation surrounding the dike, at least once a week to detect any leaks, deterioration, or failures in the impoundment.

   (Comment: As required by part (2)(f)3 of this Rule, the owner or operator must remedy any deterioration or malfunction he finds.)

(g) Closure and Post-closure

1. At closure, the owner or operator may elect to remove from the impoundment:

   (i) Standing liquids;

   (ii) Waste and waste residues;

   (iii) The liner, if any; and

   (iv) Underlying and surrounding contaminated soil.

2. If the owner or operator removes all the impoundment materials in part 1 of this subparagraph, or can demonstrate under Rule 1200-1-11-.02(1)(c)3 or 4 that none of the materials listed in part 1 of this subparagraph remaining at any stage of removal are hazardous wastes, the impoundment is not further subject to the requirements of this Rule.

   (Comment: At closure, as throughout the operating period, unless the owner or operator can demonstrate, in accordance with Rule 1200-1-11-.02(1)(c)3 or 4, that any waste removed from the surface impoundment is not a hazardous waste, he becomes a generator of hazardous waste and must manage it in accordance with all applicable requirements of this Rule and Rules 1200-1-11-.03 and 1200-1-11-.04.

3. If the owner or operator does not remove all the impoundment materials in part 1 of this subparagraph, or does not make the demonstration in part 2 of this subparagraph, he must close the impoundment and provide post-closure care as for a landfill under paragraph (7) and subparagraph (14)(d) of this Rule. If necessary to support the final cover specified in the approved closure plan, the owner or operator must treat remaining liquids, residues, and soils by removal of liquids, drying, or other means.

(Comment: The closure requirements under subparagraph (14)(d) of this Rule will vary with the amount and nature of the residue remaining, if any, and the degree of contamination of the underlying and surrounding soil. Part (7)(g)4 of this Rule allows the Commissioner to vary post-closure care requirements.)

(h) Special Requirements For Ignitable or Reactive Waste - Ignitable or reactive waste must not be placed in a surface impoundment, unless:

1. The waste is treated, rendered, or mixed before or immediately after placement in the impoundment so that:

   (i) The resulting waste, mixture, or dissolution of material no longer meets the definition of ignitable or reactive waste under Rule 1200-1-11-.02(3)(b) or (d); and

   (ii) Part (2)(h)2 of this Rule is complied with; or

2. (i) The waste is managed in such a way that it is protected from any material or conditions which may cause it to ignite or react; and

   (ii) The owner or operator obtains a certification from a qualified chemist or registered engineer that, to the best of his knowledge and opinion, the design features or operating plans of the facility will prevent ignition or reaction; and

   (iii) The certification and the basis for it are maintained at the facility; or

3. The surface impoundment is used solely for emergencies.

(i) Special Requirements For Incompatible Wastes - Incompatible wastes, or incompatible wastes and materials, (see Appendix .05/D for examples) must not be placed in the same surface impoundment, unless part (2)(h)2 of this Rule is complied with.

(12) Waste Piles

(a) Applicability - The regulations in this paragraph apply to owners and operators of facilities that treat or store hazardous waste in piles, except as subparagraph (1)(b) of this Rule provides otherwise. Alternatively, a pile of hazardous waste may be managed as a landfill under paragraph (14) of this Rule.

(b) Protection From Wind - The owner or operator of a pile containing hazardous waste which could be subject to dispersal by wind must cover or otherwise manage the pile so that wind dispersal is controlled.

(c) Waste Analysis - In addition to the waste analyses required by subparagraph (2)(d) of this Rule, the owner or operator must analyze a representative sample of waste from each incoming movement before adding the waste to any existing pile, unless (1) the only wastes the facility receives which are amenable to piling are compatible with each other, or (2) the waste received is compatible with the waste in the pile to

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which it is to be added. The analysis conducted must be capable of differentiating between the types of hazardous waste the owner or operator places in piles, so that mixing of incompatible waste does not inadvertently occur. The analysis must include a visual comparison of color and texture.

(Comment: As required by subparagraph (2)(d) of this Rule, the waste analysis plan must include analyses needed to comply with subparagraphs (e) and (f) of this paragraph. As required by subparagraph (5)(d) of this Rule, the owner or operator must place the results of this analysis in the operating record of the facility.)

(d) Containment - If leachate or run-off from a pile is hazardous waste, then either:

1. (i) The pile must be placed on an impermeable base that is compatible with the waste under the conditions of treatment or storage;

   (ii) The owner or operator must design, construct, operate, and maintain a run-on control system capable of preventing flow onto the active portion of the pile during peak discharge from at least a 25-year storm;

   (iii) The owner or operator must design, construct, operate, and maintain a run-off management system to collect and control at least the water volume resulting from a 24-hour, 25-year storm; and

   (iv) Collection and holding facilities (e.g., tanks or basins) associated with run-on and run-off control systems must be emptied or otherwise managed expeditiously to maintain design capacity of the system; or

2. (i) The pile must be protected from precipitation and run-on by some other means; and

   (ii) No liquids or wastes containing free liquids may be placed in the pile.

   (Comment: If collected leachate or run-off is discharged through a point source to waters of the state, it may also be subject to the requirements of the Tennessee Water Quality Control Act, as amended (TCA 69-3-101 et seq.).

(e) Design Requirements - The owner or operator of a waste pile is subject to the requirements for liners and leachate collection systems or equivalent protection provided in Rule 1200-1-11-.06(12)(b), with respect to each new unit, replacement of an existing unit, or lateral expansion of an existing unit that is within the area identified in the Part A permit application, and with respect to waste received beginning the effective date of this regulation.

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(f) Special Requirements For Ignitable or Reactive Waste - Ignitable or reactive waste must not be placed in a pile, unless:

1. Addition of the waste to an existing pile (1) results in the waste or mixture no longer meeting the definition of ignitable or reactive waste under Rule 1200-1-11-.02(3)(b) or (d), and (2) complies with part (2)(h)2 of this Rule; or

2. The waste is managed in such a way that it is protected from any material or conditions which may cause it to ignite or react.

(g) Special Requirements For Incompatible Wastes

1. Incompatible wastes, or incompatible wastes and materials, (see Appendix .05/D for examples) must not be placed in the same pile, unless part (2)(h)2 of this Rule is complied with.

2. A pile of hazardous waste that is incompatible with any waste or other material stored nearby in other containers, piles, open tanks, or surface impoundments must be separated from the other materials, or protected from them by means of a dike, berm, wall, or other device.

   (Comment: The purpose of this is to prevent fires, explosions, gaseous emissions, leaching, or other discharge of hazardous waste or hazardous waste constituents which could result from the contact or mixing of incompatible wastes or materials.)

3. Hazardous waste must not be piled on the same area where incompatible wastes or materials were previously piled, unless the area has been decontaminated sufficiently to ensure compliance with part (2)(h)2 of this Rule.

(h) Closure and Post-closure Care

1. At closure, the owner or operator must remove or decontaminate all waste residues, contaminated containment system components (liner, etc.), contaminated subsoils, and structures and equipment contaminated with waste and leachate, and manage them as hazardous waste unless Rule 1200-1-11-.02(1)(c)4 applies; or

2. If, after removing or decontaminating all residues and making all reasonable efforts to effect removal or decontamination of contaminated components, subsoils, structures, and equipment as required in part 1 of this subparagraph, the owner or operator finds that not all contaminated subsoils can be practicably removed or decontaminated, he must close the facility and perform post-closure care in accordance with the closure and post-closure requirements that apply to landfills (subparagraph (14)(d) of this Rule).

(13) Land Treatment

(a) Applicability - The regulations in this paragraph apply to owners and operators of hazardous waste land treatment facilities, except as subparagraph (1)(b) of this Rule provides otherwise.

(b) General Operating Requirements

1. Hazardous waste must not be placed in or on a land treatment facility unless the waste can be made less hazardous or non-hazardous by degradation, transformation, or immobilization processes occurring in or on the soil.

2. The owner or operator must design, construct, operate, and maintain a run-on control system capable of preventing flow onto the active portions of the facility during peak discharge from at least a 25-year storm.

3. The owner or operator must design, construct, operate, and maintain a run-off management system capable of collecting and controlling a water volume at least equivalent to a 24-hour, 25-year storm.

4. Collection and holding facilities (e.g., tanks or basins) associated with run-on and run-off control systems must be emptied or otherwise managed expeditiously after storms to maintain design capacity of the system.

5. If the treatment zone contains particulate matter which may be subject to wind dispersal, the owner or operator must manage the unit to control wind dispersal.

(c) Waste Analysis - In addition to the waste analyses required by subparagraph (2)(d) of this Rule, before placing a hazardous waste in or on a land treatment facility, the owner or operator must:

1. Determine the concentrations in the waste of any substances which exceed the maximum concentrations contained in Table I of Rule 1200-1-11-.02(3)(e) that cause a waste to exhibit the EP toxicity characteristic;

2. For any waste listed in Rule 1200-1-11-.02(4) determine the concentrations of any substances which caused the waste to be listed as a hazardous waste; and

3. If food chain crops are grown, determine the concentrations in the waste of each of the following constituents: arsenic, cadmium, lead, and mercury, unless the owner or operator has written, documented data that show that the constituent is not present.

(Comment: Rule 1200-1-11-.02 specifies the substances for which a waste is listed as a hazardous waste. As required by subparagraph (2)(d) of this Rule, the waste analysis plan must include analyses needed to comply with subparagraphs (h) and (i) of this paragraph. As required by subparagraph (5)(d) of this Rule, the owner or operator

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must place the results from each waste analysis, or the documented information, in the operating record of the facility.)

(d) Food Chain Crops

1. An owner or operator of a hazardous waste land treatment facility on which food chain crops are being grown, or have been grown and will be grown in the future, must notify the Commissioner within 60 days after the effective date of this Rule.

(Comment: The growth of food chain crops at a facility which has never before been used for this purpose is significant change in process under Rule 1200-1-11-.07(3)(c)3. Owners or operators of such land treatment facilities who propose to grow food chain crops after the effective date of this Rule must comply with Rule 1200-1-11-.07(3)(c)3.)

2. (i) Food chain crops must not be grown on the treated area of a hazardous waste land treatment facility unless the owner or operator can demonstrate, based on field testing, that any arsenic, lead, mercury, or other constituents identified under part (c)2 of this paragraph:

(I) Will not be transferred to the food portion of the crop by plant uptake or direct contact, and will not otherwise be ingested by food chain animals (e.g., by grazing); or

(II) Will not occur in greater concentrations in the crops grown on the land treatment facility than in the same crops grown on untreated soils under similar conditions in the same region.

(ii) The information necessary to make the demonstration required by subpart (i) of this part must be kept at the facility and must, at a minimum:

(I) Be based on tests for the specific waste and application rates being used at the facility; and

(II) Include descriptions of crop and soil characteristics, sample selection criteria, sample size determination, analytical methods, and statistical procedures.

3. Food chain crops must not be grown on a land treatment facility receiving waste that contains cadmium unless all requirements of items (i)(I) through (III) of this part or all requirements of items (ii)(I) through (IV) of this part are met.

(i) (I) The pH of the waste and soil mixture is 6.5 or greater at the time of each waste application, except for waste containing cadmium at concentrations of 2 mg/kg (dry weight) or less;

(II) The annual application of cadmium from waste does not exceed 0.5 kilograms per hectare (kg/ha) on land used for

production of tobacco, leafy vegetables, or root crops grown for human consumption. For other food chain crops, the annual cadmium application rate does not exceed:

Time Period	Annual Application Rate (kg/ha)
Present to June 30, 1984	2.0
July 1, 1984 to December 31, 1986	1.25
Beginning January 1, 1987	0.5

(III) The cumulative application of cadmium from waste does not exceed the levels of in either subitem I or II below:

I.

Soil cation exchange capacity (meq/100g)	Maximum cumulative application (kg/ha) Background soil pH less than 6.5	Background soil pH greater than 6.5
less than 5	5	5
5-15	5	10
greater than 15	5	20

II. For soils with a background pH of less than 6.5, the cumulative cadmium application rate does not exceed the levels below: Provided, that the pH of the waste and soil mixture is adjusted to and maintained at 6.5 greater whenever food chain crops are grown.

Soil cation exchange capacity (meq/100g)	Maximum cumulative application (kg/ha)
less than 5	5
5-15	10
greater than 15	20

(ii) (I) The only food chain crop produced is animal feed.

(II) The pH of the waste and soil mixture is 6.5 greater at the time of waste application or at the time the crop is planted, whichever occurs later, and this pH level is maintained whiever food chain crops are grown.

(III) There is a facility operating plan which demonstrates how the animal feed will be distributed to preclude ingestion by humans. The facility operating plan describes the measures to be taken to safeguard against possible health hazards from cadmium entering the food chain, which may result from alternative land uses.

(IV) Future property owners are notified by a stipulation in the land record or property deed which states that the property has received waste at high cadmium application rates and that food chain crops must not be grown except in compliance with subpart 3(ii) of this subparagraph.

(Comment: As required by subparagraph (5)(d) of this Rule, if an owner or operator grows food chain crops on his land treatment facility, he must place the information developed in this subparagraph in the operating record of the facility.)

(e) Unsaturated Zone (Zone of Aeration) Monitoring

1. The owner or operator must have in writing, and must implement, an unsaturated zone monitoring plan which is designed to:

(i) Detect the vertical migration of hazardous waste and hazardous waste constituents under the active portion of the land treatment facility; and

(ii) Provide information on the background concentrations of the hazardous waste and hazardous waste constituents in similar but untreated soils nearby; this background monitoring must be conducted before or in conjunction with the monitoring required under subpart (i) of this part.

2. The unsaturated zone monitoring plan must include, at a minimum:

(i) Soil monitoring using soil cores; and

(ii) Soil-pore water monitoring using devices such as lysimeters.

3. To comply with subpart 1(i) of this subparagraph, the owner or operator must demonstrate in his unsaturated zone monitoring plan that:

(i) The depth at which soil and soil-pore water samples are to be taken is below the depth to which the waste is incorporated into the soil;

(ii) The number of soil and soil-pore water samples to be taken is based on the variability of:

(I) The hazardous waste constituents (as identified in part (c)1 and 2 of this paragraph) in the waste and in the soil; and

(II) The soil type(s); and

(iii) The frequency and timing of soil and soil-pore water sampling is based on the frequency, time, and rate of waste application, proximity to ground water, and soil permeability.

4. The owner or operator must keep at the facility his unsaturated zone monitoring plan, and the rationale used in developing this plan.

5. The owner or operator must analyze the soil and soil-pore water samples for the hazardous waste constituents that were found in the waste during the waste analysis under parts (c)1 and 2 of this paragraph.

(Comment: As required by subparagraph (5)(d) of this Rule, all data and information developed by the owner or operator under this subparagraph must be placed in the operating record of the facility.)

(f) Recordkeeping - The owner or operator of a land treatment facility must include hazardous waste application dates and rates in the operating record required under subparagraph (5)(d) of this Rule.

(g) Closure and Post-closure

1. In the closure plan under subparagraph (7)(c) of this Rule and the post-closure plan under subparagraph (7)(h) of this Rule, the owner or operator must address the following objectives and indicate how they will be achieved:

(i) Control of the migration of hazardous waste and hazardous waste constituents from the treated area into the ground water;

(ii) Control of the release of contaminated run-off from the facility into surface water;

(iii) Control of the release of airborne particulate contaminants caused by wind erosion; and

(iv) Compliance with subparagraph (d) of this paragraph concerning the growth of food-chain crops.

2. The owner or operator must consider at least the following factors in addressing the closure and post-closure care obejectives of part 1 of this subparagraph:

(i) Type and amount of hazardous waste and hazardous waste constituents applied to the land treatment facility;

(ii) The mobility and the expected rate of migration of the hazardous waste and hazardous waste constituents;

(iii) Site location, topography, and surrounding land use, with respect to the potential effects of pollutant migration (e.g., proximity to ground water, surface water and drinking water sources);

(iv) Climate, including amount, frequency, and pH of precipitation;

(v) Geological and soil profiles and surface and subsurface hydrology of the site, and soil characterisitcs, including cation exchange capacity, total organic carbon, and pH;

(vi) Unsaturated zone monitoring information obtained under subparagraph (e) of this paragraph; and

(vii) Type, concentration, and depth of migration of hazardous waste constituents in the soil as compared to their background concentrations.

3. The owner or operator must consider at least the following methods in addressing the closure and post-closure care objectives of part 1 of this subparagraph:

(i) Removal of contaminated soils;

(ii) Placement of a final cover, considering:

(I) Functions of the cover (e.g., infiltration control, erosion and run-off control, and wind erosion control); and

(II) Characteristics of the covers, including material, final surface contours, thickness, porosity and permeability, slope, length of run of slope, and type of vegetation on the cover; and

(iii) Monitoring of ground water.

4. In addition to the requirements of paragraph (7) of this Rule, during the closure period the owner or operator of a land treatment facility must:

(i) Continue unsaturated zone monitoring in a manner and frequency specified in the closure plan, except that soil pore liquid monitoring may be terminated 90 days after the last application of waste to the treatment zone;

(ii) Maintain the run-on control system required under part (b)2 of this paragraph;

(iii) Maintain the run-off management system required under part (b)3 of this paragraph; and

(iv) Control wind dispersal of particulate matter which may be subject to wind dispersal.

5. For the purpose of complying with subparagraph (7)(f) of this Rule, when closure is completed the owner or operator may submit to the Commissioner certification both by the owner or operator and by an independent qualified soil scientist, in lieu of an independent registered professional engineer, that the facility has been closed in accordance with the specifications in the approved closure plan.

6. In addition to the requirements of subparagraph (7)(g) of this Rule, during the post-closure care period the owner or operator of a land treatment unit must:

(i) Continue soil-core monitoring by collecting and analyzing samples in a manner and frequency specified in the post-closure plan;

(ii) Restrict access to the unit as appropriate for its post-closure use;

(iii) Assure that growth of food chain crops complies with subparagraph (d) of this paragraph; and

(iv) Control wind dispersal of hazardous waste.

(h) Special Requirements For Ignitable or Reactive Waste - Ignitable or reactive waste must not be land treated unless:

1. The waste is immediately incorporated into the soil so that:

(i) The resulting waste, mixture, or dissolution of material no longer meets the definition of ignitable or reactive waste under Rule 1200-1-11-.02(3)(b) or (d); and

(ii) Part (2)(h)2 of this Rule is complied with; or

2. The waste is managed in such a way that it is protected from any material or conditions which may cause it to ignite or react.

(i) Special Requirements For Incompatible Wastes - Incompatible wastes, or incompatible wastes and materials, (see Appendix .05/D for examples) must not be placed in the same land treatment area, unless part (2)(h)2 of this Rule is complied with.

(14) Landfills

(a) Applicability - The regulations in this paragraph apply to owners and operators of facilities that dispose of hazardous waste in landfills, excpet as subparagraph (1)(b) of this Rule provides otherwise. A waste pile used as a disposal facility is a landfill and is governed by this paragraph.

(b) Design Requirements

1. The owner or operator of a landfill must install two or more liners and leachate collection systems above and between such liners in accordance with part 3 of this subparagraph, with respect to each new unit, replacement of an existing unit, or lateral expansion of an existing unit that is within the area identified in the Part A permit application, and with respect to waste received beginning the effective date of this regulation.

2. The owner or operator of each unit referred to in part 1 of this subparagraph must notify the Commissioner at least sixty days prior to receiving waste. The owner or operator of each facility submitting notice must file a Part B application within six months of the receipt of such notice.

3. Part 1 of this subparagraph will not apply if the owner or operator demonstrates to the Commissioner, and the Commissioner finds for such landfill, that alternative design and operating practices, together with location characteristics, will prevent the migration of any hazardous constitutent into the ground water or surface water at least as effectively as such liners and leachate collection systems.

4. The double liner requirement set forth in part 1 of this subparagraph may be waived by the Commissioner for any monofill, if:

   (i) The monofill contains only hazardous wastes from foundry furnace emission controls or metal casting molding sand, and such wastes do not contain constituents which would render the wastes hazardous for reasons other than the EP toxicity characteristics in Rule 1200-1-11-.02(3)(e); and

   (ii) (I) I. The monofill has at least one liner for which there is no evidence that such liner is leaking;

   II. The monofill is located more than one-quarter mile from an underground source of drinking water (as that term is defined in 40 CFR 144.3); and

   III. The monofill is in compliance with generally applicable ground-water monitoring requirements for facilities with permits under Section 68-46-108 of the Act; or

   (II) The owner or operator demonstrates that the monofill is located, designed and operated so as to assure that there will be no migration of any hazardous constituent into ground water or surface water at any future time.

5. In the case of any unit in which the liner and leachate collection system has been installed pursuant to the requirements of part 1 of this subparagraph and in good faith compliance with that part and with guidance documents governing liners and leachate collection systems under that part, no liner or leachate collection system which is different from that which was so installed pursuant to part 1 of

this subparagraph will be required for such unit by the Commissioner when issuing the first permit to such facility, except that the Commissioner will not be precluded from requiring installation of a new liner when the Commissioner has reason to believe that any liner installed pursuant to the requirements of part 1 of this subparagraph is leaking.

(c) General Operating Requirements

1. The owner or operator must design, construct, operate, and maintain a run-on control system capable of preventing flow onto the active portion of the landfill during peak discharge from at least a 25-year storm.

2. The owner or operator must design, construct, operate and maintain a run-off management system to collect and control at least the water volume resulting from a 24-hour, 25-year storm.

3. Collection and holding facilities (e.g., tanks or basins) associated with run-on and run-off control systems must be emptied or otherwise managed expeditiously after storms to maintain design capacity of the system.

4. The owner or operator of a landfill containing hazardous waste which is subject to dispersal by wind must cover or otherwise manage the landfill so that wind dispersal of the hazardous waste is controlled.

(Comment: As required by subparagraph (2)(d) of this Rule, the waste analysis plan must include analyses needed to comply with subparagraphs (f), (g), and (h) of this paragraph. As required by subparagraph (5)(d) of this Rule, the owner or operator must place the results of these analyses in the operating record of the facility.)

(d) Surveying and Recordkeeping - The owner or operator of a landfill must maintain the following items in the operating record required in subparagraph (5)(d) of this Rule:

1. On a map, the exact location and dimensions, including depth, of each cell with respect to permanently surveyed benchmarks; and

2. The contents of each cell and the approximate location of each hazardous waste type within each cell.

(e) Closure and Post-Closure

1. At final closure of the landfill or upon closure of any cell, the owner or operator must cover the landfill or cell with a final cover designed and constructed to:

(i) Provide long-term minimization of migration of liquids through the closed landfill;

(ii) Function with minimum maintenance;

(iii) Promote drainage and minimize erosion or abrasion of the cover;

(iv) Accommodate settling and subsidence so that the cover's integrity is maintained; and

(v) Have a permeability less than or equal to the permeability of any bottom liner system or natural subsoils present.

2. After final closure, the owner or operator must comply with all post-closure requirements contained in subparagraphs (7)(g) through (j) of this Rule including maintenance and monitoring throughout the post-closure care period. The owner or operator must:

(i) Maintain the integrity and effectiveness of the final cover, including making repairs to the cover as necessary to correct the effects of settling, subsidence, erosion, or other events;

(ii) Maintain and monitor the groundwater monitoring sysem and comply with all other applicable requirements of paragraph (6) of this Rule;

(iii) Prevent run-on and run-off from eroding or otherwise damaging the final cover; and

(iv) Protect and maintain surveyed benchmarks used in complying with subparagraph (d) of this rule.

(f) Special Requirements for Ignitable or Reactive Waste

1. Except as provided in part 2 of this subparagraph and in subparagraph (i) of this paragraph, ignitable or reactive waste must not be placed in a landfill unless the waste is treated, rendered, or mixed before or immediately after placement in a landfill so that:

(i) The resulting waste, mixture, or dissolution of material no longer meets the definition of ignitable or reactive waste under Rule 1200-1-11-.02(3)(b) or (d); and

(ii) Part (2)(h)2 of this Rule is complied with.

2. Ignitable wastes in containers may be landfilled without meeting the requirements of part 1 of this paragraph provided that the wastes are disposed in such a way that they are protected from any material or conditions which may cause them to ignite. At a minimum, ignitable wastes must be disposed in non-leaking containers which are carefully handled and placed so as to avoid heat, sparks, rupture, or any other condition that might cause ignition of the wastes; must be covered daily with soil or other non-combustible material to minimize the potential for ignition of the wastes; and must not be disposed in cells that contain or will contain other wastes which may generate heat sufficient to cause ignition of the waste.

(g) Special Requirements for Incompatible Wastes - Incompatible wastes, or incompatible wastes and materials, (see Appendix .05/D for examples) must not be placed in the same landfill cell, unless part (2)(h)2 of this Rule is complied with.

(h) Special Requirement for Bulk and Containerized Liquids

1. After the effective date of this regulation, the placement of bulk or non-containerized liquid hazardous waste or hazardous waste containing free liquids (whether or not absorbents have been added) in any landfill is prohibited.

2. Containers holding free liquids must not be placed in a landfill unless:

   (i) All free-standing liquid has been:

      (I) Removed by decanting or other methods;

      (II) Mixed with absorbent or solidified so that free-standing liquid is no longer observed; or

      (III) Otherwise eliminated; or

   (ii) The container is very small, such as an ampule; or

   (iii) The container is designed to hold free liquids for use other than storage, such as a battery or capacitor; or

   (iv) The container is a lab pack as defined in subparagraph (j) of this paragraph and is disposed of in accordance with subparagraph (j).

3. After the effective date of this regulation, the placement of any liquid which is not a hazardous waste in a landfill is prohibited unless the owner or operator of such landfill demonstrates to the Commissioner, or the Commissioner determines, that:

   (i) The only reasonably available alternative to the placement in such landfill is placement in a landfill or unlined surface impoundment, whether or not permitted or operating under interim status, which contains, or may reasonably be anticipated to contain, hazardous waste; and

   (ii) Placement in such owner or operator's landfill will not present a risk of contamination of any underground source of drinking water (as that term is defined in 40 CFR 144.3).

4. To demonstrate the absence or presence of free liquids in either a containerized or bulk waste, the following test must be used: Method 9095 (Paint Filter Liquids Test) as described in "Test Methods for Evaluting Solid Wastes, Physical/Chemical Methods". (EPA Publication No. SW-846, incorporated by reference, see Rule 1200-1-11-.01(2)(b)).

(i) Special Requirements for Containers - Unless they are very small, such as an ampule, containers must be either:

1. At least 90 percent full when placed in the landfill; or

2. Crushed, shredded, or similarily reduced in volume to the maximum practical extent before burial in the landfill.

(j) Disposal of Small Containers of Hazardous Waste in Overpacked Drums (Lab Packs) - Small containers of hazardous waste in overpacked drums (lab packs) may be placed in a landfill if the following requirements are met:

1. Hazardous waste must be packaged in non-leaking inside containers. The inside containers must be of a design and constructed of a material that will not react dangerously with, be decomposed by, or be ignited by the waste held therein. Inside containers must be tightly and securely sealed. The inside containers must be of the size and type specified in the Department of Transportation (DOT) hazardous materials regulations (49 CFR Parts 173, 178 and 179), if those regulations specify a particular inside container for the waste.

2. The inside containers must be overpacked in an open head DOT-specification metal shipping container (49 CFR Parts 178 and 179) of no more than 416-liter (110 gallon) capacity and surrounded by, at a minimum, a sufficient quantity of absorbent material to completely absorb all of the liquid contents of the inside containers. The metal outer container must be full after packing with inside containers and absorbent material.

3. The absorbent material used must not be capable of reacting dangerously with, being decomposed by, or being ignited by the contents of the inside containers, in accordance with part (2)(h) 2 of this Rule.

4. Incompatible wastes, as defined in Rule 1200-1-11-.01(2)(a), must not be placed in the same outside container.

5. Reactive waste, other than cyanide or sulfide-bearing waste as defined in Rule 1200-1-11-.02(3)(d)1(v), must be treated or rendered non-reactive prior to packaging in accordance with parts 1 through 4 of this subparagraph. Cyanide and sulfide-bearing reactive waste may be packaged in accordance with parts 1 through 4 of this subparagraph without first being treated or rendered non-reactive.

(15) Incinerators

(a) Applicability

1. The regulations in this paragraph apply to owners or operators of facilities that incinerate hazardous waste, except as paragraph (1) of this Rule and part 2 of this subparagraph provide otherwise. The following facility owners or operators are considered to incinerate hazardous waste:

(i) Owners or operators of hazardous waste incinerators (as defined in Rule 1200-1-11-.01(2)(a)); and

(ii) Owners or operators who burn hazardous wastes in boilers or in industrial furnaces in order to destroy the wastes.

2. Owners and operators of incinerators burning hazardous waste are exempt from all of the requirements of this paragraph, except subparagraph (e) (Closure), provided that the owner or operator has documented, in writing, that the waste would not reasonably be expected to contain any of the hazardous constituents listed in Rule 1200-1-11-.02 Appendix .02/E, and such documentation is retained at the facility, if the waste to be burned is:

(i) Listed as a hazardous waste in Rule 1200-1-11-.02(4) solely because it is ignitable (Hazard Code I), corrosive (Hazard Code C), or both; or

(ii) Listed as a hazardous waste in Rule 1200-1-11-.02(4) solely because it is reactive (Hazard Code R) for characteristics other than those listed in Rule 1200-1-11-.02 (3)(d)1(iv) and (v), and will not be burned when other hazardous wastes are present in the combustion zone; or

(iii) A hazardous waste solely because it possesses the characteristic of ignitability, corrosivity, or both, as determined by the tests for characteristics of hazardous waste under Rule 1200-1-11-.02 (3); or

(iv) A hazardous waste solely because it possesses the reactivity characteristics described by Rule 1200-1-11-.02 (3)(d)1(i),(ii),(iii),(vi),(vii), or (viii), and will not be burned when other hazardous wastes are present in the combustion zone.

(b) Waste Analysis - In addition to the waste analyses required by subparagraph (2) (d) of this Rule, the owner or operator must sufficiently analyze any waste which he has not previously burned in his incinerator to enable him to establish steady state (normal) operating conditions (including waste and auxiliary fuel feed and air flow) and to determine the type of pollutants which might be emitted. At a minimum, the analysis must determine:

1. Heating value of the waste;

2. Halogen content and sulfur content in the waste; and

3. Concentrations in the waste of lead and mercury, unless the owner or operator has written, documented data that show that the element is not present.

(Comment: As required by subparagraph (5)(d) of this Rule, the owner or operator must place the results from each waste analysis, or the documented information, in the operating record of the facility.)

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(c) General Operating Requirements - During start-up and shut-down of an incinerator, the owner or operator must not feed hazardous waste unless the incinerator is at steady state (normal) conditions of operation, including steady state operating temperature and air flow.

(d) Monitoring and Inspections - The owner or operator must conduct, at a minimum, the following monitoring and inspections when incinerating hazardous waste:

1. Existing instruments which relate to combustion and emission control must be monitored at least every 15 minutes. Appropriate corrections to maintain steady state combustion conditions must be made immediately either automatically or by the operator. Instruments which relate to combustion and emission control would normally include those measuring waste feed, auxiliary fuel feed, air flow, incinerator temperature, scrubber flow, scrubber pH, and relevant level controls.

2. The complete incinerator and associated equipment (pumps, valves, conveyors, pipes, etc.) must be inspected at least daily for leaks, spills, and fugitive emissions, and all emergency shutdown controls and system alarms must be checked to assure proper operation.

(e) Closure - At closure, the owner or operator must remove all hazardous waste and hazardous waste residues (including but not limited to ash, scrubber waters, and scrubber sludges) from the incinerator.

(Comment: At closure, as throughout the operating period, unless the owner or operator can demonstrate, in accordance with Rule 1200-1-11-.02(1)(c)3, that the residue removed from his incinerator is not a hazardous waste, the owner or operator becomes a generator of hazardous waste and must manage it in accordance with all applicable requirements of these Rules.)

(16) Thermal Treatment

(a) Applicability - The regulations in this paragraph apply to owners and operators of facilities that thermally treat hazardous waste in devices other than enclosed devices using controlled flame combustion, except as paragraph (1) of this Rule provides otherwise. Thermal treatment in enclosed devices using controlled flame combustion is subject to the requirements of paragraph (15) of this Rule if the unit is an incinerator.

(b) General Operating Requirements - Before adding hazardous waste, the owner or operator must bring his thermal treatment process to steady state (normal) conditions of operation--including steady state operating temperature--using auxiliary fuel or other means, unless the process is a non-continuous (batch) thermal treatment process which requires a complete thermal cycle to treat a discrete quantity of hazardous waste.

(c) Waste Analysis - In addition to the waste analyses required by subparagraph (2)(d) of this Rule, the owner or operator must sufficiently analyze any waste which he has not previously treated in his thermal treatment process to enable him to establish steady state (normal) or

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other appropriate (for a non-continuous process) operating conditions (including waste and auxiliary fuel feed) and to determine the type of pollutants which might be emitted. At a minimum, the analysis must determine:

1. Heating value of the waste;

2. Halogen content and sulfur content in the waste; and

3. Concentrations in the waste of lead and mercury, unless the owner or operator has written, documented data that show that the element is not present.

   (Comment: As required by subparagraph (5)(d) of this Rule, the owner or operator must place the results from each waste analysis, or the documented information, in the operating record of the facility.)

(d) Monitoring and Inspections - The owner or operator must conduct, as a minimum, the following monitoring and inspections when thermally treating hazardous waste:

1. Existing instruments which relate to temperature and emission control (if an emission control device is present) must be monitored at least every 15 minutes. Appropriate corrections to maintain steady state or other appropriate thermal treatment conditions must be made immediately either automatically or by the operator. Instruments which relate to temperature and emission control would normally include those measuring waste feed, auxiliary fuel feed, treatment process temperature, and relevant process flow and level controls.

2. The stack plume (emissions), where present, must be observed visually at least hourly for normal appearance (color and opacity). The operator must immediately make any indicated operating corrections necessary to return any visible emissions to their normal appearance.

3. The complete thermal treatment process and associated equipment (pumps, valves, conveyors, pipes, etc.) must be inspected at least daily for leaks, spills, and fugitive emissions, and all emergency shutdown controls and system alarms must be checked to assure proper operation.

(e) Closure - At closure, the owner or operator must remove all hazardous waste and hazardous waste residues (including, but not limited to, ash) from the thermal treatment process or equipment.

(Comment: At closure, as throughout the operating period, unless the owner or operator can demonstrate, in accordance with Rule 1200-1-11-.02(1)(c)3 or 4, that any waste removed from his thermal treatment process or equipment is not a hazardous waste, the owner or operator becomes a generator of hazardous waste and must manage it in accordance with all applicable requirements of this Rule and Rules 1200-1-11-.03 and 1200-1-11-.04)

(f) Open Burning; Waste Explosives - Open burning of hazardous waste is prohibited except for the open burning and detonation of waste explosives. Waste explosives include waste which has the potential to detonate and bulk military propellants which cannot safely be disposed of through other modes of treatment. Detonation is an explosion in which chemical transformation passes through the material faster than the sound (0.33 kilometers/second at sea level). Owners or operators choosing to open burn or detonate waste explosives must do so in accordance with the following table and in a manner that does not threaten public health or the environment.

Pounds of waste Explosives or Propellants			Minimum Distance from Open Burning or Detonation to the Property of Others	
0	-	100	203 meters	(670 feet)
101	-	1,000	380 meters	(1,250 feet)
1,001	-	10,000	530 meters	(1,730 feet)
10,001	-	30,000	690 meters	(2,260 feet)

(17) Chemical, Physical, and Biological Treatment

(a) Applicability - The regulations in this paragraph apply to owners and operators of facilities which treat hazardous wastes by chemical, physical, or biological methods in other than tanks, surface impoundments, and land treatment facilities, except as subparagraph (1)(b) of this Rule provides otherwise. Chemical, physical, and biological treatment of hazardous waste in tanks, surface impoundments, and land treatment facilities must be conducted in accordance with paragraphs (10), (11), and (13), respectively.

(b) General Operating Requirements

1. Chemical, physical, or biological treatment of hazardous waste must comply with part (2)(h)2 of this Rule.

2. Hazardous wastes or treatment reagents must not be placed in the treatment process or equipment if they could cause the treatment process or equipment to rupture, leak, corrode, or otherwise fail before the end of its intended life.

3. Where hazardous waste is continuously fed into a treatment process or equipment, the process or equipment must be equipped with a means to stop this inflow (e.g., a waste feed cut-off system or by-pass system to a standby containment device).

(Comment: These systems are intended to be used in the event of a malfunction in the treatment process or equipment.)

(c) Waste Analysis and Trial Tests - In addition to the waste analysis required by subparagraph (2)(d) of this Rule, whenever:

(1) A hazardous waste which is substantially different from waste previously treated in a treatment process or equipment at the facility is to be treated in that process or equipment; or

(2) A substantially different process than any previously used at the facility is to be used to chemically treat hazardous waste;

the owner or operator must, before treating the different waste or using the different process or equipment:

(1) Conduct waste analyses and trial treatment test (e.g., bench scale or pilot plant scale tests); or

(2) Obtain written, documented information on similar treatment of similar waste under similar operating conditions;

to show that this proposed treatment will meet all applicable requirements of parts (b)1 and 2 of this paragraph.

(Comment: As required by subparagraph (2)(d) of this Rule, the waste analysis plan must include analyses needed to comply with subparagraphs (f) and (g) of this paragraph. As required by subparagraph (5)(d) of this Rule, the owner or operator must place the results from each waste analysis and trial test, or the documented information, in the operating record of the facility.)

(d) Inspections - The owner or operator of a treatment facility must inspect, where present:

1. Discharge control and safety equipment (e.g., waste feed cut-off systems, by-pass systems, drainage systems, and pressure relief systems) at least once each operating day, to ensure that it is in good working order;

2. Data gathered from monitoring equipment (e.g., pressure and temperature gauges), at least once each operating day, to ensure that the treatment process or equipment is being operated according to its design;

3. The construction materials of the treatment process or equipment, at least weekly, to detect corrosion or leaking of fixtures or seams; and

4. The construction materials of, and the area immediately surrounding, discharge confinement structures (e.g., dikes), at least weekly, to detect erosion or obvious signs of leakage (e.g., wet spots or dead vegetation).

(Comment: As required by subparagraph (2)(f)3 of this Rule, the owner or operator must remedy any deterioration or malfunction he finds.)

(e) Closure - At closure, all hazardous waste and hazardous waste residues must be removed from treatment processes or equipment, discharge control equipment, and discharge confinement structures.

(Comment: At closure, as throughout the operating period, unless the owner or operator can demonstrate, in accordance with Rule 1200-1-11-.02(1)(c)3 or 4, that any waste removed from his treatment process or equipment is not a hazardous waste, the owner or operator becomes a generator of hazardous waste and must manage it in accordance with all applicable requirements of this Rule and Rules 1200-1-11-.03 and 1200-1-11-.04.)

(f) Special Requirements For Ignitable or Reactive Waste

1. Ignitable or reactive waste must not be placed in a treatment process or equipment unless:

   (i) The waste is treated, rendered, or mixed before or immediately after placement in the treatment process or equipment so that (1) the resulting waste, mixture, or dissolution of material no longer meets the definition of ignitable or reactive waste under Rule 1200-1-11-.02(3)(b) or (d), (2) part (2)(h)2 of this rule is complied with; or

   (ii) The waste is treated in such a way that it is protected from any material or conditions which may cause the waste to ignite or react.

(g) Special Requirements For Incompatible Wastes

1. Incompatible wastes, or incompatible wastes and materials, (see Appendix .05/D for examples) must not be placed in the same treatment process or equipment, unless part (2)(h)2 of this Rule is complied with.

2. Hazardous waste must not be placed in unwashed treatment equipment which previously held an incompatible waste or material, unless part (2)(h)2 of this Rule is complied with.

(18) Underground Injection

(a) Applicability - Except as subparagraph (1)(b) of this Rule provides otherwise:

1. The owner or operator of a facility which disposes of hazardous waste by underground injection is excluded from the requirements of paragraphs (7) and (8) of this Rule.

APPENDIX .05/A

RECORDKEEPING INSTRUCTIONS

The recordkeeping provisions of subparagraph (5)(d) of this Rule specify that an owner or operator must keep a written operating record at his facility. This appendix provides additional instructions for keeping portions of the operating record. See part (5)(d)2 of this Rule or additional recordkeeping requirements.

The following information must be recorded, as it becomes available, and maintained in the operating record until closure of the facility in the following manner:

(a) Records of each hazardous waste received, treated, stored, or disposed of at the facility which include the following:

(1) A description by its common name and the appropriate waste codes which apply to the waste. The waste description also must include the waste's physical form, i.e., liquid, sludge, solid, or contained gas. If the waste is not listed in Rule 1200-1-11-.02(4), the description also must include the process that produced it (for example, solid filter cake from production of ---, Waste Code W051).

Each hazardous waste listed in Rule 1200-1-11-.02(4), and each hazardous waste characteristics defined in Rule 1200-1-11-.02(3), has a Waste Code assigned to it. In addition, each individual hazardous waste generated in this state will, as part of the generator notification process of Rule 1200-1-11-.03(2), be assigned a waste code by the Department which will be based upon the waste codes specified in Rule 1200-1-11-.02. These Department-assigned waste codes must be used when recording hazardous waste accepted from generators in this state. The EPA Hazardous Waste Numbers which apply to the waste must be used when recording hazardous wastes received from out-of-state generators. Where a hazardous waste waste contains more than one Department-coded or EPA-numbered hazardous waste, or where more than one hazardous waste characteristic applies to the waste, all applicable Department-assigned waste codes or all applicable EPA Hazardous Waste Numbers must be recorded.

(2) The estimated or manifest-reported weight, or volume and density, where applicable, in one of the units of measure specified in Table 1.

(3) The method(s) (by handling code(s) as specified in Table 2 and date(s) of treatment, storage, or disposal.

Table 1

Unit of Measure	Symbol*	Density
Pounds	P	--
Short Tons (2000 lbs)	T	--
Gallons (U.S.)	G	P/G
Cubic Yards	Y	T/Y
Kilograms	K	--
Tonnes (1000 kg)	M	--
Liters	L	K/L
Cubic Meters	C	M/C

*Single digit symbols are used here for data processing purposes.

Table 2

HANDLING CODES FOR TREATMENT, STORAGE, AND DISPOSAL METHODS

Enter the handling code(s) listed below that most closely represents the technique(s) used at the facility to treat, store, or dispose of each quantity of hazardous waste received.

1. Storage

S01 Container (barrel, drum, etc.)
S02 Tank
S03 Waste pile
S04 Surface impoundment
S05 Other (specify)

2. Treatment

(a) Thermal Treatment

T06 Liquid injection incinerator
T07 Rotary kiln incinerator
T08 Fluidized bed incinerator
T09 Multiple hearth incinerator
T10 Infrared furnace incinerator
T11 Molten salt destructor
T12 Pyrolysis
T13 Wet Air oxidation
T14 Calcination
T15 Microwave discharge
T16 Cement kiln
T17 Lime kiln
T18 Other (specify)

(b) Chemical Treatment

T19 Absorption mound
T20 Absorption field
T21 Chemical fixation
T22 Chemical oxidation
T23 Chemical precipitation
T24 Chemical reduction
T25 Chlorination
T26 Clorinolysis
T27 Cyanide destruction
T28 Degradation
T29 Detoxification
T30 Ion exchange
T31 Neutralization
T32 Ozonation
T33 Photolysis
T34 Other (specify)

(c) Physical Treatment

(1) Separation of components

T35 Centrifugation
T36 Clarification
T37 Coagulation
T38 Decanting
T39 Encapsulation
T40 Filtration
T41 Flocculation
T42 Flotation
T43 Foaming
T44 Sedimentation
T45 Thickening
T46 Ultrafiltration
T47 Other (specify)

(2) Removal of Specific Components

T48 Absorption-molecular seive
T49 Activated carbon
T50 Blending
T51 Catalysis
T52 Crystalization
T53 Dialysis
T54 Distillation
T55 Electrodialysis
T56 Electrolysis
T57 Evaporation
T58 High gradient magnetic separation
T59 Leaching
T60 Liquid ion exchange
T61 Liquid-liquid extraction
T62 Reverse osmosis
T63 Solvent recovery
T64 Stripping
T65 Sand filter
T66 Other (specify)

(d) Biological Treatment

T66 Activated sludge
T68 Aerobic lagoon
T69 Aerobic tank
T70 Anaerobic lagoon
T71 Composting
T72 Septic tank
T73 Spray irrigation
T74 Thickening filter
T75 Trickling filter
T76 Waste stabilization pond
T77 Other (specify)
T78-79 Reserved

3. Disposal

D80 Underground injection
D81 Landfill
D82 Land treatment
D83 Ocean disposal
D84 Surface impoundment (to be closed as a landfill)
D85 Other (specify)

APPENDIX .05/B

EPA INTERIM PRIMARY DRINKING WATER STANDARDS

Parameter	Maximum Level mg/l
Arsenic	0.05
Barium	1.0
Cadmium	0.01
Chromium	0.05
Flouride	1.4-2.4
Lead	0.05
Mercury	0.002
Nitrate (as N)	10
Selenium	0.01
Silver	0.05
Endrin	0.0002
Lindane	0.004
Methoxychlor	0.1
Toxaphene	0.005
2, 4-D	0.1
2, 4, 5-TP Silvex	0.01

Radium	5 pCi/l
Gross Alpha	15 pCi/l
Gross Beta	4 millirem/yr
Turbidity	1/TU
Coliform Bacteria	1/100 ml

(Comment: Turbidity is applicable only to surface water supplies.)

APPENDIX .05/C

PROCEDURES FOR STATISTICALLY EVALUATING GROUNDWATER MONITORING DATA

Introduction

Groundwater monitoring is used to identify and evaluate the impacts--if any--which a hazardous waste storage, treatment, or disposal facility has on groundwater quality. The groundwater is periodically sampled and the samples analyzed for certain parameters. The measurements obtained are then compared to pre-established "background" measurements for those parameters to determine if there has been a change in value (e.g., concentration) for that parameter. Such changes must then be evaluated to determine if they are truly significantly different from the established background values or are merely different readings of the same value caused by indeterminate error in the measurement of the physical quantity. This evaluation can be made using the statistical procedures below to determine the significance of a change in a measurement.

Analytical Quality Control

The statistical evaluation below is based on the assumption that errors will be randomly distributed around an average value. This normal distribution is characteristic of the indeterminate error inherent in any physical measurement; but the assumption is invalid in the case of error which may be traced to the personal errors of the analyst, the instrumental errors of his measuring devices, the errors that repose in the method of analysis he employs, or a combination of these. It is therefore imperative that these determinate errors be minimized in obtaining, handling and preparing, and analyzing the groundwater samples. Strict attention to sampling and sample handling protocol is necessary, as is the achievement of good precision in the laboratory analyses. Quality control in the laboratory must be demonstrably maintained through proper calibration of equipment and through the periodic checking of performance using standard samples, blank determinations, and other procedures. An accepted method for quality control in the laboratory is the Shewhart method.

Procedure

Step One - Using the following equations:

$$\bar{X} = \frac{\sum_{i=1}^{N} X_i}{N} \qquad V = \frac{\sum_{i=1}^{N} (X_i - \bar{X})^2}{N - 1}$$

where X_i is an individual measurement in a set containing N measurements;

(a) From the background data obtained for each well as per Rule 1200-1-11-.05(6)(c)3, for each parameter to be compared, calculate the background arithmetic mean ($\bar{X}_B$) and variance (V_B) for that well. For the parameters pH, specific conductance, total organic carbon; and (if appropriate) total organic halogen; the number of background measurements N_B will equal or exceed 16 since at least four replicate measurements of each of at least four samples (quarterly) must be obtained for establishing background for that parameter at

that well. For other indicator parameters (if appropriate), N_B will equal or exceed four based on the minimum four quarterly measurements.

(b) From the background data obtained for the upgradient wells as per Rule 1200-1-11-.05(6)(c)3, for each parameter to be compared, calculate the background "pooled upgradient" arithmetic mean ($(\overline{X}_p)_B$) and variance ($(V_p)_B$) from the pooled measurements ($(N_p)_B$) from all upgradient wells. For the parameters pH, specific conductance, total organic carbon, and (if appropriate) total organic halogen; the number of pooled measurements $(N_p)_B$ will equal or exceed 16 times the number of upgradient wells. For other indicator parameters (if appropriate) $(N_p)_B$ will equal or exceed 4 times the number of upgradient wells.

Step Two - From the subsequent periodic indicator monitoring required by Rule 1200-1-11-.05(6)(c)4(ii), for the parameters pH, specific conductance, total organic carbon, and (if appropriate) total organic halogen; calculate for each well the arithmetic mean ($\overline{X}_2$) and variance (V_2) using the equations of Step One. For these parameters, at least four replicate measurements will be made and thus N_2 will equal or exceed 4. For other indicator parameters (if appropriate) for which only a single measurement (X) is obtained in subsequent periodic sampling and analyses, $\overline{X}_2 = X$, $V_2 = 0$, and $N_2 = 1$.

Step Three - Using the following equation:

$$t = \frac{\overline{X}_2 - \overline{X}_1}{\sqrt{\left[\frac{(N_2 - 1)V_2 + (N_1 - 1)V_1}{N_2 + N_1 - 2}\right]\left[\frac{N_2 + N_1}{(N_2)(N_1)}\right]}}$$

(a) For each parameter for each well, calculate t when $\overline{X}_1 = \overline{X}_B$, $V_1 = V_B$, and $N_1 = N_B$. This compares the data from the periodic indicator monitoring of a well to the background data established for that well.

(b) For each parameter for each well, calculate t when $\overline{X}_1 = (\overline{X}_p)_B$, $V_1 = (V_p)_B$, and $N_1 = (N_p)_B$. This compares the data from the periodic indicator monitoring of a well to the pooled background data established for all upgradient wells.

NOTE: If $\overline{X}_2$ is equal to or (except for pH) less than $\overline{X}_1$, then no significant increase in parameter value can have occurred and no further statistical analysis of that parameter is necessary.

Step Four - Compare the calculated t-statistics from Step Three above to the appropriate t-statistic value from Table 1. For pH, the values from the "Two-tailed t" column of Table 1 shall be used since both increases and decreases of that parameter are of concern. For the other parameters, the values from the "One-tailed t" column shall be used since only increases of those parameters are of concern. If the calculated value of t exceeds the value of t found in the table, a statistically significant difference in the parameter has occurred.

Interpretation of Results

The occurrence of a statistically significant increase in a parameter value (or pH decrease) for a well indicates a possible problem which needs further evaluation. In particular, the results for that well need to be correlated with similar results from the other wells in the monitoring system. The spatial and depth distribution of the wells must be considered in relationship to the indicated groundwater zone(s) of contamination, groundwater flow rates and flow directions, and the location of possible sources of contamination (including, of course, the facility). Historical data may need to be considered. Additional and/or equivalent statistical procedures may need to be used to check or further clarify the discrepancy. The entire groundwater monitoring system must be considered before a determination can be made that a facility is contaminating groundwater.

Table 1. Critical Values of the t-Statistic
at the 0.01 Level of Significance

$N + N_B - 2$	One-tailed t	Two-tailed t
3	4.541	5.841
4	3.747	4.604
5	3.365	4.032
6	3.143	3.707
7	2.998	3.499
8	2.896	3.355
9	2.821	3.250
10	2.764	3.169
11	2.718	3.106
12	2.681	3.055
13	2.650	3.012
14	2.624	2.977
15	2.602	2.947
16	2.583	2.921
17	2.567	2.898
18	2.552	2.878
19	2.539	2.861
20	2.528	2.845
25	2.485	2.787
30	2.457	2.750
40	2.423	2.704

APPENDIX .05/D

EXAMPLES OF POTENTIALLY INCOMPATIBLE WASTE

Many hazardous wastes, when mixed with other waste or materials at a hazardous waste facility, can produce effects which are harmful to human health and the environment, such as (1) heat or pressure, (2) fire or explosion, (3) violent reaction, (4) toxic dusts, mists, fumes, or gases, or (5) flammable fumes or gases.

Below are examples of potentially incompatible wastes, waste components, and materials, along with the harmful consequences which result from mixing materials in one group with materials in another group. The list is intended as a guide to owners or operators of treatment, storage, and disposal facilities, and to enforcement and permit granting officials, to indicate the need for special precautions when managing these potentially incompatible waste materials or components.

This list is not intended to be exhaustive. An owner or operator must, as the regulations require, adequately analyze his wastes so that he can avoid creating uncontrolled substances or reactions of the type listed below, whether they are listed below or not.

It is possible for potentially incompatible wastes to be mixed in a way that precludes a reaction (e.g., adding acid to water rather than water to acid) or that neutralizes them (e.g., a strong acid mixed with a strong base), or that controls substances produced (e.g., by generating flammable gases in a closed tank equipped so that ignition cannot occur, and burning the gases in an incinerator).

In the lists below, the mixing of a Group A material with a Group B material may have the potential consequence as noted.

Group 1-A	Group 1-B
Acetylene sludge	Acid sludge
Akaline caustic liquids	Acid and water
Alkaline cleaner	Battery acid
Alkaline corrosive liquids	Chemical cleaners
Alkaline corrosive battery fluid	Electrolyte, acid
Caustic wastewater	Etching acid liquid or solvent
Lime sludge and other corrosive alkalines	Pickling liquor and other corrosive acids
Lime wastewater	Spent acid
Lime and water	Spent mixed acid
Spent caustic	Spent sulfuric acid

Potential consequences: Heat generation; violent reaction.

Group 2-A	Group 2-B
Aluminum	Any waste in Group 1-A or 1-B
Berylium	
Calcium	
Lithium	
Magnesium	

Potassium
Sodium
Zinc powder
Other reactive metals and metal hydrides

Potential consequences: Fire or explosion; generation of flammable hydrogen gas.

Group 3-A	Group 3-B
Alcohols Water	Any concentrated waste in Groups 1-A or 1-B Calcium Lithium Metal hydrides Potassium SO_2Cl_2, $SOCl_2$, PCl_3, CH_3SiCl_3 Other water-reactive waste

Potential consequences: Fire, explosion, or heat generation; generation of flammable or toxic gases.

Group 4-A	Group 4-B
Alcohols Aldehydes Halogenated hydrocarbons Nitrated hydrocarbons Unsaturated hydrocarbons Other reactive organic compounds and solvents	Concentrated Group 1-A or 1-B wastes Group 2-A wastes

Potential consequences: Fire, explosion, or violent reaction.

Group 5-A	Group 5-B
Spent cyanide and sulfide solutions	Groups 1-B wastes

Potential consequences: Generation of toxic hydrogen cyanide or hydrogen sulfide gas.

Group 6-A	Group 6-B
Chlorates Chlorine Chlorites Chromic acid Hypochlorides Nitrates Nitric acid, fuming Perchlorates Permanganates Peroxides Other strong oxidizers	Acetic acid and other organic acids Concentrated mineral acids Group 2-A wastes Group 4-A wastes Other flammable and combustible wastes

Potential consequences: Fire, explosion or violent reaction.

Source: "Law, Regulations, and Guidelines for Handling of Hazardous Waste." California Department of Health, February 1975.

RULE 1200-1-11-.06 STANDARDS FOR OWNERS AND OPERATORS OF HAZARDOUS WASTE TREATMENT, STORAGE, AND DISPOSAL FACILITIES

(1) General

(a) Purpose - The purpose of this Rule is to establish standards which define the acceptable management of hazardous wastes in Tennessee. These standards provide a basis upon which permit applications for facilities will be evaluated.

(b) Applicability

1. The standards in this Rule apply to owners and operators of all facilities which treat, store, or dispose of hazardous wastes, except as specifically provided otherwise in this Rule or Rule 1200-1-11-.02.

2. The requirements of this Rule do not apply to:

(i) The owner or operator of a facility permitted or registered by the Commissioner or Board, as appropriate, pursuant to the "Tennessee Solid Waste Disposal Act" (TCA 68-31-101 through 63-31-111, and 68-31-301) to manage municipal or industrial waste if the only hazardous waste the facility treats, stores, or disposes of is excluded from regulations under this Rule by Rule 1200-1-11-.02(1)(e) as a "small quantity";

(ii) The owner or operator of a facility managing recyclable materials described in Rule 1200-1-11-.02(1)(f)1(ii) and (iii) (except to the extent that requirements of this Rule are referred to in Rule 1200-1-11-.09(3),(4),(6), or (7)).

(iii) A generator accumulating waste on-site in compliance with Rule 1200-1-11-.03(4)(e);

(iv) The owner or operator of a totally enclosed treatment facility, as defined in Rule 1200-1-11-.01(2);

(v) The owner or operator of an elementary neutralization unit or an on-site wastewater treatment unit as defined in Rule 1200-1-11-.01(2).

(Comment: On-site wastewater treatment units are, however, subject to permits-by-rule as set forth at Rule 1200-1-11-.07(1)(e)1(iii).)

(vi) The addition of absorbent material to waste in a container (as defined in Rule 1200-1-11-.01(2)) or the addition of waste to the absorbent material in a container, provided that these actions occur at the time waste is first placed in

the container and part (2)(h)2, subparagraph (9)(b), and subparagraph (9)(c) of this Rule are complied with.

(vii) (I) Except as provided in item (II) of this subpart, a person engaged in treatment or containment activities during immediate response to any of the following situations:

I. A discharge of a hazardous waste;

II. An imminent and substantial threat of a discharge of hazardous waste; and

III. A discharge of a material which, when discharged, becomes a hazardous waste.

(II) An owner or operator of a facility otherwise regulated by this Rule must comply with all applicable requirements of paragraphs (3) and (4) of this Rule.

(III) Any person who is covered by item (I) of this subpart and who continues or initiates hazardous waste treatment or containment activities after the immediate response is over is subject to all applicable requirements of this Rule and Rule 1200-1-11-.07 for those activities.

(viii) A transporter storing manifested shipments of hazardous waste in containers meeting applicable DOT and PSC regulations for packaging at a transfer facility for a period of ten days or less.

3. The requirements of this Rule apply to a person disposing of hazardous waste by means of underground injection subject to permits issued under the Tennessee Water Quality Control Act (TCA 69-3-101 et seq.), through Chapter 1200-4-6 of the Rules of the State of Tennessee, and under Part C of the Federal Safe Drinking Water Act (42 U.S.C. 3001 et seq.) only to the extent they are included in a permit-by-rule granted to such a person under Rule 1200-1-9-.07(1)(c).

4. The requirements of this Rule apply to the owner or operator of a POTW which treats, stores, or disposes of hazardous waste only to the extent they are included in a permit-by-rule granted to such a person under Rule 1200-1-11-.07(1)(c).

(c) Relationship to Interim Status Standards - A facility owner or operator who has fully complied with the requirements for interim status - as defined in Rule 1200-1-11-.07(3) must comply with the regulations specified in Rule 1200-1-11-.05 in lieu of the regulations of this Rule, until final administrative disposition of his permit application is made.

(d) Waivers - Any standard in this Rule may be waived by the Commissioner if the owner or operator can demonstrate, to the

satisfaction of the Commissioner that the standard is inapplicable, inappropriate, or unnecessary to his facility, or that it is equaled in effect by other procedures or mechanisms utilized at the facility. Any such waiver must be granted in writing.

(2) General Facility Standards

(a) Applicability

1. The regulations in this paragraph apply to owners and operators of all hazardous waste facilities, except as provided in subparagraphs (1)(b) and (1)(d) of this Rule and in part 2 of this subparagraph.

2. Part (f)2 of this paragraph is applicable only to facilities subject to regulation under paragraphs (9) through (15) of this Rule.

(b) Installation Identification Number - Installation identification numbers will be assigned to facilities as part of the permit issued pursuant to Rule 1200-1-11-.07.

(c) Required Notices

1. The owner or operator of a facility that has arranged to receive hazardous waste from a foreign source must notify the Commissioner in writing at least four weeks in advance of the date the waste is expected to arrive at the facility. Notice of subsequent shipments of the same waste from the same foreign source is not required.

2. The owner or operator of a facility that receives hazardous waste from an off-site source (except where the owner or operator is also the generator) must inform the generator in writing that he has the appropriate permit(s) for, and will accept, the waste the generator is shipping. The owner or opertor must keep a copy of this written notice as part of the operating record.

3. Before transferring ownership or operation of a facility during its operating life, or of a disposal facility during the post-closure care period, the owner or operator must notify the new owner or operator in writing of the requirements of this Rule, Rule 1200-1-11-.07, and Rule 1200-1-11-.08.

(Comment: An owner's or operator's failure to notify the new owner or operator of the requirements of this part in no way relieves the new owner or operator of his obligation to comply with all applicable requirements.)

(d) General Waste Analysis

1. (i) Before an owner or operator treats, stores, or disposes of any hazardous waste, he must obtain a detailed chemical and physical analysis of a representative sample of the waste. At a minimum, this analyis must contain all the

information which must be known to treat, store, or dispose of the waste in accordance with the requirements of this Rule or with the conditions of a permit issued under Rule 1200-1-11-.07.

(ii) The analysis may include data developed under Rule 1200-1-11-.02, and existing published or documented data on the hazardous waste or on hazardous waste generated from similar processes.

(Comment: For example, the facility's records of analyses performed on the waste before the effective date of these regulations, or studies conducted on hazardous waste generated from processes similar to that which generated the waste to be managed at the facility, may be included in the data base required to comply with subpart (i) of this part. The owner or operator of an off-site facility may arrange for the generator of the hazardous waste to supply part or all of the information required by subpart (i) of this part. If the generator does not supply the information, and the owner or operator chooses to accept a hazardous waste, the owner or operator is responsible for obtaining the information required to comply with this subparagraph.)

(iii) The analysis must be repeated as necessary to ensure that it is accurate and up to date. At a minimum, the analysis must be repeated:

(I) When the owner or operator is notified, or has reason to believe, that the process or operation generating the hazardous waste has changed; and

(II) For off-site facilities, when the results of the inspection required in subpart (iv) of this part indicate that the hazardous waste received at the facility does not match the waste designated on the accompanying manifest or shipping paper.

(iv) The owner or operator of an off-site facility must inspect and, if necessary, analyze each hazardous waste movement received at the facility to determine whether it matches the identity of the waste specified on the accompanying manifest or shipping paper.

2. The owner or operator must develop and follow a written waste analysis plan which describes the procedures which he will carry out to comply with part 1 of this subparagraph. He must keep this plan at the facility. At a minimum, the plan must specify:

(i) The parameters for which each hazardous waste will be analyzed and the rationale for the selection of these parameters (i.e., how analysis for these parameters will provide sufficient information on the waste's properties to comply with part 1 of this paragraph);

(ii) The test methods which will be used to test for these parameters;

(iii) The sampling method which will be used to obtain a representative sample of the waste to be analyzed. A representative sample may be obtained using either;

(I) One of the sampling methods described in Appendix .02/A of Rule 1200-1-11-.02; or

(II) An equivalent sampling method.

(Comment: See Rule 1200-1-11-.01(3)(b) for related discussion.)

(iv) The frequency with which the initial analysis of the waste will be reviewed or repeated to ensure that the analysis is accurate and up to date; and

(v) For off-site facilities, the waste analyses that hazardous waste generators have agreed to supply.

(vi) Where applicable, the methods which will be used to meet the additional waste analysis requirements for specific waste management methods as specified in subparagraphs (2)(h), (14)(c), and (15)(b) of this Rule.

3. For off-site facilities, the waste analysis plan required in part 2 of this subparagraph must also specify the procedures which will be used to inspect and, if necessary, analyze each movement of hazardous waste received at the facility to ensure that it matches the identity of the waste designated on the accompanying manifest or shipping paper. At a minimum, the plan must describe:

(i) The procedures which will be used to determine the identity of each movement of waste managed at the facility; and

(ii) The sampling method which will be used to obtain a representative sample of the waste to be identified, if the identification method includes sampling.

(Comment: Rule 1200-1-11-.07 requires that the waste analysis plan be submitted with Part B of the permit application.)

• —Revised Effective FEB 2 1986

(e) Security

1. The owner or operator must prevent the unknowing entry, and minimize the possibility for the unauthorized entry, of persons or livestock onto the active portion of his facility, unless he can demonstrate to the Commissioner that:

   (i) Physical contact with the waste, structures, or equipment within the active portion of the facility will not injure unknowing or unauthorized persons or livestock which may enter the active portion of a facility; and

   (ii) Disturbance of the waste or equipment, by the unknowing or unauthorized entry of persons or livestock onto the active portion of a facility, will not cause a violation of the requirements of this Rule.

   (Comment: Rule 1200-1-11-.07 requires that an owner or operator who wishes to make the demonstration referred to above must do so with Part B of the permit application.)

2. Unless the owner or operator has made a successful demonstration under subparts 1(i) and 1(ii) of this subparagraph, a facility must have:

   (i) A 24-hour surveillance system (e.g., television monitoring or surveillance by guards or facility personnel) which continuously monitors and controls entry onto the active portion of the facility; or

   (ii) (I) An artificial or natural barrier (e.g., a fence in good repair or a fence combined with a cliff), which completely surrounds the active portion of the facility; and

   (II) A means to control entry, at all times, through the gates or other entrances to the active portion of the facility (e.g., an attendant, television monitors, locked entrance, or controlled roadway access to the facility).

   (Comment: The requirements of part 2 of this subparagraph are satisfied if the facility or plant within which the active portion is located itself has a surveillance system, or a barrier and a means to control entry, which complies with the requirements of subparts 2(i) or 2(ii) of this subparagraph.)

3. Unless the owner or operator has made a successful demonstration under subparts 1(i) and 1(ii) of this subparagraph, a sign with the legend, "Danger-Unauthorized Personnel Keep Out", must be posted at each entrance to the active portion of a facility, and at other locations, in sufficient numbers to be seen from any approach to this active portion. The legend must be legible from a distance of at least 25 feet.

• —Revised Effective FEB 2 1986

Existing signs with a legend other than "Danger-Unauthorized Personnel Keep Out" may be used if the legend on the sign indicates that only authorized personnel are allowed to enter the active portion, and that entry onto the active portion can be dangerous.

(Comment: See part (7)(g)2 of this Rule for discussion of security requirements at disposal facilities during the post-closure care period.)

(f) General Inspection Requirements

1. The owner or operator must inspect his facility for malfunctions and deterioration, operator errors, and discharges which may be causing -or may lead to - (1) release of hazardous waste constituents to the environment or (2) a threat to human health. The owner or operator must conduct these inspections often enough to identify problems in time to correct them before they harm human health or the environment.

2. (i) The owner or operator must develop and follow a written schedule for inspecting monitoring equipment, safety and emergency equipment, security devices, and operating and structural equipment (such as dikes and sump pumps) that are important to preventing, detecting, or responding to environmental or human health hazards.

   (ii) He must keep this schedule at the facility.

   (iii) The schedule must identify the types of problems (e.g., malfunctions or deterioration) which are to be looked for during the inspection (e.g., inoperative sump pump, leaking fitting, eroding dike, etc.).

   (iv) The frequency of inspection may vary for the items on the schedule. However, it should be based on the rate of possible deterioration of the equipment and the probability of an environmental or human health incident if the deterioration or malfunction or any operator error goes undetected between inspections. Areas subject to spills, such as loading and unloading areas, must be inspected daily when in use. At a minimum, the inspection schedule must include the terms and frequencies called for in subparagraphs (9)(e), (10)(d), (11)(g), (12)(d) and (e),(14)(d), and (15)(g) of this Rule, where applicable.

(Comment: Rule 1200-1-11-.07 requires the inspection schedule to be submitted with Part B of the permit application. The Department will evaluate the schedule along with the rest of the application to ensure that it adequately protects human health and the environment. As part of this review, the Department may modify or amend the schedule as may be necessary.)

3. The owner or operator must 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 must be taken immediately.

4. The owner or operator must record inspections in an inspection log or summary. He must keep these records for at least three years from the date of inspection. At a minimum, these records must include the date and time of the inspection, the name of the inspector, a notation of the observations made, and the date and nature of any repairs or other remedial actions.

(g) Personnel Training

1. (i) Facility personnel must successfully complete a program of classroom instruction or on-the-job training that teaches them to perform their duties in a way that ensures the facility's compliance with the requirements of this Rule. The owner or operator must ensure that this program includes all the elements described in the document required under subpart 4(iii) of this subparagraph.

(Comment: Rule 1200-1-11-.07 requires that owners and operators submit with Part B of the permit application an outline of the training program used (or to be used) at the facility and a brief description of how the training program is designed to meet actual job tasks.)

(ii) This program must be directed by a person trained in hazardous waste management procedures and must include instruction which teaches facility personnel hazardous waste management procedures (including contingency plan implementation) relevant to the positions in which they are employed.

(iii) At a minimum, the training program must be designed to ensure that facility personnel are able to respond effectively to emergencies by familiarizing them with emergency procedures, emergency equipment, and emergency systems, including, where applicable:

(I) Procedures for using, inspecting, repairing, and replacing facility emergency and monitoring equipment;

(II) Key parameters for automatic waste feed cut-off systems;

(III) Communications or alarm systems;

(IV) Response to fires or explosions;

(V) Response to ground-water contamination incidents; and

(VI) Shutdown of operations.

2. Facility personnel must successfully complete the program required in part 1 of this subparagraph within six months after the effective date of these regulations or six months after the date of their employment or assignment to a facility, or to a new position at a facility, whichever is later. Employees hired after the effective date of these regulations must not work in unsupervised positions until they have completed the training requirements of part 1 of this subparagraph.

3. Facility personnel must take part in an annual review of the initial training required in part 1 of this subparagraph.

4. The owner or operator must maintain the following documents and records at the facility.

   (i) The job title for each position at the facility related to hazardous waste management, and the name of the employee filling each job;

   (ii) A written job description for each position listed under subpart (i) of this part. This description may be consistent in its degree of specificity with descriptions for other similar positions in the same company location or bargaining unit, but must include the requisite skill, education, or other qualifications, and duties of employees assigned to each position;

   (iii) A written description of the type and amount of both introductory and continuing training that will be given to each person filling a position listed under subpart (i) of this part;

   (iv) Records that document that the training or job experience required under parts 1, 2, and 3 of this subparagraph has been given to, and completed by, facility personnel.

5. Training records on current personnel must be kept until closure of the facility; training records on former employees must be kept for at least three years from the date the employee last worked at the facility. Personnel training records may accompany personnel transferred within the same company.

(h) <u>General Requirements for Ignitable, Reactive, or Incompatible Wastes</u>

1. The owner or operator must take precautions to prevent accidental ignition or reaction of ignitable or reactive waste. This waste must 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 owner or operator must confine smoking and open flame to specially designated locations. "No Smoking" signs must be conspicuously placed wherever there is a hazard from ignitable or reactive waste.

2. Where specifically required by other subparagraphs of this Rule, the owner or operator of a facility that treats, stores or disposes ignitable or reactive waste or mixes incompatible waste or incompatible wastes and other materials, must take precautions to prevent reactions which:

   (i) Generate extreme heat or pressure, fire or 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;

   (v) Through other like means threaten human health or the environment.

3. When required to comply with parts 1 and 2 of this subparagraph, the owner or operator must document that compliance. This documentation may be based on references to published scientific or engineering literature, data from trial tests (e.g., bench scale or pilot scale tests), waste analyses (as specified in subparagraph (2)(d) of this Rule), or the results of the treatment of similar wastes by similar treatment processes and under similar operating conditions.

(i) <u>Location Standard</u>

1. <u>Seismic Considerations</u> - Reserved

2. <u>Floodplain Considerations</u>

   (i) No new facility shall be located in a 100-year floodplain unless it is demonstrated, to the satisfaction of the Commissioner, that location in the floodplain will not significantly aggravate upstream or downstream flooding.

   (ii) A facility located in a 100-year floodplain must be designed, constructed, operated, and maintained to prevent washout of any hazardous waste by a 100-year flood, <u>unless</u> the

owner or operator can demonstrate to the Commissioner's satisfaction that:

(I) Procedures are in effect which will cause the waste to be removed safely, before flood waters can reach the facility, to a location where the wastes will not be vulnerable to flood waters; or

(II) For existing surface impoundments, waste piles, land treatment units, and landfills, no adverse effects on human health or the environment will result if washout occurs, considering:

I. The volume and physical and chemical characteristics of the waste in the facility;

II. The concentration of hazardous constituents that would potentially affect surface waters as a result of washout;

III. The impact of such concentrations on the current or potential uses of and water quality standards established for the affected surface waters; and

IV. The impact of hazardous constituents on the sediments of affected surface waters or the soils of the 100-year floodplain that could result from washout.

(Comment: Where removal procedures are demonstrated, the location where wastes are moved must be a facility which, if in Tennessee, must have a permit or interim status under Rule 1200-1-11-.07 or, if in another state, must be authorized by that State or EPA to manage that hazardous waste.)

(iii) As used in this part:

(I) "100-year floodplain" means any land area which is subject to a one percent or greater chance of flooding in any given year from any source.

(II) "Washout" means the movement of hazardous waste from the active portion of the facility as a result of flooding.

(III) "100-year flood" means a flood that has one percent chance of being equalled or exceeded in any given year.

3. Salt Dome Formations, Salt Bed Formations, Underground Mines and Caves - The placement of any noncontainerized or bulk liquid

hazardous waste in any salt dome formation, salt bed formation, underground mine or cave is prohibited.

(3) Preparedness and Prevention

(a) Applicability - The regulations in this paragraph apply to owners and operators of all hazardous waste facilities, except as otherwise provided in subparagraphs (1)(b) and (1)(d) of this Rule.

(b) Design and Operation of Facility - Facilities must be designed, constructed, maintained, and operated to minimize the possibility of a fire, explosion, or any unplanned sudden or non-sudden release of hazardous waste or hazardous waste constituents to air, soil, or surface water which could threaten human health or the environment.

(c) Required Equipment - All facilities must be equipped with the following unless it can be demonstrated to the Commissioner that none of the hazards posed by waste handled at the facility could require a particular kind of equipment specified below:

1. An internal communications or alarm system capable of providing immediate emergency instruction (voice or signal) to facility personnel;

2. 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;

3. 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

4. Water at adequate volume and pressure to supply water hose streams, or foam producing equipment, or automatic sprinklers, or water spray systems.

(Comment: Rule 1200-1-11-.07 requires that an owner or operator who wishes to make the demonstration referred to above must do so with part B of the permit application.)

(d) Testing and Maintenance of Equipment - All facility communications or alarm systems, fire protection equipment, spill control equipment, and decontamination equipment, where required, must be tested and maintained as necessary to assure its proper operation in time of emergency.

(e) Access to Communications or Alarm System

1. Whenever hazardous waste is being poured, mixed, spread, or otherwise handled, all personnel involved in the operation must have immediate access to an internal alarm or emergency communication device, either directly or through visual or voice contact with another employee, unless the Commissioner has ruled that such a device is not required under subparagraph (c) of this paragraph.

2. If there is ever just one employee on the premises while the facility is operating, he must 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, unless the Commissioner has ruled that such a device is not required under subparagraph (c) of this paragraph.

(f) Required Aisle Space - The owner or operator must maintain aisle space to allow the unobstructed movement of personnel, fire protection equipment, spill control equipment, and decontamination equipment to any area of facility operation in an emergency, unless it can be demonstrated to the Commissioner that aisle space is not needed for any of these purposes.

(Comment: Rule 1200-1-11-.07 requires that an owner or operator who wishes to make the demonstration referred to above must do so with Part B of the permit application.)

(g) Arrangements With Local Authorities

1. The owner or operator must attempt to make the following arrangements, as appropriate for the type of waste handled at his facility and the potential need for the services of these organizations:

(i) Arrangements to familiarize police, fire departments, and emergency response teams with the layout of the facility, properties of hazardous waste handled at the facility and associated hazards, places where facility personnel would normally be working, entrances to and roads inside the facility, and possible evacuation routes;

(ii) Where more than one police and fire department might respond to an emergency, agreements designating primary emergency authority to a specific police and a specific fire department, and agreements with any others to provide support to the primary emergency authority;

(iii) Agreements with State emergency response teams, emergency response contractors, and equipment suppliers; and

(iv) Arrangements to familiarize local hospitals with the properties of hazardous waste handled at the facility and the types of injuries or illnesses which could result from fires, explosions, or releases at the facility.

2. Where State or local authorities decline to enter into such arrangements, the owner or operator must document the refusal in the operating record.

(4) Contingency Plan and Emergency Procedures

(a) Applicability - The regulations in this paragraph apply to owners and operators of all hazardous waste facilities, except as otherwise provided in subparagraphs (1)(b) and (1)(d) of this Rule.

(b) Purpose and Implementation of Contingency Plan

1. Each owner or operator must have a contingency plan for his facility. The contingency plan must be designed to minimize hazards to human health or the environment from fires, explosions, or any unplanned sudden or non-sudden release of hazardous waste or hazardous waste constituents to air, soil, or surface water.

2. The provisions of the plan must be carried out immediately whenever there is a fire, explosion, or release of hazardous waste or hazardous waste constituents which could threaten human health or the environment.

(c) Content of Contingency Plan

1. The contingency plan must describe the actions facility personnel must take to comply with subparagraphs (b) and (g) of this paragraph in response to fires, explosions, or any unplanned sudden or non-sudden release of hazardous waste or hazardous waste constituents to air, soil, or surface water at the facility.

2. If the owner or operator has already prepared a Spill Prevention Control and Countermeasures (SPCC) Plan in accordance with 40 CFR 112, or 40 CFR 1510, or some other emergency or contingency plan, he need only amend that plan to incorporate hazardous waste management provisions that are sufficient to comply with the requirements of this Rule.

3. The plan must describe arrangements agreed to by local police departments, fire departments, hospitals, contractors, and State and local emergency response teams to coordinate emergency services, pursuant to subparagraph (3)(g) of this Rule.

4. The plan must list names, addresses, and phone numbers (office and home) of all persons qualified to act as emergency coordinator (see subparagraph (f) of this paragraph), and this list

must be kept up to date. Where more than one person is listed, one must be named as primary emergency coordinator and others must be listed in the order in which they will assume responsibility as alternates. For new facilities, this information must be supplied to the Commissioner at the time of certification, rather than at the time of permit application.

5. The plan must include a list of all emergency equipment at the facility (such as fire extinguishing systems, spill control equipment, communications and alarm systems (internal and external), and decontamination equipment), where this equipment is required. This list must be kept up to date. In addition, the plan must include the location and a physical description of each item on the list, and a brief outline of its capabilities.

6. The plan must include an evacuation plan for facility personnel where there is a possibility that evacuation could be necessary. This plan must describe signal(s) to be used to begin evacuation, evacuation routes, and alternate evacuation routes (in cases where the primary routes could be blocked by releases of hazardous waste or fires).

(d) Copies of Contingency Plan - A copy of the contingency plan and all revisions to the plan must be:

1. Maintained at the facility; and

2. 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.

(Comment: The contingency plan must be submitted to the Commissioner with Part B of the permit application under Rule 1200-1-11-.07 and, after modification or approval, will become a condition of any permit issued.)

(e) Amendment of Contingency Plan - The contingency plan must be reviewed, and immediately amended, if necessary, whenever:

1. The facility permit is revised;

2. The plan fails in an emergency;

3. The facility 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;

4. The list of emergency coordinators changes; or

5. The list of emergency equipment changes.

(Comment: A change in the lists of facility emergency coordinators or equipment in the contingency plan constitutes a minor modification to the facility permit to which the plan is a condition.)

(f) Emergency Coordinator - At all times, there must be 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 must be thoroughly familiar with all aspects of the facility's contingency plan, all operations and activities at the facility, the location and characteristics of waste handled, the location of all records within the facility, and the facility layout. In addition, this person must have the authority to commit the resources needed to carry out the contingency plan.

(Comment: The emergency coordinator's responsibilities are more fully spelled out in subparagraph (g) of this paragraph. Applicable responsibilities for the emergency coordinator vary depending on factors such as type and variety of waste(s) handled by the facility and type and complexity of the facility.)

(g) Emergency Procedures

1. Whenever there is an imminent or actual emergency situation, the emergency coordinator (or his designee when the emergency coordinator is on call) must immediately:

   (i) Activate internal facility alarms or communication systems, where applicable, to notify all facility personnel; and

   (ii) Notify appropriate State or local agencies with designated response roles if their help is needed.

2. Whenever there is a release, fire, or explosion, the emergency coordinator must immediately identify the character, exact source, amount, and areal extent of any released materials. He may do this by observation or review of facility records or manifests, and, if necesssary, by chemical analysis.

3. Concurrently, the emergency coordinator must assess possible hazards to human health or the environment that may result from the release, fire, or explosion. This assessment must consider both direct and indirect effects of the release, fire, or explosion (e.g., the effects of any toxic, irritating, or asphyxiating gases that are generated, or the effects of any hazardous surface water run-off from water or chemical agents used to control fire and heat-induced explosions).

4. If the emergency coordinator determines that the facility has had a release, fire, or explosion which could threaten human health, or the environment, outside the facility, he must report his findings as follows:

(i) If his assessment indicates that evacuation of local areas may be advisable, he must immediately notify appropriate local authorities. He must be available to help appropriate officials decide whether local areas should be evacuated; and

(ii) He must immediately notify the Tennessee Emergency Management Agency (using their 24-hour toll-free number 800/262-3300) and/or the National Response Center (using their 24-hour toll free number 800/424-8802). The report must include:

(I) Name and telephone number of reporter;

(II) Name and address of facility;

(III) Time and type of incident (e.g., release, fire);

(IV) Name and quantity of material(s) involved, to the extent known;

(V) The extent of injuries, if any; and

(VI) The possible hazards to human health, or the environment, outside the facility.

5. During an emergency, the emergency coordinator must take all reasonable measures necessary to ensure that fires, explosions, and releases do not occur, recur, or spread to other hazardous waste at the facility. These measures must include, where applicable, stopping processes and operations, collecting and containing released waste, and removing or isolating containers.

6. If the facility stops operations in response to a fire, explosion, or release, the emergency coordinator must monitor for leaks, pressure buildup, gas generation, or ruptures in valves, pipes, or other equipment, wherever this is appropriate.

7. Immediately after an emergency, the emergency coordinator must provide for treating, storing, or disposing of recovered waste, contaminated soil or surface water, or any other material that results from a release, fire, or explosion at the facility.

(Comment: Unless the owner or operator can demonstrate in accordance with Rule 1200-1-11-.02(1)(c)3 or 4, that the recovered material is not a hazardous waste, the owner or operator becomes a generator of hazardous waste and must manage it in accordance with all applicable requirements of Rules 1200-1-11-.03, 1200-1-11-.04, and 1200-1-11-.06.

8. The emergency coordinator must ensure that, in the affected area(s) of the facility:

(i) No waste that may be incompatible with the released material is treated, stored, or disposed of until cleanup procedures are completed; and

(ii) All emergency equipment listed in the contingency plan is cleaned and fit for its intended use before operations are resumed.

9. The owner or operator must notify the Commissioner and appropriate local authorities that the facility is in compliance with part 8 of this subparagraph before operations are resumed in the affected area(s) of the facility.

10. The owner or operator must note in the operating record the time, date, and details of any incident that requires implementing the contingency plan. Within 15 days after the incident, he must submit a written report on the incident to the Commissioner. The report must 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 (e.g., fire, explosion);

(iv) Name and quantity of material(s) involved;

(v) The extent of injuries, if any;

(vi) An assessment of actual or potential hazards to human health or the environment, where this is applicable; and

(vii) Estimated quantity and disposition of recovered material that resulted from the incident.

(5) Manifest System, Recordkeeping, and Reporting

(a) Applicability - The regulations in this paragraph apply as specified to owners and/or operators of both on-site and off-site facilities, except as otherwise provided in subparagraphs (1)(b) and (1)(d) of this Rule. Subparagraphs (b), (c), and (g) of this paragraph do not apply to owners or operators of on-site facilities that do not receive any hazardous waste from off-site sources.

(b) Use of Manifest System

1. If a facility receives hazardous waste accompanied by a manifest, the owner or operator, or his agent, must:

(i) Sign and date each copy of the manifest to certify that the hazardous waste covered by the manifest was received;

(ii) Note any significant discrepancies in the manifest (as defined in part (c)1 of this paragraph) on each copy of the manifest;

(Comment: The Department does not intend that the owner or operator of a facility whose procedures under part (2)(d)3 of this Rule include waste analysis must perform that analysis before signing the manifest and giving it to the transporter. Part (c)2 of this paragraph, however, requires reporting an unreconciled discrepancy discovered during later analysis.)

(iii) Immediately give the transporter at least one copy of the signed manifest;

(iv) Within 30 days after the delivery, send a copy of the manifest to the generator; and,

(v) Retain at the facility a copy of each manifest for at least three years from the date of delivery.

2. If a facility receives, from a rail or water (bulk shipment) transporter, hazardous waste which is accompanied by a shipping paper containing all the information required on the manifest (excluding the installation identification numbers, generator's certification, and signatures), the owner or operator, or his agent, must:

(i) Sign and date each copy of the manifest or shipping paper (if the manifest has not been received) to certify that the hazardous waste covered by the manifest or shipping paper was received;

(ii) Note any significant discrepancies (as defined in part (c)1 of this paragraph) in the manifest or shipping paper (if the manifest has not been received) on each copy of the manifest or shipping paper;

(Comment: The Department does not intend that the owner or operator of a facility whose procedures under part (2)(d)3 of this Rule include waste analysis must perform that analysis before signing the shipping paper and giving it to the transporter. Part (c)2 of this paragraph, however, requires reporting an unreconciled discrepancy discovered during later analysis.)

(iii) Immediately give the rail or water (bulk shipment) transporter at least one copy of the manifest or shipping paper (if the manifest has not been received);

(iv) Within 30 days after the delivery, send a copy of the signed and dated manifest to the generator; however, if the manifest has not been received within 30 days after

delivery, the owner or operator, or his agent, must send a copy of the shipping paper signed and dated to the generator; and

(Comment: Rule 1200-1-11-.03(3)(d)3 requires the generator to send three copies of the manifest to the facility when hazardous waste is sent by rail or water (bulk shipment).)

(v) Retain at the facility a copy of the manifest and shipping paper (if signed in lieu of the manifest at the time of delivery) for at least three years from the date of delivery.

3. Whenever a shipment of hazardous waste is initiated from a facility, the owner or operator of that facility must comply with the requirements of Rule 1200-1-11-.03.

(Comment: The provisions of Rule 1200-1-11-.03(4)(e) are applicable to the on-site accumulation of hazardous waste by generators. Therefore, the provisions of Rule 1200-1-11-.03(4)(e) only apply to owners or operators who are shipping hazardous waste which they generated at that facility.)

(c) Manifest Discrepancies

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 a 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.

2. Upon discovering a significant discrepancy, the owner or operator 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 owner or operator must immediately submit to the Commissioner a letter describing the discrepancy and attempts to reconcile it, and a copy of the manifest or shipping paper at issue.

3. It shall be the responsibility of the owner or operator 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 a hazardous waste. The owner or operator may 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 owner or operator believes that the material shipped is indeed not a hazardous waste, then the owner or operator 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 subparagraph (3)(d) of this Rule.

(d) Operating Record

1. The owner or operator must keep a written operating record at his facility.

2. The following information must be recorded, as it becomes available, and maintained in the operating record until closure of the facility:

(i) A description and the quantity of each hazardous waste received, and the method(s) and date(s) of its treatment, storage, or disposal at the facility as required by Appendix .06/A;

(ii) The location of each hazardous waste within the facility and the quantity at each location. For disposal facilities, the location and quantity of each hazardous waste must be recorded on a map or diagram of each cell or disposal area. For all facilities, this information must include cross-references to specific manifest document numbers, if the waste was accompanied by a manifest;

(Comment: See subparagraph (7)(i) of this Rule for related requirements.)

(iii) Records and results of waste analyses performed as specified in subparagraphs (2)(d), (2)(h), (14)(o), and (15)(b) of this Rule;

(iv) Summary reports and details of all incidents that require implementing the contingency plan as specified in part (4)(g)10 of this Rule;

(v) Records and results of inspections as required by part (2)(f)4 of this Rule (except these data need be kept only three years);

(vi) Monitoring, testing, or analytical data where required by paragraph (6) and subparagraphs (11)(g); (12)(d) and (e); (13)(g), (i), and (k); (14)(d) and (i); and (15)(g) of this Rule.

(vii) For off-site facilities, notices to generators as specified in part (2)(c)2 of this Rule;

(viii) All closure cost estimates under subparagraph (8)(c) of this Rule, and, for disposal facilities, all post-closure cost estimates under subparagraph (8)(e) of this Rule; and

(ix) For on-site facilities, 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.

(e) Availability, Retention, and Disposition of Records

1. All records, including plans, required under this Rule must 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.

2. The retention period for all records required under this Rule is extended automatically during the course of any unresolved enforcement action regarding the facility or as requested by the Commissioner or Board.

3. A copy of records of waste disposal locations and quantities under subpart (d)2(ii) of this paragraph must be submitted to the Commissioner and local land authority upon closure of the facility.

(f) Annual Report - The owner or operator must prepare and submit a single copy of an annual report to the Commissioner by March 1 of each year. Such reports must be submitted on forms provided by the Department and in accordance with the instructions accompanying the form. The annual report must cover facility activities during the previous calendar year and must include the following information:

1. The installation identification number, name, and address of the facility;

2. The calendar year covered by the report;

3. For off-site facilities, the installation identification number of each hazardous waste generator from which the facility received a hazardous waste during the year; for imported shipments, the report must give the name and address of the foreign generator;

4. A description and the quantity of each hazardous waste the facility received during the year. For off-site facilities, this information must be listed by installation identification number of each generator;

5. The method of treatment, storage, or disposal for each hazardous waste;

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6. The most recent closure cost estimate under subparagraph (8)(c) of this Rule, and, for disposal facilities, the most recent post-closure cost estimate under subparagraph (8)(e) of this Rule; and

7. The certification signed by the owner or operator of the facility or his authorized representative.

(g) Unmanifested Waste Report - If a facility accepts for treatment, storage, or disposal any hazardous waste from an off-site source without an accompanying manifest, or without an accompanying shipping paper as described in Rule 1200-1-11-.04(3)(a)5(ii), and if the waste is not excluded from the manifest requirement by Rule 1200-1-11-.02(1)(e), then the owner or operator must prepare and submit a single copy of a report to the Commissioner within 15 days after receiving the waste. Such reports must be submitted on forms provided by the Department and in accordance with the instructions accompanying the form. The report must include the following information:

1. The installation identification number, name, and address of the facility;

2. The date the facility received the waste;

3. The installation identification number, name, and address of the generator and the transporter, if available;

4. A description and the quantity of each unmanifested hazardous waste the facility received;

5. The method of treatment, storage, or disposal for each hazardous waste;

6. The certification signed by the owner or operator of the facility or his authorized representative; and

7. A brief explanation of why the waste was unmanifested, if known.

(Comment: Small quantities of hazardous waste are excluded from regulation under this Rule and do not require a manifest. Where a facility receives unmanifested hazardous wastes, the Department suggests that the owner or operator obtain from each generator a certification that the waste qualifies for exclusion. Otherwise, the Department suggests that the owner or operator file an unmanifested waste report for the hazardous waste movement.)

(h) Additional Reports - In addition to submitting the annual report and unmanifested waste reports described in subparagraphs (f) and (g) of this paragraph, the owner or operator must also report to the Commissioner:

1. Releases, fires, and explosions as specified in part (4)(g)10 of this Rule; and

2. Facility closures specified in subparagraph (7)(f) of this Rule; and

3. As otherwise required by paragraphs (6) and (11) through (14) of this Rule.

(6) Ground-water Protection

(a) Applicability

1. Except as provided in part 2 of this subparagraph, the regulations in this paragraph apply to owners and operators of facilities that treat, store, or dispose of hazardous waste in surface impoundments, waste piles, land treatment units, or landfills. The owner or operator must satisfy the requirements of this paragraph for all wastes (or constituents thereof) contained in any such waste management unit at the facility that receives hazardous waste after July 26, 1982 (hereinafter referred to as a "regulated unit"). Any waste or waste constituents migrating beyond the waste management area under part (f)2 of this paragraph is assumed to originate from a regulated unit unless the Commissioner finds such waste or waste constituents originated from another source.

2. The owner's or operator's regulated unit or units are not subject to regulation for releases into the uppermost aquifer under this paragraph if:

(i) He is exempted under subparagraph (1)(b) of this Rule;

(ii) He obtains a waiver under subparagraph (1)(d) of this Rule;

(iii) He operates a unit which the Commissioner finds:

(I) Is an engineered structure,

(II) Does not receive or contain liquid waste or waste containing free liquids,

(III) Is designed and operated to exclude liquid, precipitation and other run-on and run-off,

(IV) Has both inner and outer layers of containment enclosing the waste,

(V) Has a leak detection system built into each containment layer which will be continually operated and maintained by the owner or operator during the active life of the unit and the closure and post-closure care periods, and

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(VI) To a reasonable degree of accuracy, will not allow hazardous constituents to migrate beyond the outer containment layer prior to the end of the post-closure care period.

(iv) The Commissioner finds pursuant to part (13)(k)4 of this Rule, that the treatment zone of a land treatment unit that qualifies as a regulated unit does not contain levels of hazardous constituents that are above background levels of those constituents by an amount that is statistically significant, and if an unsaturated zone monitoring program meeting the requirements of subparagraph (13)(i) of this Rule has not shown a statistically significant increase in hazardous constituents below the treatment zone during the operating life of the unit. An exemption under this subpart can only relieve an owner or operator of responsibility to meet the requirements of this paragraph during the post-closure care period;

(v) The Commissioner finds that there is no potential for migration of liquid from a regulated unit to the uppermost aquifer during the active life of the regulated unit (including the closure period) and the post-closure care period specified under subparagraph (7)(g) of this Rule. This demonstration must be certified by a qualified geologist or geotechnical engineer. In order to provide an adequate margin of safety in the prediction of potential migration of liquid, the owner or operator must base any predictions made under this subpart on assumptions that maximize the rate of liquid migration; or

(vi) He designs and operates a pile in compliance with part (12)(a)3 of this Rule.

3. The regulations under this paragraph apply during the active life of the regulated unit (including the closure period). After closure of the regulated unit, the regulations in this paragraph:

(i) Do not apply if all waste, waste residues, contaminated containment system components, and contaminated subsoils are removed or decontaminated at closure;

(ii) Apply during the post-closure care period under subparagraph (7)(g) of this Rule if the owner or operator is conducting a detection monitoring program under subparagraph (i); or

(iii) Apply during the compliance period under subparagraph (g) if the owner or operator is conducting a compliance monitoring program under subparagraph (j) or a corrective action program under subparagraph (k).

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(b) Required Programs

1. Owners and operators subject to this paragraph must conduct a monitoring and response program as follows:

   (i) Whenever hazardous constituents under subparagraph (d) from a regulated unit are detected at the compliance point under subparagraph (f), the owner or operator must institute a compliance monitoring program under subparagraph (j);

   (ii) Whenever the ground-water protection standard under subparagraph (c) is exceeded, the owner or operator must institute a corrective action program under subparagraph (k);

   (iii) Whenever hazardous constituents under subparagraph (d) from a regulated unit exceed concentration limits under subparagraph (e) in ground water between the compliance point under subparagraph (f) and the downgradient facility property boundary, the owner or operator must institute a corrective action program under subparagraph (k); or

   (iv) In all cases, the owner or operator must institute a detection monitoring program under subparagraph (i).

2. The Commissioner will specify in the facility permit the specific elements of the monitoring and response program. The Commissioner may include one or more of the programs identified in part 1 of this subparagraph in the facility permit as may be necessary to protect human health and the environment and will specify the circumstances under which each of the programs will be required. In deciding whether to require in the initial permit that the owner or operator be prepared to institute a particular program, the Commissioner will consider the potential adverse effects on human health and the environment that might occur before final administrative action could be taken on a permit modification application to incorporate such a program.

(c) Groundwater Protection Standard - The owner or operator must comply with conditions specified in the facility permit that are designed to ensure that hazardous constituents under subparagraph (d) entering the groundwater from a regulated unit do not exceed the concentration limits under subparagraph (e) in the uppermost aquifer underlying the waste management area beyond the point of compliance under subparagraph (f) during the compliance period under subparagraph (g). The Commissioner will establish this groundwater protection standard in the facility permit when hazardous constituents have entered the groundwater from a regulated unit.

(d) Hazardous Constituents

1. The Commissioner will specify in the facility permit the hazardous constituents to which the groundwater protection standard of subparagraph (c) applies. Hazardous constituents are constituents identified in Appendix .02/E of Rule 1200-1-11-.02

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that have been detected in groundwater in the uppermost aquifer underlying a regulated unit and that are reasonably expected to be in or derived from waste contained in a regulated unit, unless the Commissioner has excluded them under part 2 of this subparagraph.

2. The Commissioner will exclude an Appendix .02/E constituent from the list of hazardous constituents specified in the facility permit if he or it finds that the constituent is not capable of posing a substantial present or potential hazard to human health or the environment. In deciding whether to grant an exemption, the Commissioner will consider the following:

(i) Potential adverse effects on ground-water quality, considering:

(I) The physical and chemical characteristics of the waste in the regulated unit, including its potential for migration;

(II) The hydrogeological characteristics of the facility and surrounding land;

(III) The quantity of ground water and the direction of ground-water flow;

(IV) The proximity and withdrawal rates of ground-water users;

(V) The current and future uses of ground water in the area;

(VI) The existing quality of ground water, including other sources of contamination and their cumulative impact on the ground-water quality;

(VII) The potential for health risks caused by human exposure to waste constituents;

(VIII) The potential damage to wildlife, crops, vegetation, and physical structures caused by exposure to waste contituents; and

(IX) The persistence and permanence of the potential adverse effects; and

(ii) Potential adverse effects on hydraulically-connected surface water quality, considering:

(I) The volume and physical and chemical characteristics of the waste in the regulated unit;

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(II) The hydrogeological characteristics of the facility and surrounding land;

(III) The quantity and quality of ground water, and the direction of ground-water flow;

(IV) The patterns of rainfall in the region;

(V) The proximity of the regulated unit to surface waters;

(VI) The current and future uses of surface waters in the area and any water quality standards established for those surface waters;

(VII) The existing quality of surface water, including other sources of contamination and their cumulative impact on surface water quality;

(VIII) The potential for health risks caused by human exposure to waste constituents;

(IX) The potential damage to wildlife, crops, vegetation, and physical structures caused by exposure to waste constituents; and

(X) The persistence and permanence of the potential adverse effects.

3. In making any determination under part 2 of this subparagraph about the use of ground water in the area around the facility, the Commissioner will consider any identification of underground sources of drinking water and exempted aquifers made under 40 CFR 144.8 or Tennessee Rules Chapter 1200-4-6.

(e) Concentration Limits

1. The Commissioner will specify in the facility permit concentration limits in the ground water for hazardous constituents established under subparagraph (d). The concentration of a hazardous constituent:

(i) Must not exceed the background level of that constituent in the ground water at the time that limit is specified in the permit; or

(ii) For any of the constituents listed in Table 1, must not exceed the respective value given in that Table if the background level of the constituent is below the value given in Table 1; or

(iii) Must not exceed an alternate limit established by the Commissioner under part 2 of this subparagraph.

Table 1. Maximum Concentration of Constituents for Groundwater Protection

Constituent	Maximum Concentration (Milligrams per liter)
Arsenic	0.05
Barium	1.0
Cadmium	0.01
Chromium	0.05
Lead	0.05
Mercury	0.002
Selenium	0.01
Silver	0.05
Endrin (1, 2, 3, 4, 10, 10-hexachloro-1, 7-epoxy-1, 4, 4a, 5, 6, 7, 8, 8a-octahydro-1, 4-endo, endo-5, 8-dimethano naphthalene)	0.0002
Lindane (1, 2, 3, 4, 5, 6-hexachlorocyclohexane, gamma isomer)	0.004
Methoxychlor (1, 1, 1-Trichloro-2, 2-bis (p-methoxyphenylethane)	0.1
Toxaphene ($C_{10}H_{10}Cl_8$, Technical chlorinated camphene, 67-69 percent chlorine)	0.005
2, 4-D (2, 4-Dichlorophenoxyacetic acid)	0.1
2, 4, 5-TP Silvex (2, 4, 5-Trichlorophenoxypropionic acid)	0.01

2. The Commissioner will establish an alternate concentration limit for a hazardous constituent if he finds that the constituent will not pose a substantial present or potential hazard to human health or the environment as long as the alternate concentration limit is not exceeded. In establishing alternate concentration limits, the Commissioner will consider the following factors:

   (i) Potential adverse effects on ground-water quality, considering:

      (I) The physical and chemical characteristics of the waste in the regulated unit, including its potential for migration;

      (II) The hydrogeological characteristics of the facility and surrounding land;

      (III) The quantity of ground water and the direction of ground-water flow;

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(IV) The proximity and withdrawal rates of ground-water users;

(V) The current and future uses of ground water in the area;

(VI) The existing quality of ground water, including other sources of contamination and their cumulative impact on the ground-water quality;

(VII) The potential for health risks caused by human exposure to waste constituents;

(VIII) The potential damage to wildlife, crops, vegetation, and physical structures caused by exposure to waste constituents; and

(IX) The persistence and permanence of the potential adverse effects; and

(ii) Potential adverse effects on hydraulically-connected surface water quality, considering:

(I) The volume and physical and chemical characteristics of the waste in the regulated unit;

(II) The hydrogeological characteristics of the facility and surrounding land;

(III) The quantity and quality of ground water, and the direction of ground-water flow;

(IV) The patterns of rainfall in the region;

(V) The proximity of the regulated unit to surface waters;

(VI) The current and future uses of surface waters in the area and any water quality standards established for those surface waters;

(VII) The existing quality of surface water, including other sources of contamination and their cumulative impact on surface water quality;

(VIII) The potential for health risks caused by human exposure to waste constituents;

(IX) The potential damage to wildlife, crops, vegetation, and physical structures caused by exposure to waste constituents; and

(X) The persistence and permanence of the potential adverse effects.

3. In making any determination under part 2 of this subparagraph about the use of ground water in the area around the facility the Commissioner will consider any identification of underground sources of drinking water and exempted aquifers made under 40 CFR 144.8 or Tennessee Rules Chapter 1200-4-6.

(f) Point of Compliance

1. The Commissioner will specify in the facility permit the point of compliance at which the ground-water protection standard of subparagraph (c) applies and at which monitoring must be conducted. The point of compliance is a vertical surface located at the hydraulically downgradient limit of the waste management area that extends down into the uppermost aquifer underlying the regulated unit.

2. The waste management area is the limit projected in the horizontal plane of the area on which waste will be placed during the active life of a regulated unit.

   (i) The waste management area includes horizontal space taken up by any liner, dike, or other barrier designed to contain waste in a regulated unit.

   (ii) If the facility contains more than one regulated unit, the waste management area is described by an imaginary line circumscribing the several regulated units.

(g) Compliance Period

1. The Commissioner will specify in the facility permit the compliance period during which the ground-water protection standard of subparagraph (c) applies. The compliance period is the number of years equal to the active life of the waste management area (including any waste management activity prior to permitting, and the closure period).

2. The compliance period begins when the owner or operator initiates a compliance monitoring program meeting the requirements of subparagraph (j).

3. If the owner or operator is engaged in a corrective action program at the end of the compliance period specified in part 1 of this subparagraph, the compliance period is extended until the owner or operator can demonstrate that the ground-water protection standard of subparagraph (c) has not been exceeded for a period of three consecutive years.

(h) General Ground-water Monitoring Requirements - The owner or operator must comply with the following requirements for any ground-water monitoring program developed to satisfy subparagraphs (i), (j), or (k) of this paragraph:

1. The ground-water monitoring system must consist of a sufficient number of wells, installed at appropriate locations and depths to yield ground-water samples from the uppermost aquifer that:

   (i) Represent the quality of background ground water that has not been affected by leakage from a regulated unit; and

   (ii) Represent the quality of ground water passing the point of compliance.

2. If a facility contains more than one regulated unit, separate ground-water monitoring systems are not required for each regulated unit provided that provisions for sampling the ground water in the uppermost aquifer will enable detection and measurement at the compliance point of hazardous constituents from the regulated units that have entered the ground water in the uppermost aquifer.

3. All monitoring wells must be cased in a manner that maintains the integrity of the monitoring well bore hole. This casing must be screened or perforated and packed with gravel or sand, where necessary, to enable collection of ground-water samples. The annular space (i.e., the space between the bore hole and well casing) above the sampling depth must be sealed to prevent contamination of samples and the ground water.

4. The ground-water monitoring program must include consistent sampling and analysis procedures that are designed to ensure monitoring results that provide a reliable indication of ground-water quality below the waste management area. At a minimum the program must include procedures and techniques for:

   (i) Sample collection;

   (ii) Sample preservation and shipment;

   (iii) Analytical procedures; and

   (iv) Chain of custody control.

5. The ground-water monitoring program must include sampling and analytical methods that are appropriate for ground-water sampling and that accurately measure hazardous constituents in ground-water samples.

6. The ground-water monitoring program must include a determination of the ground-water surface elevation each time ground water is sampled.

7. Where appropriate, the ground-water monitoring program must establish background ground-water quality for each of the hazardous constituents or monitoring parameters or constituents specified in the permit.

(i) In the detection monitoring program under subparagraph (i), background ground-water quality for a monitoring parameter or constituent must be based on data from quarterly sampling of wells upgradient from the waste management area for one year.

(ii) In the compliance monitoring program under subparagraph (j), background ground-water quality for a hazardous constituent must be based on data from upgradient wells that:

(I) Is available before the permit is issued;

(II) Accounts for measurement errors in sampling and analysis; and

(III) Accounts, to the extent feasible, for seasonal fluctuations in background ground-water quality if such fluctuations are expected to affect the concentration of the hazardous constituent.

(iii) Background quality may be based on sampling of wells that are not upgradient from the waste management area where:

(I) Hydrogeologic conditions do not allow the owner or operator to determine what wells are upgradient; or

(II) Sampling at other wells will provide an indication of background ground-water quality that is as representative or more representative than that provided by the upgradient wells.

(iv) In developing the data base used to determine a background value for each parameter or constituent, the owner or operator must take a minimum of one sample from each well and a minimum of four samples from the entire system used to determine background ground-water quality, each time the system is sampled.

8. The owner or operator must use the following statistical procedure in determining whether background values or concentration limits have been exceeded:

(i) If, in a detection monitoring program, the level of a constituent at the compliance point is to be compared to the constituent's background value and that background value has a sample coefficient of variation less than 1.0:

(I) The owner or operator must take at least four portions from a sample at each well at the compliance point and determine whether the difference between the mean of the constituent at each well (using all portions taken) and the background value for the

constituent is significant at the 0.05 level using the Cochran's Approximation to the Behrens-Fisher Student's t-test as described in Appendix .06/C. If the test indicates that the difference is significant, the owner or operator must repeat the same procedure (with at least the same number of portions as used in the first test) with a fresh sample from the monitoring well. If this second round of analyses indicates that the difference is significant, the owner or operator must conclude that a statistically significant change has occurred; or

(II) The owner or operator may use an equivalent statistical procedure for determining whether a statistically significant change has occurred. The Commissioner will specify such a procedure in the facility permit if he or it finds that the alternative procedure reasonably balances the probability of falsely identifying a non-contaminating regulated unit and the probability of failing to identify a contaminating regulated unit in a manner that is comparable to that of the statistical procedure described in item (I) of this subpart.

(ii) In all other situations in a detection monitoring program and in a compliance monitoring program, the owner or operator must use a statistical procedure providing reasonable confidence that the migration of hazardous constituents from a regulated unit into and through the aquifer will be indicated. The Commissioner will specify a statistical procedure in the facility permit that he or it finds:

(I) Is appropriate for the distribution of the data used to establish background values or concentration limits; and

(II) Provides a reasonable balance between the probability of falsely identifying a non-contaminating regulated unit and the probability of failing to identify a contaminating regulated unit.

(i) Detection Monitoring Program - An owner or operator required to establish a detection monitoring program under this paragraph must, as a minimum, discharge the following responsibilities:

1. The owner or operator must monitor for indicator parameters (e.g., specific conductance, total organic carbon, or total organic halogen), waste constituents, or reaction products that provide a reliable indication of the presence of hazardous constituents in ground water. The Commissioner will specify the parameters or constituents to be monitored in the facility permit, after considering the following factors:

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(i) The types, quantities, and concentrations of constituents in wastes managed at the regulated unit;

(ii) The mobility, stability, and persistence of waste constituents or their reaction products in the unsaturated zone beneath the waste management area;

(iii) The detectability of indicator parameters, waste constituents, and reaction products in ground water; and

(iv) The concentrations or values and cofficients of variation of proposed monitoring parameters or constituents in the ground-water background.

2. The owner or operator must install a ground-water monitoring system at the compliance point as specified under subparagraph (f). The ground-water monitoring system must comply with subpart 1(ii) and parts 2 and 3 of subparagraph (h).

3. The owner or operator must establish a background value for each monitoring parameter or constituent specified in the permit pursuant to part 1 of this subparagraph. The permit will specify the background values for each parameter or specify the procedures to be used to calculate the background values.

(i) The owner or operator must comply with part (h)7 of this paragraph in developing the data base used to determine background values.

(ii) The owner or operator must express background values in a form necessary for the determination of statistically significant increases under part (h)8 of this paragraph.

(iii) In taking samples used in the determination of background values, the owner or operator must use a ground-water monitoring system that complies with subpart 1(i) and parts 2 and 3 of subparagraph (h).

4. The owner or operator must determine ground-water quality at each monitoring well at the compliance point at least semi-annually during the active life of a regulated unit (including the closure period) and the post-closure care period. The owner or operator must express the ground-water quality at each monitoring well in a form necessary for the determination of statistically significant increases under part (h)8 of this paragraph.

5. The owner or operator must determine the ground-water flow rate and direction in the uppermost aquifer at least annually.

6. The owner or operator must use procedures and methods for sampling and analysis that meet the requirements of parts (h)4 and 5 of this paragraph.

7. The owner or operator must determine whether there is a statistically significant increase over background values for any parameter or constituent specified in the permit pursuant to part 1 of this subparagraph each time he determines ground-water quality at the compliance point under part 4 of this subparagraph.

   (i) In determining whether a statistically significant increase has occurred, the owner or operator must compare the ground-water quality at each monitoring well at the compliance point for each parameter or constituent to the background value for the parameter or constituent, according to the statistical procedure specified in the permit under part (h)8 of this paragraph.

   (ii) The owner or operator must determine whether there has been a statistically significant increase at each monitoring well at the compliance point within a reasonable time period after completion of sampling. The Commissioner will specify that time period in the facility permit, after considering the complexity of the statistical test and the availability of laboratory facilities to perform the analysis of ground-water samples.

8. If the owner or operator determines, pursuant to part 7 of this subparagraph, that there is a statistically significant increase for parameters or constituents specified pursuant to part 1 of this subparagraph at any monitoring well at the compliance point, he must:

   (i) Notify the Commissioner of this finding in writing within seven days. The notification must indicate what parameters or constituents have shown statistically significant increases;

   (ii) Immediately sample the ground water in all monitoring wells and determine the concentration of all constituents identified in Appendix .02/E of Rule 1200-1-11-.02 that are present in ground water;

   (iii) Establish a background value for each Appendix .02/E constituent that has been found at the compliance point under subpart (ii) of this part, as follows:

      (I) The owner or operator must comply with part (h)7 of this paragraph in developing the data base used to determine background values;

      (II) The owner or operator must express background values in a form necessary for the determination of statistically significant increases under part (h)8 of this paragraph; and

(III) In taking samples used in the determination of background values, the owner or operator must use a ground-water monitoring system that complies with subpart 1(i) and parts 2 and 3 of subparagraph (h);

(iv) Within 90 days, submit to the Commissioner an application for a permit modification to establish a compliance monitoring program meeting the requirements of subparagraph (j). The application must include the following information:

(I) An identification of the concentration of any Appendix .02/E constituents found in the ground water at each monitoring well at the compliance point;

(II) Any proposed changes to the ground-water monitoring system at the facility necessary to meet the requirements of subparagraph (j);

(III) Any proposed changes to the monitoring frequency, sampling and analysis procedures or methods, or statistical procedures used at the facility necessary to meet the requirements of subparagraph (j);

(IV) For each hazardous constituent found at the compliance point, a proposed concentration limit under subparts 1(i) and (ii) of subparagraph (e), or a notice of intent to seek a variance under part 2 of subparagraph (e); and

(v) Within 180 days, submit to the Commissioner:

(I) All data necessary to justify any variance sought under part 2 of subparagraph (e); and

(II) An engineering feasibility plan for a corrective action program necessary to meet the requirements of subparagraph (k), unless:

I. All hazardous constituents identified under subpart 8(ii) of this subparagraph are listed in Table 1 of subparagraph (e) and their concentrations do not exceed the respective values given in that Table; or

II. The owner or operator has sought a variance under part 2 of subparagraph (e) for every hazardous constituent identified under subpart 8(ii) of this subparagraph.

9. If the owner or operator determines, pursuant to part 7 of this subparagraph, that there is a statistically significant increase in parameters or constituents specified pursuant to part 1 of this

subparagraph at any monitoring well at the compliance point, he may demonstrate that a source other than a regulated unit caused the increase or that the increase resulted from error in sampling, analysis, or evaluation. While the owner or operator may make a demonstration under this part in addition to, or in lieu of, submitting a permit modification application under subpart 8(iv) of this subparagraph, he is not relieved of the requirement to submit a permit modification application within the time specified in subpart 8(iv) unless the demonstration made under this part successfullly shows that a source other than a regulated unit caused the increase or that the increase resulted from error in sampling, analysis, or evaluation. In making a demonstration under this part, the owner or operator must:

(i) Notify the Commissioner in writing within seven days of determining a statistically significant increase at the compliance point that he intends to make a demonstration under this part;

(ii) Within 90 days, submit a report to the Commissioner which demonstrates that a source other than a regulated unit caused the increase, or that the increase resulted from error in sampling, analysis, or evaluation;

(iii) Within 90 days, submit to the Commissioner an application for a permit modification to make any appropriate changes to the detection monitoring program at the facility; and

(iv) Continue to monitor in accordance with the detection monitoring program established under this subparagraph.

10. If the owner or operator determines that the detection monitoring program no longer satisfies the requirements of this subparagraph, he must, within 90 days, submit an application for a permit modification to make any appropriate changes to the program.

11. The owner or operator must assure that monitoring and corrective action measures necessary to achieve compliance with the ground-water protection standard under subparagraph (c) are taken during the term of the permit.

(j) Compliance Monitoring Program - An owner or operator required to establish a compliance monitoring program under this paragraph must, at a minimum, discharge the following responsibilities:

1. The owner or operator must monitor the ground water to determine whether regulated units are in compliance with the ground-water protection standard under subparagraph (c). The Commissioner will specify the ground-water protection standard in the facility permit, including:

(i) A list of the hazardous constituents identified under subparagraph (d);

(ii) Concentration limits under subparagraph (e) for each of those hazardous constituents;

(iii) The compliance point under subparagraph (f); and

(iv) The compliance period under subparagraph (g).

2. The owner or operator must install a ground-water monitoring system at the compliance point as specified under subparagraph (f). The ground-water monitoring system must comply with subpart 1(ii) and parts 2 and 3 of subparagraph (h).

3. Where a concentration limit established under subpart 1(ii) of this subparagraph is based on background ground-water quality, the Commissioner will specify the concentration limit in the permit as follows:

(i) If there is a high temporal correlation between upgradient and compliance point concentrations of the hazardous constituents, the owner or operator may establish the concentration limit through sampling at upgradient wells each time ground water is sampled at the compliance point. The Commissioner will specify the procedures used for determining the concentration limit in this manner in the permit. In all other cases, the concentration limit will be the mean of the pooled data on the concentration of the hazardous constituent.

(ii) If a hazardous constituent is identified on Table 1 under subparagraph (e) and the difference between the respective concentration limit in Table 1 and the background value of that constituent under part (h)7 of this paragraph is not statistically significant, the owner or operator must use the background value of the constituent as the concentration limit. In determining whether this difference is statistically significant, the owner or operator must use a statistical procedure providing reasonable confidence that a real difference will be indicated. The statistical procedure must:

(I) Be appropriate for the distribution of the data used to establish background values; and

(II) Provide a reasonable balance between the probability of falsely identifying a significant difference and the probability of failing to identify a significant difference.

(iii) The owner or operator must:

(I) Comply with part (h)7 of this paragraph in developing the data base used to determine background values;

(II) Express background values in a form necessary for the determination of statistically significant increases under part (h)8 of this paragraph; and

(III) Use a ground-water monitoring system that complies with subpart 1(i) and parts 2 and 3 of subparagraph (h).

4. The owner or operator must determine the concentration of hazardous constituents in ground water at each monitoring well at the compliance point at least quarterly during the compliance period. The owner or operator must express the concentration at each monitoring well in a form necessary for the determination of statistically significant increases under part (h)8 of this paragraph.

5. The owner or operator must determine the ground-water flow rate and direction in the uppermost aquifer at least annually.

6. The owner or operator must analyze samples for all constituents contained in Appendix .02/E of Rule 1200-1-11-.02 at least annually to determine whether additional hazardous constituents are present in the uppermost aquifer. If the owner or operator finds Appendix .02/E constituents in the ground water that are not identified in the permit as hazardous constituents, the owner or operator must report the concentrations of these additional constituents to the Commissioner within seven days after completion of the analysis.

7. The owner or operator must use procedures and methods for sampling and analysis that meet the requirements of parts 4 and 5 of subparagraph (h).

8. The owner or operator must determine whether there is a statistically significant increase over the concentration limits for any hazardous constituents specified in the permit pursuant to part 1 of this subparagraph each time he determines the concentration of hazardous constituents in ground water at the compliance point.

(i) In determining whether a statistically significant increase has occurred, the owner or operator must compare the ground-water quality at each monitoring well at the compliance point for each hazardous constituent to the concentration limit for the constituent according to the statistical procedures specified in the permit under part (h)8 of this paragraph.

(ii) The owner or operator must determine whether there has been a statistically significant increase at each monitoring well at the compliance point, within a reasonable time period after completion of sampling. The Commissioner will specify that time period in the facility permit, after considering the complexity of the statistical test and the

availability of laboratory facilities to perform the analysis of ground-water samples.

9. If the owner or operator determines, pursuant to part 8 of this subparagraph, that the ground-water protection standard is being exceeded at any monitoring well at the point of compliance, he must:

   (i) Notify the Commissioner of this finding in writing within seven days. The notification must indicate what concentration limits have been exceeded.

   (ii) Submit to the Commissioner an application for a permit modification to establish a corrective action program meeting the requirements of subparagraph (k) within 180 days, or within 90 days if an engineering feasibility study has been previously submitted to the Commissioner under subpart (i)8(v) of this paragraph. The application must at a minimum include the following information:

      (I) A detailed description of corrective actions that will achieve compliance with the ground-water protection standard specified in the permit under part 1 of this subparagraph; and

      (II) A plan for a ground-water monitoring program that will demonstrate the effectiveness of the corrective action. Such a ground-water monitoring program may be based on a compliance monitoring program developed to meet the requirements of this subparagraph.

10. If the owner or operator determines, pursuant to part 8 of this subparagraph, that the ground-water protection standard is being exceeded at any monitoring well at the point of compliance, he may demonstrate that a source other than a regulated unit caused the increase or that the increase resulted from error in sampling, analysis, or evaluation. While the owner or operator may make a demonstration under this part in addition to, or in lieu of, submitting a permit modification application under subpart 9(ii) of this subparagraph, he is not relieved of the requirement to submit a permit modification application within the time specified in subpart 9(ii) unless the demonstration made under this part successfully shows that a source other than a regulated unit caused the increase or that the increase resulted from error in sampling, analysis, or evaluation. In making a demonstration under this part, the owner or operator must:

   (i) Notify the Commissioner in writing within seven days that he intends to make a demonstration under this part;

   (ii) Within 90 days, submit a report to the Commissioner which demonstrates that a source other than a regulated unit

caused the standard to be exceeded or that the apparent noncompliance with the standards resulted from error in sampling, analysis, or evaluation;

(iii) Within 90 days, submit to the Commissioner an application for a permit modification to make any appropriate changes to the compliance monitoring program at the facility; and

(iv) Continue to monitor in accord with the compliance monitoring program established under this subparagraph.

11. If the owner or operator determines that the compliance monitoring program no longer satisfies the requirements of this subparagraph, he must, within 90 days, submit an application for a permit modification to make any appropriate changes to the program.

12. The owner or operator must assure that monitoring and corrective action measures necessary to achieve compliance with the ground-water protection standard under subparagraph (c) are taken during the term of the permit.

(k) Corrective Action Program - An owner or operator required to establish a corrective action program under this paragraph must, at a minimum, discharge the following responsibilities:

1. The owner or operator must take corrective action to ensure that regulated units are in compliance with the ground-water protection standard under subparagraph (c). The Commissioner will specify the ground-water protection standard in the facility permit, including:

(i) A list of the hazardous constituents identified under subparagraph (d);

(ii) Concentration limits under subparagraph (e) for each of those hazardous constituents;

(iii) The compliance point under subparagraph (f); and

(iv) The compliance period under subparagraph (g).

2. The owner or operator must implement a corrective action program that prevents hazardous constituents from exceeding their respective concentration limits at the compliance point by removing the hazardous waste constituents or treating them in place. The permit will specify the specific measures that will be taken.

3. The owner or operator must begin corrective action within a reasonable time period after the ground-water protection standard is exceeded. The Commissioner will specify that time period in the facility permit. If a facility permit includes a

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corrective action program in addition to a compliance monitoring program, the permit will specify when the corrective action will begin and such a requirement will operate in lieu of subpart 9(ii) of subparagraph (j).

4. In conjunction with a corrective action program, the owner or operator must establish and implement a ground-water monitoring program to demonstrates the effectiveness of the corrective action program. Such a monitoring program may be based on the requirements for a compliance monitoring program under subparagraph (j) and must be as effective as that program in determining compliance with the ground-water protection standard under subparagraph (c), and in determining the success of a corrective action program under part 5 of this subparagraph, where appropriate.

5. In addition to the other requirements of this subparagraph, the owner or operator must conduct a corrective action program to remove or treat in place any hazardous constituents under subparagraph (d) that exceed concentration limits under subparagraph (e) in ground water between the compliance point under subparagraph (f) and the downgradient facility property boundary. The permit will specify the measures to be taken.

   (i) Corrective action measures under this part must be initiated and completed within a reasonable period of time considering the extent of contamination.

   (ii) Corrective action measures under this part may be terminated once the concentration of hazardous constituents under subparagraph (d) is reduced to levels below their respective concentration limits under subparagraph (e).

6. The owner or operator must continue corrective action measures during the compliance period to the extent necessary to ensure that the ground-water protection standard is not exceeded. If the owner or operator is conducting corrective action at the end of the compliance period, he must continue that corrective action for as long as necessary to achieve compliance with the ground-water protection standard. The owner or operator may terminate corrective action measures taken beyond the period equal to the active life of the waste management area (including the closure period) if he can demonstrate, based on data from the ground-water monitoring program under part 4 of this subparagraph, that the ground-water protection standard of subparagraph (c) has not been exceeded for a period of three consecutive years.

7. The owner or operator must report in writing to the Commissioner on the effectiveness of the corrective action program. The owner or operator must submit these reports semi-annually.

8. If the owner or operator determines that the corrective action program no longer satisfies the requirements of this subparagraph, he must, within 90 days, submit an application for a permit modification to make any appropriate changes to the program.

(7) Closure and Post-Closure

(a) Applicability - Except as subparagraphs (1)(b) and (1)(d) of this Rule provide otherwise:

1. Subparagraphs (b)-(f) of this paragraph (which concern closure) apply to the owners and operators of all hazardous waste management facilities; and

2. Subparagraphs (g) through (j) of this paragraph (which concern post-closure care) apply to the owners and operators of:

(i) All hazardous waste disposal facilities; and

(ii) Piles, and surface impoundments from which the owner or operator intends to remove the wastes at closure, to the extent that these subparagraphs are made applicable to such facilities in subparagraphs (11)(i) and (12)(i) of this Rule.

(b) Closure Performance Standard - The owner or operator must close the facility in a manner that:

1. Minimizes the need for further maintenance; and

2. Controls, minimizes or eliminates, to the extent necessary to prevent threats to human health and 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.

(c) Closure Plan; Amendment of Plan

1. The owner or operator of a hazardous waste management facility must have a written closure plan. The plan must be submitted with the permit application, in accordance with Rule 1200-1-11-.07(5)(a)13, and approved by the Commissioner as part of the permit issuance proceeding under Rule 1200-1-11-.07(7). In accordance with Rule 1200-1-11-.07(8)(b)1(v), the approved closure plan will become a condition of any permit. The Commissioner's decision must assure that the approved closure plan is consistent with subparagraphs (b), (d), (e), and (f) of this paragraph and the applicable requirements of subparagraphs (9)(i), (10)(e), (11)(i), (12)(i), (13)(k), (4)(k), and (15)(h) of this Rule. A copy of the approved plan and all revisions to the plan must be kept at the facility until closure is completed and certified in accordance with subparagraph (f) of this paragraph. The plan must identify steps necessary to completely or partially close the

facility at any point during its intended operating life and to completely close the facility at the end of its intended operating life. The closure plan must include, at least:

(i) A description of how and when the facility will be partially closed, if applicable, and finally closed. The description must identify the maximum extent of the operation which will be unclosed during the life of the facility, and how the requirements of subparagraphs (b), (d), (e), and (f) of this paragraph and the applicable closure requirements of subparagraphs (9)(i), (10)(e), (11)(i), (12)(i), (13)(k), (14)(k), and (15)(h) of this Rule will be met;

(ii) An estimate of the maximum inventory of wastes in storage and in treatment at any time during the life of the facility. (Any change in this estimate is a minor modification under Rule 1200-1-11-.07(9)(c)5);

(iii) A description of the steps needed to decontaminate facility equipment during closure; and

(iv) An estimate of the expected year of closure and a schedule for final closure. The schedule must include, at a minimum, the total time required to close the facility and the time required for intervening closure activities which will allow tracking of the progress of closure. (For example, in the case of a landfill, estimates of the time required to treat and dispose of all waste inventory and of the time required to place a final cover must be included.)

2. The owner or operator may amend his closure plan at any time during the active life of the facility. (The active life of the facility is that period during which wastes are periodically received.) The owner or operator must amend the plan whenever changes in operating plans or facility design affect the closure plan, or whenever there is a change in the expected year of closure. When the owner or operator requests a permit modification to authorize a change in operating plans or design, he must request a modification of the closure plan at the same time (see Rule 1200-1-11-.07(9)(c)). If a permit modification is not needed to authorize the change in operating plans or design, the request for modification of the closure plan must be made within 60 days after the change in plans or design occurs.

(Comment: Changes in estimates of maximum inventory and of the estimated year of closure under subparts 1(ii) and 1(iv) of this subparagraph may be made as minor permit modifications under Rule 1200-1-11-.07(9)(c)5.)

3. The owner or operator must notify the Commissioner at least 180 days prior to the date he expects to begin closure.

(Comment: The date when he "expects to begin closure" should be within 30 days after the date on which he expects to receive the final volume of wastes. If the facility's permit is terminated, or if the facility is otherwise ordered, by judicial decree or compliance order under the Act, to cease receiving wastes or to close, then the requirement of this paragraph does not apply. However, the owner or operator must close the facility in accordance with the deadlines established in subparagraph (d) of this paragraph.)

(d) Closure; Time Allowed for Closure

1. Within 90 days after receiving the final volume of hazardous wastes, the owner or operator must treat, remove from the site, or dispose of on-site, all hazardous wastes in accordance with the approved closure plan. The Commissioner may approve a longer period if the owner or operator demonstrates that:

   (i) (I) The activities required to comply with this paragraph will, of necessity, take longer than 90 days to complete; or

   (II) I. The facility has the capacity to receive additional wastes;

   II. There is a reasonable likelihood that a person other than the owner or operator will recommence operation of the site; and

   III. Closure of the facility would be incompatible with continued operation of the site; and

   (ii) He has taken and will continue to take all steps to prevent threats to human health and the environment.

2. The owner or operator must complete closure activities in accordance with the approved closure plan and within 180 days after receiving the final volume of wastes. The Commissioner may approve a longer closure period if the owner or operator demonstrates that:

   (i) (I) The closure activities will, of necessity, take longer than 180 days to complete; or

   (II) I. The facility has the capacity to receive additional wastes;

   II. There is reasonable likelihood that a person other than the owner or operator will recommence operation of the site; and

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III. Closure of the facility would be incompatible with continued operation of the site; and

(ii) He has taken and will continue to take all steps to prevent threats to human health and the environment from the unclosed but inactive facility.

(Comment: Any extension of the 90 or 180 day period in this subparagraph may be made as a minor modification under Rule 1200-1-11-.07(9)(c)5. Under items 1(i)(II) and 2(i)(II) of this subparagraph, if operation of the site is recommenced, the Commissioner may defer completion of closure activities until the new operation is terminated.)

3. If the facility is being totally closed (all units) or otherwise closed such that the annual reporting requirements of subparagraph (5)(f) of this Rule will no longer apply, within 120 days after receiving the final volume of hazardous wastes (or within 30 days after the end of a longer period alternatively approved by the Commissioner pursuant to part 1 of this subparagraph) the owner or operator must submit to the Commissioner the annual report required by subparagraph (5)(f) of this Rule. This report shall cover the calendar year during which the final volume of hazardous waste was received.

(e) Disposal or Decontamination of Equipment - When closure is completed, all facility equipment and structures must have been properly disposed of, or decontaminated by removing all hazardous waste and residues.

(f) Certification of Closure - Within 30 days of completion of closure, the owner or operator must submit to the Commissioner certification both by the owner or operator and by an independent registered professional engineer that the facility has been closed in accordance with the specifications in the approved closure plan.

(g) Post-closure Care and Use of Property

1. (i) Post-closure care must continue for 30 years after the date of completing closure and must consist of at least the following:

(I) Monitoring and reporting in accordance with the requirements of paragraphs (6), (11), (12), (13), and (14) of this Rule; and

(II) Maintenance and monitoring of waste containment systems in accordance with the requirements of paragraphs (6), (11), (12), (13), and (14) of this Rule.

(ii) (I) During the 180 day period preceding closure (see part (c)3 of this paragraph) or at any time thereafter, the Commissioner may reduce the post-closure care period to less than 30 years if he finds that the reduced period is sufficient to protect human health and the

environment (e.g., leachate or groundwater monitoring results, characteristics of the waste, application of advanced technology, or alternative disposal, treatment, or re-use techniques indicate that the facility is secure).

(II) Prior to the time that the post-closure care period is due to expire, the Commissioner may extend the post-closure care period if he finds that the extended period is necessary to protect human health and the environment (e.g., leachate or groundwater monitoring results indicate a potential for migration of waste at levels which may be harmful to human health and the environment).

2. The Commissioner may require, at closure, continuation of any of the security requirements of subparagraph (2)(e) of this Rule during part or all of the post-closure period after the date of completing closure when:

(i) Wastes may remain exposed after completion of closure; or

(ii) Access by the public or domestic livestock may pose a hazard to human health.

3. Post-closure use of property on or in which hazardous wastes remain after closure must never be allowed to disturb the integrity of the final cover, liner(s), or any other components of any containment system, or the function of the facility's monitoring systems, unless the Commissioner finds that the disturbance:

(i) Is necessary to the proposed use of the property, and will not increase the potential hazard to human health or the environment; or

(ii) Is necessary to reduce a threat to human health or the environment.

4. All post-closure care activities must be in accordance with the provisions of the approved post-closure plan as specified in subparagraph (h) of this paragraph.

(h) Post-closure Plan; Amendment of Plan

1. The owner or operator of a disposal facility must have a written post-closure plan. In addition, certain piles and certain surface impoundment from which the owner or operator intends to remove the wastes at closure are required by subparagraphs (11)(i) and (12)(i) of this Rule to have post-closure plans. The plan must be submitted with the permit application, in accordance with Rule 1200-1-11-.07(5)(a)13, and approved by the Commissioner as part of the permit issuance proceeding under Rule 1200-1-11-.07(7). In

accordance with Rule 1200-1-11-.07(8)(b)1(v), the approved post-closure plan will become a condition of any permit issued. A copy of the approved plan and all revisions to the plan must be kept at the facility until the post-closure care period begins. This plan must identify the activities which will be carried on after closure and the frequency of these activities, and include at least:

(i) A description of the planned monitoring activities and frequencies at which they will be performed to comply with paragraphs (6),(11), (12), (13), and (14) of this Rule during the post-closure care period;

(ii) A description of the planned maintenance activities, and frequencies at which they will be performed, to ensure:

(I) The integrity of the cap and final cover or other containment systems in accordance with the requirements of paragraphs (11), (12), (13), and (14) of this Rule; and

(II) The function of the facility monitoring equipment in accordance with the requirements of paragraphs (6), (11), (12), (13), and (14) of this Rule; and

(iii) The name, address, and phone number of the person or office to contact about the disposal facility during the post-closure period. This person or office must keep an updated post-closure plan during the post-closure period.

2. The owner or operator may amend his post-closure plan at any time during the active life of the dispoal facility or during the post-closure care period. The owner or operator must amend his plan whenever changes in operating plans or facility design, or events which occur during the active life of the facility or during the post-closure period, affect his post-closure plan. He must also amend his plan whenever there is a change in the expected year of closure.

3. When a permit modification is requested during the active life of the facility to authorize a change in operating plans or facility design, modification of the post-closure plan must be requested at the same time (see Rule 1200-1-11-.07(9)(c)). In all other cases, the request for modification of the post-closure plan must be made within 60 days after the change in operating plans or facility design or the events which affect his post-closure plan occur.

(i) Notice to Local Land Authority - Within 90 days after closure is completed, the owner or operator of a disposal facility must submit to the local zoning authority or the authority with jurisdiction over local land use and to the Commissioner a survey plat indicating the location and dimensions of landfill cells or other disposal areas with respect to permanently surveyed benchmarks. This plat must be prepared and

certified by a professional land surveyor. The plat filed with the local zoning authority or the authority with jurisdiction over local land use must contain a note, prominently displayed, which states the owner's or operator's obligation to restrict disturbance of the site as specified in part (g)3 of this paragraph. In addition, the owner or operator must submit to the local zoning authority or the authority with jurisdiction over local land use and to the Commissioner a record of the type, location, and quantity of hazardous wastes disposed of within each cell or area of the facility. For wastes disposed of before these regulations were promulgated, the owner or operator must identify the type, location and quantity of the wastes to the best of his knowledge and in accordance with any records he has kept. Any changes in the type, location, or quantity of hazardous wastes disposed of within each cell or area of the facility that occur after the survey plat and record of wastes have been filed must be reported to the local zoning authority or the authority with jurisdiction over local land use and to the Commissioner.

(j) Notice in Deed to Property

1. The owner of the property on which a disposal facility is located must record, in accordance with Tennessee law, a notation on the deed to the facility property - or on some other instrument which is normally examined during title search - that will in perpetuity notify any potential purchaser of the property that:

   (i) The land has been used to manage hazardous wastes;

   (ii) Its use is restricted under part (g)3 of this paragraph; and

   (iii) The survey plat and record of the type, location, and quantity of hazardous wastes disposed of within each cell or area of the facility required in subparagraph (i) of this paragraph have been filed with the local zoning authority or the authority with jurisdiction over local land use and with the Commissioner.

2. If at any time the owner or operator or any subsequent owner of the land upon which the hazardous waste facility was located removes the waste and waste residues, the liner, if any, and all contaminated underlying and surrounding soil, he may remove the notation on the deed to the facility property or other instrument normally examined during title search, or he may add a notation to the deed or instrument indicating the removal of the waste.

   (Comment: On removing the waste and waste residues, the liner, if any, and the contaminated soil, the owner or operator, unless he can demonstrate in accordance with Rule 1200-1-11-.02(1)(c)4 that any waste removed is not a hazardous waste, becomes a generator of hazardous waste and must manage it in accordance with all applicable requirements of these Rules.

(8) Financial Requirements

(a) Applicability

1. The requirements of subparagraphs (c),(d),(g),(h),(i), and (k) through (p) of this paragraph apply to owners and operators of all hazardous waste facilities, except as provided otherwise in this subparagraph or in subparagraph (1)(b) of this Rule.

2. The requirements of subparagraphs (e), (f), and (j) of this paragraph apply only to owners and operators of:

   (i) Disposal facilities, and

   (ii) Piles, and surface impoundments from which the owner or operator intends to remove the wastes at closure, to the extent that these subparagraphs are made applicable to such facilities by subparagraphs (11)(i) and (12)(i) of this Rule.

3. The State and the Federal government are exempt from the requirements of this paragraph.

(b) Definitions Of Terms Used In This Paragraph

1. "Closure plan" means the plan for closure prepared in accordance with the requirements of subparagraph (7)(c) of this Rule.

2. "Current closure cost estimate" means the most recent of the estimates prepared in accordance with parts (c)1, 2, and 3 of this paragraph.

3. "Current post-closure cost estimate" means the most recent of the estimates prepared in accordance with parts (e)1, 2, and 3 of this paragraph.

4. "Division Director" means the Director of the Division of Solid Waste Management of the Department. This person also serves as the Technical Secretary to the Board, and functions as the chief of staff to both the Commissioner and the Board in matters relating to these Rules and their implementation.

5. "Parent corporation" means a corporation which directly owns at least 50 percent of the voting stock of the corporation which is the facility owner or operator; the latter corporation is deemed a "subsidiary" of the parent corporation.

6. "Post-closure plan" means the plan for post-closure care prepared in accordance with the requirements of subparagraphs (7)(g)-(j) of this Rule.

7. The following terms are used in the specifications for the financial tests for financial assurance for closure and post-closure care, and for liability coverage.

The definitions are intended to assist in the understanding of these regulations and are not intended to limit the meanings of terms in a way that conflicts with generally accepted accounting practices.

"Assets" means all existing and all probable future economic benefits obtained or controlled by a particular entity.

"Current assets" means cash or other assets or resources commonly identified as those which are reasonably expected to be realized in cash or sold or consumed during the normal operating cycle of the business.

"Current liabilities" means obligations whose liquidation is reasonably expected to require the use of the existing resources properly classifiable as current assets or the creation of other current liabilities.

"Independently audited" refers to an audit performed by an independent certified public accountant in accordance with generally accepted auditing standards.

"Liabilities" means probable future sacrifices of economic benefits arising from present obligations to transfer assets or provide services to other entities in the future as a result of past transactions or events.

"Net working capital" means current assets minus current liabilities.

"Net worth" means total assets minus total liabilities and is equivalent to owner's equity.

"Tangible net worth" means the tangible assets that remain after deducting liabilities; such assets would not include intangibles such as goodwill and rights to patents or royalties.

8. In the liability insurance requirements the terms "bodily injury" and "property damage" shall have the meanings given these terms by applicable Tennessee law. However, these terms do not include those liabilities which, consistent with standard industry practices, are excluded from coverage in liability policies for bodily injury and property damage. The Department intends the meanings of other terms used in the liability insurance requirements to be consistent with their common meanings within the insurance industry. The definitions given below of several of the terms are intended to assist in the understanding of these regulations and are not intended to limit their meanings in a way that conflicts with general insurance industry usage.

"Accidental occurrence" means an accident, including continuous or repeated exposure to conditions, which results in bodily injury or property damage neither expected nor intended, from the standpoint of the insured.

"Legal defense costs" means any expenses that an insurer incurs in defending against claims of third parties brought under the terms and conditions of an insurance policy.

"Nonsudden accidental occurrence" means an occurrence which takes place over time and involves continuous or repeated exposure.

"Sudden accidental occurrence" means an occurrence which is not continuous or repeated in nature.

(c) Cost Estimate For Closure

1. The owner or operator must prepare a written estimate, in current dollars, of the costs a second party would face in closing the facility if the owner or operator abandoned it or became insolvent. This cost estimate:

   (i) Must equal the cost of closure at the point in the facility's operating life when the extent and manner of its operation would make closure the most expensive, as indicated by its closure plan and/or the factors of subpart (ii) and (iii) of this part;

   (ii) Must assume that any hazardous wastes or hazardous waste residues in storage or in treatment will be shipped off-site for treatment, storage, or disposal at an authorized hazardous waste management facility; and

   (Note: This means that the cost estimate cannot assume that the second party will reduce the waste inventory by continued operation of any on-site treatment or disposal operations.)

   (iii) Must equal the costs that would accrue if such closure were performed under contract by a capable person independent of the owner or operator.

2. The owner or operator must adjust the closure cost estimate for inflation within 30 days after each anniversary of the date on which the first closure cost estimate was prepared. The adjustment must be made as specified in subparts (i) and (ii) of this part, using an inflation factor derived from the annual Implicit Price Deflator for Gross National Product as published by the U.S. Department of Commerce in its Survey of Current Business. The inflation factor is the result of dividing the latest published annual Deflator by the Deflator for the previous year.

   (i) The first adjustment is made by multiplying the closure cost estimate by the inflation factor. The result is the adjusted closure cost estimate.

(ii) Subsequent adjustments are made by multiplying the latest adjusted closure cost estimate by the latest inflation factor.

3. The owner or operator must revise the closure cost estimate whenever a change in the closure plan increases the cost of closure. The revised closure cost estimate must be adjusted for inflation as specified in part 2 of this subparagraph.

4. The owner or operator must keep the following at the facility during the operating life of the facility: the latest closure cost estimate prepared in accordance with parts 1 and 3 of this subparagraph and, when this estimate has been adjusted in accordance with part 2 of this subparagraph, the latest adjusted closure cost estimate. Such cost estimates must be itemized and address all closure activities.

(d) Financial Assurance for Closure - An owner or operator of each facility must file and maintain with the Division Director financial assurance for closure of the facility in accordance with the requirements of this subparagraph.

1. The owner or operator must choose from the financial assurance mechanisms as specified in subparagraph (g) of this paragraph. (NOTE: See also subparagraphs (h),(i),(j), and (k) of this paragraph.)

2. The owner or operator must file and maintain financial assurance in an amount at least equal to the current closure cost estimate.

(i) Whenever the closure cost estimate increases to an amount greater than the amount of financial assurance currently filed with the Division Director, the owner or operator must, within 60 days after the increase, file additional financial assurance at least equal to this increase.

(ii) Whenever the current closure cost estimate decreases, and upon the written request of the owner or operator, the Division Director shall, provided he validates the decrease, reduce the amount of financial assurance required for the facility to the amount of the current closure cost estimate. Upon such occurrence, the Division Director shall, as appropriate considering the financial assurance mechanism(s) on file, either cause to be released to the owner or operator cash or collateral equal to this reduction or allow the owner or operator to substitute for the mechanism(s) on file a new mechanism(s) in the reduced amount.

3. An owner or operator of a new facility must file the financial assurance instrument(s) before the permit can be issued or as may otherwise be directed by the Commissioner. In any case, the financial assurance must be effective before the date on which hazardous waste is first received for treatment, storage, or disposal.

4. The financial assurance must be maintained until the Commissioner releases the owner or operator from the requirements of this subparagraph, as specified in this part, or until the Commissioner orders forfeiture of the financial assurance as provided in part 5 of this subparagraph.

   (i) Within 60 days after receiving certifications from the owner or operator and an independent registered professional engineer that closure has been accomplished in accordance with the closure plan, the Division Director will notify the owner or operator in writing that he is no longer required by this subparagraph to maintain financial assurance for closure of the particular facility, unless the Commissioner has reason to believe that closure has not been in accordance with the closure plan. At that time of such notification, the Division Director shall also cause to be released to the owner or operator (or issuing institution, if appropriate) the financial assurance filed to provide for such closure.

   (ii) Financial assurance will normally be released in the form(s) it was submitted. However, where such release involves an amount equal to only a portion of the funds assured by a financial assurance mechanism (see subparagraphs (i) and (j) of this paragraph), the Commissioner shall, as appropriate considering the type of mechanism involved, either cause to be released to the owner or operator cash or collateral equal to that amount or allow the owner or operator to substitute for the mechanism on file a new mechanism(s) reduced by that amount.

5. The Commissioner may order that any financial assurance filed by an owner or operator pursuant to this subparagraph be forfeited to the State if the Commissioner determines that the owner or operator has failed to perform final closure in accordance with the closure plan and other permit requirements when required to do so. Any such forfeiture action shall follow the procedures provided in subparagraph (l) of this paragraph.

(e) <u>Cost Estimate for Post-Closure Monitoring and Maintenance</u>

1. The owner or operator of a facility subject to post-closure monitoring or maintenance requirements must have a written estimate of the annual cost of post-closure monitoring and maintenance of the facility in accordance with the applicable post-closure regulations in subparagraphs (7)(g)-(j), (11)(i), (12)(i), (13)(k), and (14)(k) of this Rule. The owner or operator must keep this estimate, and all subsequent estimates required in this subparagraph, at the facility. The estimate must equal the cost of post-closure monitoring and maintenance if it were performed under contract by a capable person independent of the owner or operator.

2. During the operating life of the facility, the owner or operator must adjust the post-closure cost estimate for inflation within 30 days

after each anniversary of the date on which the first post-closure cost estimate was prepared. The adjustment must be made as specified in subparts (i) and (ii) of this part, using an inflation factor derived from the annual Implicit Price Deflator for Gross National Product as published by the U.S. Department of Commerce in its Survey of Current Business. The inflation factor is the result of dividing the latest published annual Deflator by the Deflator for the previous year.

(i) The first adjustment is made by multiplying the post-closure cost estimate by the inflation factor. The result is the adjusted post-closure cost estimate.

(ii) Subsequent adjustments are made by multiplying the latest adjusted post-closure cost estimate by the latest inflation factor.

3. The owner or operator must revise the post-closure cost estimate during the operating life of the facility whenever a change in the post-closure plan increases the cost of post-closure care. The revised post-closure cost estimate must be adjusted for inflation as specified in part 2 of this subparagraph.

4. The owner or operator must keep the following at the facility during the operating life of the facility: the latest post-closure cost estimate prepared in accordance with parts 1 and 3 of this subparagraph and, when this estimate has been adjusted in accordance with part 2 of this subparagraph, the latest adjusted post-closure cost estimate. Such cost estimates must be itemized and address all post-closure monitoring and maintenance activities.

(f) Financial Assurance for Post-Closure Monitoring and Maintenance - The owner or operator of a facility subject to post-closure monitoring or maintenance requirements must file and maintain with the Division Director financial assurance for post-closure care in accordance with the approved post-closure plan for the facility and the requirements of this subparagraph.

1. The owner or operator must choose from the financial assurance mechanisms as specified in subparagraph (g) of this paragraph. (NOTE: See also subparagraphs (h),(i),(j), and (k) of this paragraph).

2. The owner or operator must file and maintain financial assurance in an amount at least equal to the current post-closure cost estimate.

(i) Whenever the current post-closure cost estimate increases to an amount greater than the amount of financial assurance currently filed with the Division Director, the owner or operator must, within 60 days after the increase, file additional financial assurance at least equal to this increase.

(ii) Whenever the current post-closure cost estimate decreases during the operating life of the facility, and upon the written request of the owner or operator, the Division Director shall, provided he validates the decrease, reduce the amount of financial assurance required for the facility to the amount of the current post-closure cost estimate. Upon such occurrence, the Division Director shall, as appropriate considering the financial assurance mechanism(s) on file, either cause to be released to the owner or operator cash or collateral equal to this reduction or allow the owner or operator to substitute for the mechanism(s) on file a new mechanism(s) in the reduced amount.

(iii) During the period of post-closure care, the Division Director may reduce the amount of financial assurance required for the facility if the owner or operator demonstrates to the Division Director that the amount currently filed exceeds the remaining cost of post-closure care. Upon such occurrence, the Division Director shall, as appropriate considering the financial assurance mechanism(s) on file, either cause to be released to the owner or operator cash or collateral equal to this reduction or allow the owner or operator to substitute for the mechanism(s) on file a new mechanism(s) in the reduced amount.

3. An owner or operator of a new facility must file the financial assurance instrument(s) before the permit can be issued or as may otherwise be directed by the Commissioner. In any case, the financial assurance must be effective before the date on which hazardous waste is first received for disposal.

4. The financial assurance must be maintained until the Commissioner releases the owner or operator from the requirements of this subparagraph, as specified in this part, or until the Commissioner orders forfeiture of the financial assurance as provided in part 5 of this subparagraph.

(i) When an owner or operator has completed, to the satisfaction of the Commissioner, all post-closure care requirements in accordance with the post-closure plan, the Commissioner will, at the request of the owner or operator, notify him in writing that he is no longer required by this subparagraph to maintain financial assurance for post-closure care of the particular facility. At such time the Commissioner shall also cause to be released to the owner or operator (or issuing institution, if appropriate) the financial assurance filed to provide for such post-closure care.

(ii) Financial assurance will normally be released in the form(s) it was submitted. However, where such release involves an amount equal to only a portion of the funds assured by a financial assurance mechanism (see subparagraphs (i) and (j) of this paragraph), the Commissioner shall, as appropriate considering the type of mechanism involved, either cause to be released to

the owner or operator cash or collateral equal to that amount or allow the owner or operator to substitute for the mechanism on file a new mechanism(s) reduced by that amount.

5. The Commissioner may order that any financial assurance filed by an owner or operator pursuant to this subparagraph be forfeited to the State if the Commissioner determines that the owner or operator has failed to perform post-closure care in accordance with the post-closure plan and other permit requirements. Any such forfeiture action shall follow the procedures provided in subparagraph (l) of this paragraph.

(g) Mechanisms of Financial Assurance

1. Surety Bond - An owner or operator may satisfy the requirements of subparagraphs (d) and/or (f) of this paragraph by obtaining and filing a surety bond which conforms to the requirements of this part.

(i) The surety company issuing the bond must be licensed to do business as a surety in Tennessee.

(ii) The wording of the surety bond must be identical to the wording specified in part (n)1 of this paragraph.

(iii) The bond must guarantee that the owner or operator will:

(I) Perform final closure in accordance with the closure plan and other requirements of the permit for the facility whenever required to do so, and/or perform post-closure care in accordance with the post-closure care plan and other requirements of the permit for the facility; or

(II) Provide alternate financial assurance as specified in this paragraph, and obtain the Division Director's written approval of the assurance provided, within 90 days of receipt by both the owner or operator and the Division Director of a notice of cancellation of the bond from the surety.

(iv) Under the terms of the bond, the surety will become liable on the bond obligation when the owner or operator fails to perform as guaranteed by the bond. Following a determination by the Commissioner that the owner or operator has failed to so perform, under the terms of the bond the surety will perform final closure and/or post-closure care as guaranteed by the bond or will forfeit the amount of the penal sum, as provided in parts (d)5 and/or (f)5 of this paragraph.

(v) The penal sum of the bond must be in an amount at least adequate to provide the necessary financial assurance.

(vi) Under the terms of the bond, the surety may cancel the bond by sending notice of cancellation by certified mail to the owner or operator and to the Division Director. Cancellation may not occur, however, during the 120 days beginning on the date of receipt of the notice of cancellation by both the owner or operator and the Division Director, as evidenced by the return receipts.

(vii) The surety will not be liable for deficiencies in the performance of closure and/or post-closure care by the owner or operator after the Commissioner releases the owner or operator from the financial assurance requirements as provided in parts (d)4 and/or (f)4 of this paragraph.

2. Personal Bond Supported by a Letter of Credit - An owner or operator may satisfy the requirements of subparagraphs (d) and/or (f) of this paragraph by filing his personal performance guarantee accompanied by collateral in the form of an irrevocable standby letter of credit. He must guarantee to perform final closure in accordance with the closure plan and other requirements of the permit for the facility whenever required to do so, and/or guarantee to perform post-closure care in accordance with the post-closure plan and other requirements of the permit for the facility. The irrevocable standby letter of credit supporting this guarantee must conform to the following requirements:

(i) The institution issuing the letter of credit must be an entity which has the authority to issue letters of credit and whose letter-of-credit operations are regulated and examined by a Federal or State agency.

(ii) The wording of the letter of credit must be identical to the wording specified in part (n)2 of this paragraph.

(iii) The letter of credit must be accompanied by a letter from the owner or operator referring to the letter of credit by number, issuing institution, and date, and providing the following information: the installation identification number, name, and address of the facility, and the amount of funds assured for closure and/or post-closure care of the facility by the letter of credit. (NOTE: This letter from the owner or operator may also contain his personal performance guarantee.)

(iv) The letter of credit must be irrevocable and issued for a period of at least one year. The letter of credit must provide that the expiration date will be automatically extended for a period of at least one year unless, at least 120 days before the current expiration date, the issuing institution notifies both the owner or operator and the Division Director by certified mail of a decision not to extend the expiration date. Under the terms of the letter of credit, the 120 days will begin on the date when both the owner or operator and the Division Director have received the

notice, as evidenced by the return receipts.

(v) The letter of credit must be issued in an amount at least adequate to provide the necessary financial assurance.

(vi) The Division Director may draw on the letter of credit upon forfeiture as provided in parts (d)5 and (f)5 of this paragraph. The Division Director will also draw on the letter of credit if the owner or operator does not establish alternate financial assurance as specifed in this paragraph and obtain written approval of such alternate assurance from the Division Director within 90 days after receipt by both the owner or operator and the Division Director of a notice from the issuing institution that it has decided not to extend the letter of credit beyond the current expiration date. The Division Director may delay the drawing if the issuing institution grants an extension of the term of the credit. During the last 30 days of any such extension the Division Director will draw on the letter of credit if the owner or operator has failed to provide alternate financial assurance as specified in this paragraph and obtain written approval of such assurance from the Division Director.

3. Personal Bond Supported by Insurance - An owner or operator may satisfy the requirements of subparagraphs (d) and/or (f) of this paragraph by filing his personal performance guarantee accompanied by collateral in the form of an insurance policy. He must guarantee to perform final closure in accordance with the closure plan and other requirements of the permit for the facility whenever required to do so, and/or guarantee to perform post-closure care in accordance with the post-closure plan and other requirements of the permit for the facility. The insurance policy supporting this guarantee must conform to the following requirements:

(i) The insurer must be licensed to transact the business of insurance, or eligible to provide insurance as an excess or surplus lines insurer, in the State of Tennessee.

(ii) The insurance policy must be accompanied by a certificate of insurance whose wording is identical to the wording specified in part (n)3 of this paragraph.

(iii) The insurance policy must be for a face amount at least adequate to provide the necessary financial assurance. The term "face amount" means the total amount the insurer is obligated to pay under the policy. Actual payments by the insurer will not change the face amount, although the insurer's future liability will be lowered by the amount of the payments.

(iv) The insurance policy must guarantee that funds will be available to close the facility whenever final closure occurs and/or to provide post-closure care of the facility whenever the post-closure period begins. The policy must also guarantee that once

final closure and/or the post-closure care period begins, the insurer will be responsible for paying out funds, up to an amount equal to the face amount of the policy, upon the direction of the Division Director, to such party or parties as the Division Director specifies.

(v) Under an insurance policy which guarantees the availability of funds for final closure, after final closure begins an owner or operator or any other person authorized to perform closure may request reimbursement from the insurer for closure expenditures by submitting itemized bills to the Division Director. Within 60 days after receiving bills for closure activities, the Division Director will determine whether the closure expenditures are in accordance with the closure plan or otherwise justified, and if so, he will instruct the insurer to make reimbursement in such amounts as the Division Director specifies in writing. If the Division Director has reason to believe that the cost of closure will be significantly greater than the face amount of the policy, he may withhold reimbursement of such amounts as he deems prudent until the owner or operator is released from the financial assurance requirement as provided in part (d)4 of this paragraph.

(vi) Under an insurance policy which guarantees the availability of funds for post-closure care, an owner or operator or any other person authorized to perform post-closure care may request reimbursement from the insurer for post-closure expenditures by submitting itemized bills to the Division Director. Within 60 days after receiving bills for post-closure activities, the Division Director will determine whether the post-closure expenditures are in accordance with the post-closure plan or otherwise justified, and if so, he will instruct the insurer to make reimbursement in such amounts as the Division Director specifies in writing.

(vii) Upon forfeiture of financial assurance as provided in parts (d)5 and (f)5 of this paragraph, the Division Director will direct the insurer to pay the full face amount to the State.

(viii) The owner or operator must maintain the policy in full force and effect until the Division Director, Commissioner, or Board releases the financial assurance mechanism as provided in this paragraph. Failure to pay the premium, without substitution of alternate financial assurance as specified in this paragraph, will constitute a significant violation of these regulations, warranting such remedy as the Commissioner deems necessary. Such violation will be deemed to begin upon receipt by the Division Director of a notice of future cancellation, termination, or failure to renew due to nonpayment of the premium, rather than upon the date of expiration.

(ix) Each policy must contain a provision allowing assignment of the policy to a successor owner or operator. Such assignment may be conditional upon consent of the insurer, provided such consent is not unreasonably refused.

(x) The policy must provide that the insurer may not cancel, terminate, or fail to renew the policy except for failure to pay the premium. The automatic renewal of the policy must, at a minimum, provide the insured with the option of renewal at the face amount of the expiring policy. If there is a failure to pay the premium, the insurer may elect to cancel, terminate, or fail to renew the policy by sending notice by certified mail to the owner or operator and the Division Director. Cancellation, termination, or failure to renew may not occur, however, during the 120 days beginning with the date of receipt of the notice by both the Division Director and the owner or operator, as evidenced by the return receipts. Cancellation, termination, or failure to renew may not occur and the policy will remain in full force and effect in the event that on or before the date of expiration:

(I) The Division Director deems the facility abandoned; or

(II) The permit is terminated or revoked or a new permit is denied; or

(III) Closure is ordered by the Commissioner, the Board, or a court of competent jurisdiction; or

(IV) The owner or operator is named as debtor in a voluntary or involuntary proceeding under Title 11 (Bankruptcy), U.S. Code; or

(V) The premium due is paid.

(xi) Commencing on the date that liability to make payments pursuant to the policy accrues, the insurer will thereafter annually increase the face amount of the policy. Such increase must be equivalent to the face amount of the policy, less any payments made, multiplied by an amount equivalent to 85 percent of the most recent investment rate or of the equivalent coupon-issue yield announced by the U.S. Treasury for 26-week Treasury securities.

4. Personal Bond Supported by Securities - An owner or operator may satisfy the requirements of subparagraphs (d) and/or (f) of this paragraph by filing his personal performance guarantee accompanied by collateral in the form of securities. He must guarantee to perform final closure in accordance with the closure plan and other requirements of the permit for the facility whenever required to do so, and/or guarantee to perform post-closure care in accordance with the post-closure plan and other requirements of the permit for the

facility. The securities supporting this guarantee must be fully registered as to principal and interest in such manner as to identify the State and the Department as holder of such collateral and to also identify that person filing such collateral. These securities must have a current market value at least adequate to provide the necessary financial assurance, and must be included among the following types:

(i) Negotiable certificates of deposit assigned irrevocably to the State.

(I) Such certificates of deposit must be automatically renewable and must be assigned to the State in writing and recorded as such in the records of the financial institution issuing such certificate.

(II) Such certificates of deposit must also include a statement signed by an officer of the issuing financial institution which waives all rights of lien which the institution has or might have against the certificate.

(ii) Negotiable United States Treasury securities assigned irrevocably to the State.

(iii) Negotiable general obligation municipal or corporate bonds which have at least an "A" rating by Moody's and/or Standard and Poor's rating services and which are assigned irrevocably to the State.

5. Personal Bond Supported by Cash - An owner or operator may satisfy the requirements of subparagraphs (d) and/or (f) of this paragraph by filing his personal performance guarantee accompanied by cash in an amount at least adequate to provide the necessary financial assurance. He must guarantee to perform final closure in accordance with the closure plan and other requirements of the permit for the facility whenever required to do so, and/or guarantee to perform post-closure care in accordance with the post-closure plan and other requirements of the permit for the facility.

6. Financial Test and Corporate Guarantee

(i) An owner or operator may satisfy the requirements of subparagraphs (d) and/or (f) of this paragraph by demonstrating that he passes a financial test as specified in this part. To pass this test the owner or operator must meet the criteria of either item (I) or (II) of this subpart as follows:

(I) The owner or operator must have:

I. Two of the following three ratios: a ratio of total liabilities to net worth less than 2.0, a ratio of the sum of net income plus depreciation, depletion, and

amortization to total liabilities greater than 0.1, and a ratio of current assets to current liabilities greater than 1.5; and

II. Net working capital and tangible net worth each at least six times the sum of the current closure and post-closure cost estimates; and

III. Tangible net worth of at least $10 million; and

IV. Assets in the United States amounting to at least 90 percent of his total assets or at least six times the sum of the current closure and post-closure cost estimates.

(II) The owner or operator must have:

I. A current rating for his most recent bond issuance of AAA, AA, A, or BBB as issued by Standard and Poor's or Aaa, Aa, A, or Baa as issued by Moody's; and

II. Tangible net worth at least six times the sum of the current closure and post-closure cost estimates; and

III. Tangible net worth of at least $10 million; and

IV. Assets located in the United States amounting to at least 90 percent of his total assets or at least six times the sum of the current closure and post-closure cost estimates.

(ii) The phrase "current closure and post-closure cost estimates" as used in subpart (i) of this part refers to the cost estimates required to be shown in paragraphs 1-4 of the letter from the owner's or operator's chief financial officer (see part (n)4 of this paragraph).

(iii) To demonstrate that he meets this test, the owner or operator must submit the following items to the Division Director:

(I) A letter signed by the owner's or operator's chief financial officer and worded as specified in part (n)4 of this paragraph; and

(II) A copy of the independent certified public accountant's report on examination of the owner's or operator's financial statements for the latest completed fiscal year; and

(III) A special report from the owner's or operator's independent certified public accountant to the owner or operator stating that:

I. He has compared the data which the letter from the chief financial officer specifies as having been derived from the independently audited, year-end financial statements for the latest fiscal year with the amounts in such financial statements; and

II. In connection with that procedure, no matters came to his attention which caused him to believe that the specified data should be adjusted.

(iv) An owner or operator of a new facility must submit the items specified in subpart (iii) of this part to the Division Director at least 60 days before the date on which hazardous waste is first received for treatment, storage, or disposal.

(v) After the initial submission of items specified in subpart (iii) of this part, the owner or operator must send updated information to the Division Director within 90 days after the close of each succeeding fiscal year. This information must consist of all three items specified in subpart (iii) of this part.

(vi) If the owner or operator no longer meets the requirements of subpart (i) of this part, he must send notice to the Division Director of intent to establish alternate financial assurance as specified in this paragraph. The notice must be sent by certified mail within 90 days after the end of the fiscal year for which the year-end financial data show that the owner or operator no longer meets the requirements. The owner or operator must provide the alternate financial assurance within 120 days after the end of such fiscal year.

(vii) The Division Director may, based on a reasonable belief that the owner or operator may no longer meet the requirements of subpart (i) of this part, require reports of financial condition at any time from the owner or operator in addition to those specified in subpart (iii) of this part. If the Division Director finds, on the basis of such reports or other information, that the owner or operator no longer meets the requirements of subpart (i) of this part, the owner or operator must provide alternate financial assurance as specified in this paragraph within 30 days after notification of such a finding.

(viii) The Division Director may disallow use of this test on the basis of qualifications in the opinion expressed by the independent certified public accountant in his report on examination of the owner's or operator's financial statements (see item (iii)(II) of this part). An adverse opinion or a disclaimer of opinion will be cause for disallowance. The Division Director will evaluate other qualifications on an individual basis. The owner or operator must provide alternate financial assurance as specified in this paragraph within 30 days after notification of the disallowance.

(ix) An owner or operator may meet the requirements of subparagraphs (d) and/or (f) of this paragraph by obtaining a written guarantee, hereafter referred to as "corporate guarantee". The guarantor must be the parent corporation of the owner or operator. The guarantor must meet the requirements for owners or operators in subparts (i) through (viii) of this part and must comply with the terms of the corporate guarantee. The wording of the corporate guarantee must be identical to the wording specified in part (n)5 of this paragraph. The corporate guarantee must accompany the items sent to the Division Director as specified in subpart (iii) of this part. The terms of the corporate guarantee must provide that:

(I) If the owner or operator fails to perform final closure of a facility covered by a corporate guarantee for closure in accordance with the closure plan and other permit requirements whenever required to do so, the guarantor will do so or forfeit to the State monies in an amount equal to the current closure cost estimate for the facility , as provided in part (d)5 of this paragraph. If the owner or operator fails to perform post-closure care of a facility covered by a corporate guarantee for post-closure care in accordance with the post-closure plan and other permit requirements, the guarantor will do so or forfeit to the State monies in an amount equal to the current post-closure cost estimate for the facility, as provided in part (f)5 of this paragraph.

(II) The corporate guarantee will remain in force unless the guarantor sends notice of cancellation by certified mail to the owner or operator and to the Division Director. Cancellation may not occur, however, during the 120 days beginning on the date of receipt of the notice of cancellation by both the owner or operator and the Division Director, as evidenced by the return receipts.

(III) If the owner or operator fails to provide alternate financial assurance as specified in this paragraph and obtain the written approval of such alternate assurance from the Division Director within 90 days after receipt by both the owner or operator and the Division Director of a notice of cancellation of the corporate guarantee from the guarantor, the guarantor will provide such alternative financial assurance in the name of the owner or operator.

(h) Use of Multiple Financial Mechanisms - In meeting the requirements of subparagraphs (d) or (f) of this paragraph, an owner or operator may utilize more than one financial assurance mechanism per facility. These mechanisms are limited to personal bonds supported by letters of credit, insurance, securities, or cash. The mechanisms must be as specified in subparagraph (g) of this paragraph, except that it is the combination of mechanisms, rather than the single mechanism, which must provide

financial assurance for the necessary amount.

(i) Use of a Financial Mechanism for Multiple Facilities - An owner or operator may use a financial assurance mechanism specified in subparagraph (g) of this paragraph to meet the requirements of subparagraphs (d) or (f) of this paragraph for more than one facility he owns or operates in Tennessee. If so, the mechanism submitted to the Division Director must include a list showing, for each facility, the installation identification number, name, address, and amount of funds for closure and/or post-closure care assured by the mechanism. The amount of funds available through the mechanism must be no less than the sum of funds that would be available if a separate mechanism had been filed and maintained for each facility. In a financial assurance forfeiture action taken under parts (d)5 and (f)5 of this paragraph for closure and/or post-closure care of any of the facilities covered by the mechanism, the Commissioner may order forfeiture of only the amount of funds designated for that facility, unless the owner or operator agrees to the use of additional funds available under the mechanism.

(j) Use of a Mechanism for Financial Assurance for Both Closure and Post-Closure Care - An owner or operator may satisfy the requirements for financial assurance for both closure and post-closure care for one or more facilities by using a mechanism from subparagraph (g) of this paragraph which meets the requirements of both subparagraphs (d) and (f) of this paragraph. The amount of funds available through the mechanism must be no less than the sum of funds that would be available if a separate mechanism had been established and maintained for financial assurance for closure and for post-closure care.

(k) Substituting Alternate Financial Assurance - In meeting the requirements of subparagraphs (d) or (f) of this paragraph, an owner or operator may substitute alternate financial assurance meeting the requirements of this paragraph for the financial assurance already filed with the Division Director for the facility. However, the existing financial assurance shall not be released by the Division Director until the substitute financial assurance has been received and approved by him.

(l) Procedures for Forfeiture of Financial Assurance

1. Upon his determination that the owner or operator has failed to perform final closure in accordance with the closure plan and other permit requirements when required to do so, or has failed to perform post-closure care in accordance with the post-closure plan and other permit requirements, the Division Director shall cause a notice of non-compliance to be served upon the owner or operator. Such notice shall be hand delivered or forwarded by certified mail. The notice of non-compliance shall specify in what respects the owner or operator has failed to perform as required, and shall establish a schedule of compliance leading to compliance with the plan and other permit requirements as soon as possible.

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2. If the Division Director determines that the owner or operator has failed to perform as specified in the notice of non-compliance, or as specified in any subsequent compliance agreement which may have been reached by the owner or operator and the Division Director, the Division Director shall cause a notice of show cause meeting to be served upon the owner or operator. Such notice shall be signed by the Division Director and either hand-delivered or forwarded by certified mail to the owner or operator. The notice of show cause meeting shall establish the date, time, and location of a meeting scheduled to provide the owner or operator with the opportunity to show cause why the Division Director should not pursue forfeiture of the financial assurance filed to guarantee such performance.

3. If no mutual compliance agreement is reached at the show cause meeting, or upon the Division Director's determination that the owner or operator has failed to perform as specified in such agreement that was reached, the Division Director shall request the Commissioner to order forfeiture of the financial assuance filed to guarantee such performance.

4. The Commissioner shall order forfeiture of the financial assurance upon his or its validation of the Division Director's determinations and upon his or its determination that the procedures of this subparagraph have been followed. The Commissioner may however, at his or its discretion, provide opportunity for the owner or operator to be heard before himself or it before issuing such order. Upon issuance a copy of the order shall be hand delivered or forwarded by certified mail to the owner or operator. Any such order issued by the Commissioner shall become effective 30 days after receipt by the owner or operator unless it is appealed to the Board as provided in Section 68-46-113 of the Act.

5. If necessary, upon the effective date of the order of forfeiture, the Commissioner shall give notice to the State Attorney General who shall collect the forfeiture.

6. All forfeited funds shall be deposited in the State's hazardous waste trust fund account for use by the Commissioner as set forth in Section 68-46-108(c)(6) of the Act.

(m) Management of Collateral Filed With the State - The Division Director shall obtain possession of and deposit with the Treasurer of the State of Tennessee all collateral filed under this paragraph, in accordance with Tennessee Code Annotated Section 8-5-110. At the owner or operator's request, the State Treasurer shall release to the operator any interest income from deposited securities as the same becomes due and payable.

(n) Liability Requirements

1. Coverage for Sudden Accidental Occurrences - An owner or operator of a hazardous waste treatment, storage, or disposal facility, or a group of such facilities, must demonstrate financial responsibility for

bodily injury and property damage to third parties caused by sudden accidental occurrences arising from operations of the facility or group of facilities. The owner or operator must have and maintain liability coverage for sudden accidental occurrences in the amount of $1 million per occurrence (for bodily injury and property damage combined) with an annual aggregate of at least $2 million, exclusive of legal defense costs. This liability coverage may be demonstrated in one of three ways, as specified in subparts (i), (ii) and (iii) of this part.

(i) An owner or operator may demonstrate the required liability coverage by having liability insurance as specified in this subpart.

(I) Each insurance policy must be amended by attachment of the Hazardous Waste Facility Liability Endorsement or evidenced by a Certificate of Liability Insurance. The wording of the endorsement must be identical to the wording specified in part (p)6 of this paragraph. The wording of the certificate of insurance must be identical to the wording specified in part (p)7 of this paragraph. The owner or operator must submit a signed duplicate original of the endorsement or the certificate of insurance to the Division Director. If requested by the Division Director, the owner or operator must provide a signed duplicate original of the insurance policy. An owner or operator of a new facility must submit the signed duplicate original of the Hazardous Waste Facility Liability Endorsement or the Certificate of Liability Insurance to the Division Director at least 60 days before the date on which hazardous waste is first received for treatment, storage, or disposal. The insurance must be effective before this initial receipt of hazardous waste.

(II) Each insurance policy must be issued by an insurer which, at a minimum, is licensed to transact the business of insurance, or eligible to provide insurance as an excess or surplus lines insurer, in Tennessee.

(ii) An owner or operator may meet the requirements of this part by passing a financial test for liability coverage as specified in part 6 of this subparagraph.

(iii) An owner or operator may demonstrate the required liability coverage through use of both the financial test and insurance as these mechanisms are specified in this subparagraph. The amounts of coverage demonstrated must total at least the minimum amounts required by this part.

2. Coverage for Nonsudden Accidental Occurrences - An owner or operator of a surface impoundment, landfill, or land treatment facility which is used to manage hazardous waste, or a group of such facilities, must

demonstrate financial responsiblity for bodily injury or property damage to third parties caused by nonsudden accidental occurrences arising from operations of the facility or group of facilities. The owner or operator must have and maintain liability coverage for nonsudden accidental occurrences in the amount of at least $3 million per occurrence (for bodily injury and property damage combined) with an annual aggregate of at least $6 million, exclusive of legal defense costs. This liability coverage may be demonstrated in one of three ways, as specified in subparts (i), (ii), and (iii) of this part.

(i) An owner or operator may demonstrate the required liability coverage by having liability insurance as specified in this subpart.

(I) Each insurance policy must be amended by attachment of the Hazardous Waste Facility Liability Endorsement or evidenced by a Certificate of Liability Insurance. The wording of the endorsement must be identical to the wording specified in part (p)6 of this paragraph. The wording of the certificate of insurance must be identical to the wording specified in in part (p)7 of this paragraph. The owner or operator must submit a signed duplicate original of the endorsement or the certificate of insurance to the Division Director. If requested by the Division Director, the owner or operator must provide a signed duplicate original of the insurance policy. An owner or operator of a new facility must submit the signed duplicate original of the Hazardous Waste Facility Liability Endorsement or the Certificate of Liability Insurance to the Division Director at least 60 days before the date on which hazardous waste is first received for treatment, storage, or disposal. The insurance must be effective before this initial receipt of hazardous waste.

(II) Each insurance policy must be issued by an insurer which, at a minimum, is licensed to transact the business of insurance, or eligible to provide insurance as an excess or surplus lines insurer, in Tennessee.

(ii) An owner or operator may meet the requirements of this part by passing a financial test for liability coverage as specified in part 6 of this subparagraph.

(iii) An owner or operator may demonstrate the required liability coverage through use of both the financial test and insurance as these mechanisms are specified in this subparagraph. The amounts of coverage must total at least the minimum amounts required by this part.

(iv) For existing facilities, the required liability coverage for nonsudden accidental occurrences must be demonstrated by the dates listed below. The total sales or revenues of this owner or operator in all lines of business, in the fiscal year preceding the effective date of these regulations, will determine which of the dates applies. If the owner and operator of a facility are two

different parties, or if there is more than one owner or operator, the sales or revenues of the owner or operator with the largest sales or revenues will determine the date by which the coverage must be demonstrated. The dates are as follows:

(I) For an owner or operator with sales or revenues totalling $5 million or more, 6 months after the effective date of these regulations.

(II) All other owners or operators, January 16, 1985.

3. Request for Variance - If an owner or operator can demonstrate to the satifisfaction of the Commissioner that the levels of financial responsibility required by parts 1 and 2 of this subparagraph are not consistent with the degree and duration of risk associated with treatment, storage, or disposal at the facility or group of facilities, the owner or operator may obtain a variance from the Commissioner. The request for a variance must be submitted to the Commissioner as part of the application under Rule 1200-1-11-.07(5) for a facility that does not have a permit, or pursuant to the procedures for permit modification under Rule 1200-1-11-.07(9)(c) for a facility that has a permit. If granted, the variance will take the form of an adjusted level of required liability coverage, such level to be based on the Commissioner's assessment of the degree and duration of risk associated with the ownership or operation of the facility or group of facilities. The Commissioner may require an owner or operator who requests a variance to provide such technical and engineering information as is deemed necessary by the Commissioner to determine a level of financial responsibility other than that required by part 1 or 2 of this subparagraph. Any request for a variance for a permitted facility will be treated as a request for a permit modification under Rule 1200-1-11-.07(9)(c)3(xiii) and 2.

4. Adjustments by the Commissioner - If the Commissioner determines that the levels of financial responsibility required by part 1 or 2 of this subparagraph are not consistent with the degree and duration of risk associated with treatment, storage, or disposal at the facility or group of facilities, the Commissioner may adjust the level of financial responsibility required under part 1 or 2 of this subparagraph as may be necessary to protect human health and environment. This adjusted level will be based on the Commissioner's assessment of the degree and duration of risk associated with the ownership or operation of the facilty or group of facilities. In addition, if the Commissioner determines that there is a significant risk to human health and the environment for nonsudden accidental occurrences resulting from the operations of a facility that is not a surface impoundment, landfill, or land treatment facility, he or it may require that an owner or operator of the facility comply with part 2 of this subparagraph. An owner or operator must furnish to the Division Director, within a reasonable time, any information which the Commissioner requests to determine whether cause exists for such adjustments of level or type of coverage. Any adjustment of

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the level or type of coverage for a facility that has a permit will be treated as a permit modification under Rule 1200-1-11-.07(9)(c)3(xiii) and 2.

5. Period of Coverage - An owner or operator must continuously provide liability coverage for a facility as required by this subparagraph until certifications of closure of the facility, as specified in Rule 1200-1-11-.06(7)(f), are received by the Commissioner.

6. Financial Test for Liability Coverage

(i) An owner or operator may satisfy the requirements of this subparagraph by demonstrating that he passes a financial test as specified in this part. To pass this test the owner or operator must meet the criteria of items (I) or (II) of this subpart.

(I) The owner or operator must have:

I. Net working capital and tangible net worth each at least six times the amount of liability coverage to be demonstrated by this test; and

II. Tangible net worth of at least $10 million; and

III. Assets in the United States amounting to either:

A. At least 90 percent of his total assets; or

B. At least six times the amount of liability coverage to be demonstrated by this test.

(II) The owner or operator must have:

I. A current rating for his most recent bond issuance of AAA, AA, A, or BBB as issued by Standard and Poor's, or Aaa, Aa, A, or Baa as issued by Moody's; and

II. Tangible net worth of at least $10 million; and

III. Tangible net worth at least six times the amount of liability coverage to be demonstrated by this test; and

IV. Assets in the United States amounting to either:

A. At least 90 percent of his total assets; or

B. At least six times the amount of liability coverage to be demonstrated by this test.

(ii) The phrase "amount of liability coverage" as used in subpart (i) of this part refers to the annual aggregate amounts for which coverage is required under parts 1 and 2 of subparagraph.

(iii) To demonstrate that he meets this test, the owner or operator must submit the following three items to the Division Director:

(I) A letter signed by the owner's or operator's chief financial officer and worded as specified in part (p)8 of this paragraph. If an owner or operator is using the financial test to demonstrate both assurance for closure and post-closure care (as specified by subparagraphs (d) and (f) and part (g)6 of this paragraph and Rule 1200-1-11-.05(d), (f) and (g)5) and liability coverage, he must submit the letter specified in part (p)8 of this paragraph to cover both forms of financial responsiblity; a separate letter as specified in part (p)4 of this paragraph is not required.

(II) A copy of the independent certified public accountant's report on examination of the owner's or operator's financial statements for the latest completed fiscal year.

(III) A special report from the owner's or operator's independent certified public accountant to the owner or operator stating that:

I. He has compared the data which the letter from the chief financial officer specifies as having been derived from the independently audited, year-end financial statements for the latest fiscal year with the amounts in such financial statements; and

II. In connection with that procedure, no matters came to his attention which caused him to believe that the specified data should be adjusted.

(iv) An owner or operator of a new facility must submit the items specified in subpart (iii) of this part to the Division Director at least 60 days before the date on which hazardous waste is first received for treatment, storage, or disposal.

(v) After the initial submission of items specified in subpart (iii) of this part, the owner or operator must send updated information to the Division Director within 90 days after the close of each succeeding fiscal year. This information must consist of all three items specified in subpart (iii) of this part.

(vi) If the owner or operator no longer meets the requirements of subpart (i) of this part, he must obtain insurance for the entire amount of required liability coverage as specified in this subparagraph. Evidence of insurance must be submitted to the Division Director within 90 days after the end of the fiscal year

for which the owner or operator no longer meets the test requirements.

(vii) The Commissioner may disallow use of this test on the basis of qualifications in the opinion expressed by the independent certified public accountant in his report on examination of the owner's or operator's financial statements (see item (iii)(II) of this part). An adverse opinion or a disclaimer of opinion will be cause for disallowance. The Commissioner will evaluate other qualifications on an individual basis. The owner or operator must provide evidence of insurance for the entire amount of required liability coverage as specified in this subparagraph within 30 days after notification of disallowance.

(o) Incapacity of Owners or Operators, Guarantors, or Financial Institutions

1. An owner or operator must notify the Division Director by certified mail of the commencement of a voluntary or involuntary proceeding under Title 11 (Bankruptcy), U.S. Code, naming the owner or operator as debtor, within 10 days after commencement of the proceeding. A guarantor of a corporate guarantee as specified in part (g) 6 of this paragraph must make such a notification if he is named as debtor, as required under the terms of the corporate gurantee (see part (n)5 of this paragraph).

2. An owner or operator who fulfills the requirements of subparagraph (d), (f), or (n) of this paragraph by obtaining a surety bond, letter of credit, or insurance policy will be deemed to be without the required financial assurance or liability coverage in the event of bankruptcy of the issuing institution, or a suspension or revocation of the authority of the institution issuing the surety bond, letter of credit, or insurance policy to issue such instruments. The owner or operator must establish other financial assurance or liability coverage within 60 days after such an event.

(p) Wording of the Instruments

1. A surety bond guaranteeing performance of closure and/or post-closure care, as specified in part (g)1 of this paragraph, must be worded as follows, except that the instructions in parentheses are to be replaced with the relevant information and the parentheses deleted:

PERFORMANCE BOND

Date bond executed: _____

Effective date: _____

Principal: (legal name and business address of owner or operator)

Type of organization: (insert "individual," "joint venture," "partnership," or "corporation")
State of incorporation: _____
Surety(ies): (Name(s) and business address(es))

Installation Identification Number, name, address, and closure and/or post-closure amount(s) for each facility guaranteed by this bond (indicate closure and post-closure amounts separately):

_____

Total penal sum of bond: $_____

Surety's bond number: _____

KNOW ALL PERSONS BY THESE PRESENTS, That we, the Principal and Surety(ies) hereto are firmly bound to the Tennessee Department of Health and Environment (hereinafter called Department), in the above penal sum for the payment of which we bind ourselves, our heirs, executors, administrators, successors, and assigns jointly and severally; provided that, where the Surety(ies) are corporations acting as co-sureties, we, the Sureties, bind ourselves in such sum "jointly and severally" only for the purpose of allowing a joint action or actions against any or all of us, and for all other purposes each Surety binds itself, jointly and severally with the Principal, for the payment of such sum only as is set forth opposite the name of such Surety, but if no limit of liability is indicated, the limit of liability shall be the full amount of the penal sum.

WHEREAS said Principal is required, under the Tennessee Hazardous Waste Management Act as amended (THWMA), to have a permit in order to own or operate each hazardous waste management facility identified above, and

WHEREAS said Principal is required to provide financial assurance for closure, or closure and post-closure care, as a condition of the permit;

NOW, THEREFORE, the conditions of this obligation are such that if the Principal shall faithfully perform closure, whenever required to do so, of each facility for which this bond guarantees closure, in accordance with the closure plan and other requirements of the permit as such plan and permit may be amended, pursuant to all applicable laws, statutes, rules, and regulations, as such laws, statutes, rules, and regulations may be amended,

AND, if the Principal shall faithfully perform post-closure care of each facility for which this bond guarantees post-closure care, in accordance with the post-closure plan and other requirements of the permit, as such plan and permit may be amended, pursuant to all applicable laws, statutes, rules, and regulations, as such laws, statutes, rules, and regulations may be amended,

OR, if the Principal shall provide alternate financial assurance as specified in Department Rule 1200-1-11-.06(8), and obtain the written approval of such assurance from the Director of the Department's Division of Solid Waste Management (hereinafter called

Division Director), within 90 days after the date notice of cancellation is received by both the Principal and the Division Director from the Surety(ies), then this obligation shall be null and void, otherwise it is to remain in full force and effect.

The Surety(ies) shall become liable on this bond obligation only when the Principal has failed to fulfill the conditions described above.

Upon notification by the Division Director that the principal has been found in violation of the closure requirements of Department Rule 1200-1-11-.06, for a facility for which this bond guarantees performance of closure, the Surety(ies) shall either perform closure in accordance with the closure plan and other permit requirements or forfeit the closure amount guaranteed for the facility to the Department as directed the Division Director.

Upon notification by the Division Director that the Principal has been found in violation of the post-closure requirements of Department Rule 1200-1-11-.06 for a facility for which this bond guarantees performance of post-closure care, the Surety(ies) shall either perform post-closure care in accordance with the post-closure plan and other permit requirements or forfeit the post-closure amount guaranteed for the facility to the Department as directed by the Division Director.

Upon notification by the Division Director that the Principal has failed to provide alternate financial assurance as specified in Department Rule 1200-1-11-.06(8), and obtain written approval of such assurance from the Division Director during the 90 days following receipt by both the Principal and the Division Director of a notice of cancellation of the bond, the Surety(ies) shall forfeit funds in the amount guaranteed for the facility(ies) to the Department as directed by the Division Director.

The Surety(ies) hereby waive(s) notification of amendments to closure plans, permits, applicable laws, statutes, rules, and regulations and agrees that no such amendment shall in any way alleviate its (their) obligation on this bond.

The liability of the Surety(ies) shall not be discharged by any payment or succession of payments hereunder, unless and until such payment or payments shall amount in the aggregate to the penal sum of the bond, but in no event shall the obligation of the Surety(ies) hereunder exceed the amount of said penal sum.

The Surety(ies) may cancel the bond by sending notice of cancellation by certified mail to the owner or operater and to the Division Director, provided, however, that cancellation shall not occur during the 120 days beginning on the date of receipt of the notice of cancellation by both the Principal and the Division Director, as evidenced by the return receipts.

The Principal may terminate this bond by sending written notice to the Surety(ies), provided, however, that no such notice shall become effective until the Surety(ies) receive(s) written authorization for termination of the bond by the Division Director.

(The following paragraph is an optional rider that may be included but is not required.)

Principal and Surety(ies) hereby agree to adjust the penal sum of the bond yearly so that it guarantees a new closure and/or post-closure amount, provided that the penal sum does not increase by more than 20 percent in any one year, and no decrease in the penal sum takes place without the written permission of the Division Director.

IN WITNESS WHEREOF, the Principal and Surety(ies) have executed this PERFORMANCE BOND and have affixed their seals on the date set forth above.

The persons whose signatures appear below hereby certify that they are authorized to execute this surety bond on behalf of the Principal and Surety(ies) and that the wording of this surety bond is identical to the wording specified in Department Rule 1200-1-11-.06(8)(p)1 as such regulation was constituted on the date this bond was executed.

PRINCIPAL

(Signature(s))

(Name(s))

(Title(s))

(Corporate seal)

CORPORATE SURETY(IES)

(Name and address)

State of incorporation: _____

Liability limit: $_____

(Signature(s))

(Name(s) and title(s))

Corporate seal:

(For every co-surety, provide signature(s), corporate seal, and other information in the same manner as for Surety above.)

Bond premium: $ _____

2. A letter of credit, as specified in part (g)2 of this paragraph and in Rule 1200-1-11-.05(8)(g)1, must be worded as follows, except that instructions in parentheses are to be replaced with the relevant information and the parentheses deleted:

IRREVOCABLE STANDBY LETTER OF CREDIT

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

Dear Sir or Madam:

We hereby establish our Irrevocable Standby Letter of Credit No. ___ in your favor, at the request and for the account of (owner's or operator's name and address) up to the aggregate amount of (in words) U.S. dollars $_____, available upon presentation of

1) your sight draft, bearing reference to this letter of credit No. ____, and
2) your signed statement reading as follows: "I certify that the amount of the draft is payable pursuant to regulations issued under authority of the Tennessee Hazardous Waste Managment Act, as amended."

This letter of credit is effective as of (date) and shall expire on (date at least 1 year later), but such expiration date shall be automatically extended for a period of (at least 1 year) on (date) and on each successive expiration date, unless, at least 120 days before the current expiration date, we notify both you and (owner's or operator's name) by certified mail that we have decided not to extend this letter of credit beyond the current expiration date. In the event you are so notified, any unused portion of the credit shall be available upon presentation of your sight draft for 120 days after the date of receipt by both you and (owner's or operator's name), as shown on the signed return receipts.

Whenever this letter of credit is drawn on under and in compliance with the terms of this credit, we shall duly honor such draft upon presentation to us, and we shall forfeit the amount of the draft to the State of Tennessee in accordance with your instructions.

We certify that the wording of this letter of credit is identical to the wording specified in State Rule 1200-1-11-.06(8)(p)2 as such regulations were constituted on the date shown immediately below.

(Signature(s) and title(s) of official(s) of issuing institution) (Date)

This credit is subject to (insert "the most recent edition of the Uniform Customs and Practice for Documentary Credits, published by the International Chamber of Commerce," or "the Uniform Commercial Code").

3. A certificate of insurance, as specified in part (g)3 of this paragraph and in Rule 1200-1-11-.05(8)(g)2, must be worded as follows, except that instructions in parentheses are to be replaced with the relevant information and the parentheses deleted:

CERTIFICATE OF INSURANCE FOR CLOSURE OR POST-CLOSURE CARE

Name and Address of Insurer
(herein called the "Insurer"): _____

Name and Address of Insured
(herein called the "Insured"): _____

Facilities Covered: (List for each facility: The Installation Identification Number, name, address, and the amount of insurance for closure and/or the amount for post-closure care (these amounts for all facilities covered must total the face amount shown below).)

Face Amount: _____

Policy Number: _____

Effective Date: _____

The Insurer hereby certifies that it has issued to the Insured the policy of insurance identified above to provide financial assurance for (insert "closure" or "closure and post-closure care" or "post-closure care") for the facilites identified above. The Insurer further warrants that such policy conforms in all respects with the requirements of State Rules 1200-1-11-.05(8)(g)2 and 1200-1-11-.06(8)(g)3, as applicable and as such regulations were constituted on the date shown immediately below. It is agreed that any provision of the policy inconsistent with such regulations is hereby amended to eliminate such inconsistency.

Whenever requested by the Director of the Division of Solid Waste Management of the Tennessee Department of Health and Environment, the Insurer agrees to furnish to the Division Director a duplicate original of the policy listed above, including all endorsements thereon.

I hereby certify that the wording of this certificate is identical to the wording specified in Tennessee Rule 1200-1-11-.06(8)(p)3 as such regulations were constituted on the date shown immediately below.

(Authorized signature for Insurer)

(Name of person signing)

(Title of person signing)

Signature of witness or notary: _____

(Date)

4. A letter from the chief financial officer, as specified in part (g)6 of this paragraph and in Rule 1200-1-11-.05(8)(g)5, must be worded as follows, except that instructions in parentheses are to be replaced with the relevant information and the parentheses deleted:

LETTER FROM CHIEF FINANCIAL OFFICER

(Address to Division Director)

I am the chief financial officer of (name and address of firm). This letter is in support of this firm's use of the financial test to demonstrate financial assurance, as specified in Tennessee Rule 1200-1-11-.05(8) and 1200-1-11-.06(8).

(Fill out the following four paragraphs regarding facilities and associated cost estimates. If your firm has no facilities that belong in a particular paragraph, write "None" in the space indicated. For each facility, include its Installation Identification Number, name, address, and current closure and/or post-closure cost estimates. Identify each cost estimate as to whether it is for closure or post-closure care.)

1. This firm is the owner or operator of the following facilities for which financial assurance for closure or post-closure care is demonstrated through the financial test specified in Tennessee Rules 1200-1-11.05(8) and 1200-1-11-.06(8). The current closure and/or post-closure cost estimates covered by the test are shown for each facility: _____.

2. This firm guarantees, through the corporate guarantee specified in Tennessee Rule 1200-1-11-.05(8) and 1200-1-11-.06(8), the closure or post-closure care of the following facilities owned or operated by subsidiaries of this firm. The current cost estimates for the closure or post-closure care so guaranteed are shown for each facility: _____.

3. In other states, this firm, as owner or operator or guarantor, is demonstrating financial assurance for the closure or post-closure care of the following facilities through the use of a test equivalent or substantially equivalent to the financial test specified in Tennessee Rules 1200-1-11-.05(8) and 1200-1-11-.06(8). The current closure and/or post-closure cost estimates covered by such a test are shown for each facility: _____.

4. This firm is the owner or operator of the following hazardous waste management facilities for which financial assurance for closure or, if a disposal facility, post-closure care, is not demonstrated either to the Department, another State, or the U.S. Environmental Protection Agency through the financial test or any other financial assurance mechanism specified in Tennessee Rules 1200-1-11-.05(8) and 1200-1-11-.06(8) or equivalent or substantially equivalent mechanisms. The current closure and/or post-closure cost estimates not covered by such financial assurance are shown for each facility: _____.

This firm (insert "is required" or "is not required") to file a Form 10K with the Securities and Exchange Commission (SEC) for the latest fiscal year.

The fiscal year of this firm ends on (month, day). The figures for the following items marked with an asterisk are derived from this firm's independently audited, year-end financial statement for the latest completed fiscal year, ended (date).

(Fill in Alternative I if the criteria of item (g)6(i)(I) of this paragraph or of Rule 1200-1-11-.05(8)(g)4(i)(I) are used. Fill in Alternative II if the criteria of item (g)6(i)(II) of this paragraph or of Rule 1200-1-11-.05(8)(g)5(i)(II) are used).

ALTERNATIVE I

1.	Sum of current closure and post-closure cost estimates (total of all cost estimates shown in the four paragraphs above)	$_____
*2.	Total liabilities (if any portion of the closure or post-closure cost estimates is included in total liabilities, you may deduct the amount of that portion from this line and add that amount to lines 3 and 4)	$_____
*3.	Tangible net worth	$_____
*4.	Net worth	$_____
*5.	Current assets	$_____
*6.	Current liabilities	$_____
*7.	Net working capital (line 5 minus line 6)	$_____
*8.	The sum of net income plus depreciation, depletion, and amortization	$_____
*9.	Total assets in U.S. (required only if less than 90% of firm's assets are located in the U.S.)	$_____

		YES	NO
10.	Is line 3 at least $10 million?	____	____
11.	Is line 3 at least 6 times line 1?	____	____
12.	Is line 7 at least 6 times line 1?	____	____
*13.	Are at least 90% of firm's assets located in the U.S.? If not, complete line 14.	____	____
14.	Is line 9 at least 6 times line 1?	____	____
15.	Is line 2 divided by line 4 less than 2.0?	____	____
16.	Is line 8 divided by line 2 greater than 0.1?	____	____
17.	Is line 5 divided by line 6 greater than 1.5?	____	____

ALTERNATIVE II

1.	Sum of current closure and post-closure cost estimates (total of all cost estimates shown in the four paragraphs above)	$_____	
2.	Current bond rating of most recent issuance of this firm and name of rating service	_____	
3.	Date of issuance of bond	_____	
4.	Date of maturity of bond	_____	
*5.	Tangible net worth	$_____	
*6.	Total assets in U.S. (required only if less than 90% of firm's assets are located in the U.S.)	$_____	
		YES	NO
7.	Is line 5 at least $10 million?	____	____
8.	Is line 5 at least 6 times line 1?	____	____
*9.	Are at least 90% of firm's assets located in the U.S.? If not, complete line 10.	____	____
10.	Is line 6 at least 6 times line 1?	____	____

I hereby certify that the wording of this letter is identical to the wording specified in Tennessee Rule 1200-1-11-.06(8)(p)4 as such regulations were constituted on the date shown immediately below.

(Signature)

(Name)

(Title)

(Date)

5. A corporate guarantee, as specified in part (g)6 of this paragraph or in Rule 1200-1-11-.05(8)(g)5, must be worded as follows, except that instructions in parentheses are to be replaced with the relevant information and the parentheses deleted:

CORPORATE GUARANTEE FOR CLOSURE OR POST-CLOSURE CARE

Guarantee made this (date) by (name of guaranteeing entity), a business corporation organized under the laws of the State of (insert name of State), herein referred to as guarantor, to the Tennessee Department of Health and Environment (Department), obligee, on behalf of our subsidiary (owner or operator) of (business address).

Recitals

1. Guarantor meets or exceeds the financial test criteria and agrees to comply with the reporting requirements for guarantors as specified in Tennessee Rules 1200-1-11-.05(8)(g)5 and 1200-1-11-.06(8)(g)6.

2. (Owner or operator) owns or operates the following hazardous waste management facility(ies) covered by this guarantee: (List for each facility: Installation Identification Number, name, and address. Indicate for each whether guarantee is for closure, post-closure care, or both.)

3. "Closure plans" and "post-closure plans" as used below refer to the plans maintained as required by Tennessee Rules 1200-1-11-.05(7) and 1200-1-11-.06(7) for the closure and post-closure care of facilities as identified above.

4. For value received from (owner or operator), guarantor guarantees to the Department that in the event that (owner or operator) fails to perform (insert "closure," "post-closure care" or "closure and post-closure care") of the above facility(ies) in accordance with the closure or post-closure plans and other permit or interim status requirements whenever required to do so, the guarantor shall do so or forfeit to the State of Tennessee, as specified in Tennessee Rules 1200-1-11-.05(8) or 1200-1-11-.06(8), as applicable, monies in an amount equal to the current closure or post-closure cost estimates as specified in Tennessee Rules 1200-1-11-.05(8) and 1200-1-11-.06(8).

5. Guarantor agrees that if, at the end of any fiscal year before termination of this guarantee, the guarantor fails to meet the financial test criteria, guarantor shall send within 90 days, by certified mail, notice to the Director of the Department's Division of Solid Waste Management (Division Director) and to (owner or operator) that he intends to provide alternate financial assurance as specified in Tennessee Rules 1200-1-11-.05(8) or 1200-1-11-.06(8), as applicable, in the name of (owner or

operator). Within 120 days after the end of such fiscal year, the guarantor shall establish such financial assurance unless (owner or operator) has done so.

6. The guarantor agrees to notify the Division Director, by certified mail, of a voluntary or involuntary proceeding under Title 11 (Bankruptcy), U.S. Code, naming guarantor as debtor, within 10 days after commencement of this proceeding.

7. Guarantor agrees that within 30 days after being notified by the Division Director of a determination that guarantor no longer meets the financial test criteria or that he is disallowed from continuing as a guarantor of closure or post-closure, he shall establish alternate financial assurance as specified in Tennessee Rules 1200-1-11-.05(8) or 1200-1-11-.06(8), as applicable, in the name of (owner or operator) unless (owner or operator) has done so.

8. Guarantor agrees to remain bound under this guarantee notwithstanding any or all of the following: amendment or modification of the closure or post-closure plan, amendment or modification of the permit, the extension or reduction of the time of performance of closure or post-closure, or any other modification or alteration of an obligation of the owner or operator pursuant to Tennessee Rules 1200-1-11-.05 or 1200-1-11-.06.

9. Guarantor agrees to remain bound under this guarantee for so long as (owner or operator) must comply with the applicable financial assurance requirements of Tennessee Rules 1200-1-11-.05(8) and 1200-1-11-.06(8) for the above-listed facilities, except that guarantor may cancel this guarantee by sending notice by certified mail to the Division Director and to (owner or operator), such cancellation to become effective no earlier than 120 days after receipt of such notice by both the Department and (owner or operator), as evidenced by the return receipts.

10. Guarantor agrees that if (owner or operator) fails to provide alternate financial assurance as specified in Tennessee Rules 1200-1-11-.05(8) or 1200-1-11-.06(8), as applicable, and obtain written approval of such assurance from the Division Director within 90 days after a notice of cancellation by the guarantor is received by the Division Director from guarantor, guarantor shall provide such alternate financial assurance in the name of (owner or operator).

11. Guarantor expressly waives notice of acceptance of this guarantee by the Department or by (owner or operator). Guarantor also expressly waives notice of amendments or modifications of the closure and/or post-closure plan and of amendments or modifications of the facility permit(s).

I hereby certify that the wording of this guarantee is identical to the wording specified in Tennessee Rule 1200-1-11-.06(8)(p)5 as such regulations were constituted on the date first above written.

Effective Date: _____

(Name of guarantor)

(Authorized signature for guarantor)

(Name of person signing)

(Title of person signing)

Signature of witness of notary: _____

6. A hazardous waste facility liability endorsement as required in subparagraph (n) of this paragraph and Rule 1200-1-11-.05(8)(n), must be worded as follows, except that instructions in parentheses are to be replaced with the relevant information and the parentheses deleted:

HAZARDOUS WASTE FACILITY LIABILITY ENDORSEMENT

(1) This endorsement certifies that the policy to which the endorsement is attached provides liability insurance covering bodily injury and property damage in connection with the insured's obligation to demonstrate financial responsibility under Tennessee Department of Health and Environment Rules 1200-1-11-.06(8)(n) or 1200-1-11-.05(8)(n). The coverage applies at (list Installation Identification Number, name and address for each facility) for (insert "sudden accidental occurrences", "nonsudden accidental occurrences", or "sudden and nonsudden accidental occurrences". If coverage is for multiple facilities and the coverage is different for different facilities, indicate which facilities are insured for sudden accidental occurrences, which are insured for nonsudden accidental occurrences, and which are insured for both.) The limits of liability are (insert the dollar amount of the "each occurrence" and "annual aggregate" limits of the Insurer's liability), exclusive of legal defense costs. (If the endorsement is for an excess insurance policy, this last sentence should be replaced by a sentence which reads "The limits of liability are $ _____ each occurrence and $_____ annual aggregate for bodily injury and property damage combined in excess of the underlying limits of $_____ each occurrence and $_____ annual aggregate", with the appropriate amounts indicated.)

(2) The insurance afforded with respect to such occurrences is subject to all of the terms and conditions of the policy: provided, however, that any provision of the policy inconsistent with subsections (a) through (e) of this paragraph are hereby amended to conform with subsections (a) through (e):

(a) Bankruptcy or insolvency of the insured shall not relieve the Insurer of its obligations under the policy to which this endorsement is attached.

(b) The Insurer is liable for the payment of amounts within any deductible, applicable to the policy, with a right of reimbursement by the insured for any such payment made by the Insurer. This provision does not apply with respect to that amount of any deductible for which coverage is demonstrated as specified in Rules 1200-1-11-.06(8)(n)6 or 1200-1-11-.05(8)(n)6.

(c) Whenever requested by the Commissioner of the Tennessee Department of Health and Environment or his designee, the Insurer agrees to furnish to the Commissioner or designee a signed duplicate original of the policy and all endorsements.

(d) Cancellation of this endorsement, whether by the Insurer or the Insured, will be effective only upon written notice and only after the expiration of sixty (60) days after a copy of such written notice is received by the Commissioner or his designee.

(e) Any other termination of this endorsement will be effective only upon written notice and only after the expiration of thirty (30) days after a copy of such written notice is received by the Commissioner or his designee.

Attached to and forming part of policy no. _____ issued by (name of Insurer), herein called the Insurer, (address of Insurer) to (name of Insured) of (address) this _____ day of _____ 19 _____. The effective date of said policy is _____ day of _____, 19 _____.

I hereby certify that the wording of this endorsement is identical to the wording specified in Tennessee Department of Health and Environment Rule 1200-1-11-.06(8)(p)6 as such regulation was constituted on the date first above written, and that the Insurer is licensed to transact the business of insurance, or eligible to provide insurance as an excess or surplus lines insurer, in Tennessee.

(Signature of Authorized Representative of Insurer)

(Type name)

(Title), Authorized Representative of (Name of Insurer)

(Address of Representative)

7. A certificate of liability insurance as required in subparagraph (n) of this paragraph and Rule 1200-1-11-.05(8)(n) must be worded as follows, except that the instructions in parentheses are to be replaced with the relevant information and the parentheses deleted.

HAZARDOUS WASTE FACILITY CERTIFICATE OF LIABILITY INSURANCE

(1) (Name of Insurer), the "Insurer", of (Address of Insurer) hereby certifies that it has issued liability insurance covering bodily injury and property damage to (Name of Insured), the "insured", of (Address of Insured) in connection with the insured's obligation to demonstrate financial responsibility under Tennessee Department of Health and Environment Rules 1200-1-11-.06(8)(n) or 1200-1-11-.05(8)(n). The coverage applies at (list installation identification number, name and address for each facility) for (insert "sudden accidental occurrences", "nonsudden accidental occurrences", or "sudden and non sudden accidental occurrences"; if coverage is for multiple facilities and the coverage is different for different facilities, indicate which facilities are insured for sudden accidental occurrences, which are insured for nonsudden accidental occurrences, and which are insured for both.) The limits of liability are (insert the dollar amount of the "each occurrence" and "annual aggregate" limits of the Insurer's liability), exclusive of legal defense costs. (If the certificate is for an excess insurance policy, this last sentence should be replaced by a sentence which reads "The limits of liability are $_____ each occurrence and $_____ annual aggregate for bodily injury and property damage combined in excess of the underlying limits of $_____ each occurrence and $_____ annual aggregate.", with the appropriate amounts indicated.) The coverage is provided under policy number _____, issued on (date). The effective date of said policy is (date).

(2) The Insurer further certifies the following with respect to the insurance described in Paragraph 1:

(a) Bankruptcy or insolvency of the insured shall not relieve the Insurer of its obligations under the policy.

(b) The Insurer is liable for the payment of amounts within any deductible applicable to the policy, with a right of reimbursement by the insured for any such payment made by the Insurer. This provision does not apply with respect to that amount of any deductible for which coverage is demonstrated as specified in Rules 1200-1-11-.06(8)(n)6 or 1200-1-11-.05(8)(n)6.

(c) Whenever requested by the Commissioner of the Tennessee Department of Health and Environment or his designee, the Insurer agrees to furnish to the Commissioner or his designee a signed duplicate original of the policy and all endorsements.

(d) Cancellation of the insurance, whether by the Insurer or the Insured, will be effective only upon written notice and only after the expiration of sixty (60) days after a copy of such written notice is received by the Commissioner or his designee.

(e) Any other termination of the insurance will be effective only upon written notice and only after the expiration of thirty (30) days after a copy of such written notice is received by the Commissioner or his designee.

I hereby certify that the wording of this instrument is identical to the wording specified in Tennessee Department of Health and Environment Rule 1200-1-11-.06(8)(p)7 as such regulation was constituted on the date first above written, and that the Insurer is licensed to transact the business of insurance, or eligible to provide insurance as an excess or surplus lines insurer, in Tennessee.

(Signature of Authorized Representative of Insurer)

(Type Name)

(Title) Authorized Representative of (Name of Insurer)

(Address of Representative)

8. A letter from the chief financial officer, as specified in part (n)6 of this paragraph and Rule 1200-1-11-.05(8)(n)6, must be worded as follows, except that instructions in parentheses are to be replaced with the relevant information and the parentheses deleted:

Letter from Chief Financial Officer (to demonstrate liability coverage or to demonstrate both liability coverage and assurance of closure or post-closure care).

(Address to Commissioner of the Tennessee Department of Health and Environment).

I am the chief financial officer of (owner's or operator's name and address). This letter is in support of the use of the financial test to demonstrate financial responsbility for liability coverage (insert "and closure and/or post-closure care" if applicable) as specified in Tennessee Department of Health and Environment Rules 1200-1-11-.06(8) and 1200-1-11-.05(8).

(Fill out the following paragraph regarding facilities and liability coverage. For each facility, include its Installation Identification Number, name, and address.)

The owner or operator identified above is the owner or operator of the following facilities for which liability coverage is being demonstrated through the financial test specified in Rules 1200-1-11-.06(8) and 1200-1-11-.05(8): _____.

(If you are using the financial test to demonstrate coverage of both liability and closure and post-closure care, fill in the following four paragraphs regarding facilities and associated closure and post-closure cost estimates. If there are no facilities that belong in a particular paragraph, write "None" in the space indicated. For each facility, include the Installation Identification Number, name, address, and current closure and/or post-closure cost estimates. Identify each cost estimate as to whether it is for closure or post-closure care.)

1. The owner or operator identified above owns or operates the following facilities for which financial assurance for closure or post-closure care is demonstrated through the financial test specified in Rules 1200-1-11-.06(8) and 1200-1-11-.05(8). The current closure and/or post-closure cost estimates covered by the test are shown for each facility:

   _____

2. The owner or operator identified above guarantees, through the corporate guarantee specified in Rules 1200-1-11-.06(8) and 1200-1-11-.05(8) the closure and post-closure care of the following facilities owned or operated by its subsidiaries. The current cost estimates for the closure or post-closure care so guaranteed are shown for each facility:

   _____

3. In States other than Tennessee, this owner or operator is demonstrating financial assurance for the closure or post-closure care of the following facilities through the use of a test equivalent or substantially equivalent to the financial test specified in Rules 1200-1-11-.06(8) and 1200-1-11-.05(8). The current closure and/or post-closure cost estimates covered by such a test are shown for each facility:

   _____

4. The owner or operator identified above owns or operates the following hazardous waste management facilities for which financial assurance for closure or, if a disposal facility, post-closure care, is <u>not</u> demonstrated either to the State of Tennessee, another State, or the U.S. Environmental Protection Agency through the financial test or any other financial assurance mechanism specified in Rules 1200-1-11-.06(8) and 1200-1-11-.05(8) or equivalent or substantially equivalent State or Federal mechanisms. The current closure and/or post-closure cost esimates not covered by such financial assurance are shown for each facility:

   _____

   This owner or operator (insert "is required" or "is not required") to file a Form 10K with the Securities and Exchange Commission (SEC) for the latest fiscal year.

   The fiscal year of this owner or operator ends on (month, day). The figures for the following items marked with an asterisk are derived from

the owner's or operator's independently audited, year-end financial statements for the latest completed fiscal year, ended (date).

(Fill in part A if you are using the finanical test to demonstrate coverage only for the liability requirements.)

Part A. Liability Coverage for Accidental Occurrences

(Fill in Alternative I if the criteria of Rule 1200-1-11-.06(8)(n)6(i)(I) or Rule 1200-1-11-.05(8)(n)6(i)(I) are used. Fill in Alternative II if the criteria of Rule 1200-1-11-.06(8)(n)6(i)(II) or Rule 1200-1-11-.05(8)(n)6(i)(II) are used.)

Alternative I

1.	Amount of annual aggregate liability coverage to be demonstrated	$_____	
*2.	Current assets	$_____	
*3.	Current liabilities	$_____	
4.	Net working capital (line 2 minus line 3)	$_____	
*5.	Tangible net worth	$_____	
*6.	If less than 90% of assets are located in the U.S., give total U.S. assets	$_____	
		YES	NO
7.	Is line 5 at least $10 million?	____	____
8.	Is line 4 at least 6 times line 1?	____	____
9.	Is line 5 at least 6 times line 1?	____	____
*10.	Are at least 90% of assets located in the U.S.? If not, complete line 11.	____	____
11.	Is line 6 at least 6 times line 1?	____	____

Alternative II

1.	Amount of annual aggregate liability coverage to be demonstrated	$_____	
2.	Current bond rating of most recent issuance and name of rating service	$_____	
3.	Date of issuance of bond	$_____	
4.	Date of maturity of bond	$_____	
*5.	Tangible net worth	$_____	
*6.	Total assets in U.S. (required only if less than 90% of assests are located in the U.S.)	$_____	
		YES	NO
7.	Is line 5 at least $10 million?	____	____
8.	Is line 5 at least 6 times line 1?	____	____
*9.	Are at least 90% of assets located in the U.S.? If not, complete line 10.	____	____
10.	Is line 6 at least 6 times line 1?	____	____

(Fill in part B if you are using the financial test to demonstrate assurance of both liability coverage and closure or post-closure care.)

Part B. Closure or Post-Closure Care and Liability Coverage

(Fill in Alternative I if the criteria of Rule 1200-1-11-.06(8)(g)6(i)(I) and (n)6(i)(I) are used or if the criteria of Rule 1200-1-11-.05(8)(g)5(i)(I) and (n)6(i)(I) are used. Fill in

Alternative II if the criteria of Rule 1200-1-11-.06(8)(g)6(i)(II) and (n)6(i)(II) are used or if the criteria of Rule 1200-1-11-.05(8)(g)5(i)(II) and (n)6(i)(II) are used.)

Alternative I

1.	Sum of current closure and post-closure cost estimate (total of all cost estimates listed above)	$_____
2.	Amount of annual aggregate liability coverage to be demonstrated	$_____
3.	Sum of lines 1 and 2	$_____
*4.	Total liabilities (if any portion of your closure or post-closure cost estimates is included in your total liabilities, you may deduct that portion from this line and add that amount to lines 5 and 6)	$_____
*5.	Tangible net worth	$_____
*6.	Net worth	$_____
*7.	Current assets	$_____
*8.	Current liabilities	$_____
9.	Net working capital (line 7 minus line 8)	$_____
*10.	The sum of net income plus depreciation, depletion, and amortization	$_____
*11.	Total assets in U.S. (required only if less than 90% of assets are located in the U.S.)	$_____

		YES	NO
12.	Is line 5 at least $10 million?	____	____
13.	Is line 5 at least 6 times line 3?	____	____
14.	Is line 9 at least 6 times line 3?	____	____
*15.	Are at least 90% of assets located in the U.S.? If not, complete line 16	____	____
16.	Is line 11 at least 6 times line 3?	____	____
17.	Is line 4 divided by line 6 less than 2.0?	____	____
18.	Is line 10 divided by line 4 greater than 0.1?	____	____
19.	Is line 7 divided by line 8 greater than 1.5?	____	____

Alternative II

1.	Sum or current closure and post-closure cost estimates (total of all cost estimates listed above)	$_____
2.	Amount of annual aggregate liability coverage to be demonstrated	$_____
3.	Sum of lines 1 and 2	$_____
4.	Current bond rating of most recent issuance and name of rating service	$_____
5.	Date of issuance of bond	$_____
6.	Date of maturity of bond	$_____
*7.	Tangible net worth (if any portion of the closure or post-closure cost estimates is included in "total liabilities" on your financial statements you may add that portion to this line)	$_____
*8.	Total assets in the U.S. (required only if less than 90% of assets are located in the U.S.)	$_____

		YES	NO
9.	Is line 7 at least $10 million?	____	____
10.	Is line 7 at least 6 times line 3?	____	____
*11.	Are at least 90% of assets located in the U.S.? If not, complete line 12	____	____
12.	Is line 8 at least 6 times line 3?	____	____

I hereby certify that the wording of this letter is identical to the wording specified in Tennessee Department of Health and Environment Rule 1200-1-11-.06(8)(p)8, as such regulations were constituted on the date shown immediately below.

(Signature)
(Name)
(Title)
(Date)

(9) Use and Management of Containers

(a) Applicability - The regulations in this paragraph apply to owners and operators of all hazardous waste facilities that store containers of hazardous waste, except as subparagraphs (1)(b) and (1)(d) of this Rule provide otherwise.

(Comment: Under Rule 1200-1-11-.02(1)(g) and (4)(d)1(iii), if a hazardous waste is emptied from a container the residue remaining in the container is not considered a hazardous waste if the container is "empty" as defined in Rule 1200-1-11-.02(1)(g). In that event, management of the container is exempt from the requirements of this paragraph.

(b) Condition of Container - If a container holding hazardous waste is not in good condition (e.g., severe rusting, apparent structural defects) or if it begans to leak, the owner or operator must transfer the hazardous waste from this container to a container that is in good condition or manage the waste in some other way that complies with the requirements of this Rule.

(c) Compatibility of Waste with Containers - The owner or operator must 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

1. A container holding hazardous waste must always be closed during storage, except when it is necessary to add or remove waste.

2. A container holding hazardous waste must not be opened, handled, or stored in a manner which may rupture the container or cause it to leak.

(Comment: Reuse of containers in transportation is governed by U.S. Department of Transportation regulations including those set forth in 49 CFR 173.28.)

(e) Inspections - At least weekly, the owner or operator must inspect areas where containers are stored, looking for leaking containers and for deterioration of containers and the containment system caused by corrosion or other factors.

(Comment: See part (2)(f)3 of this Rule and subparagraph (b) of this paragraph for remedial action required if deterioration or leaks are detected.)

(f) Containment

1. Container storage areas must have a containment system that is designed and operated in accordance with part 2 of this subparagraph, except as otherwise provided by part 3 of this subparagraph.

2. A containment system must be designed and operated as follows:

   (i) A base must underly the containers which is free of cracks or gaps and is sufficiently impervious to contain leaks, spills, and accumulated precipitation until the collected material is detected and removed;

   (ii) The base must be sloped or the containment system must be otherwise designed and operated to drain and remove liquids resulting from leaks, spills, or precipitation, unless the containers are elevated or are otherwise protected from contact with accumulated liquids;

   (iii) The containment system must have sufficient capacity to contain 10% of the volume of containers or the volume of the largest container, whichever is greater. Containers that do not contain free liquids need not be considered in this determination;

   (iv) Run-on into the containment system must be prevented unless the collection system has sufficient excess capacity in addition to that required in subpart (iii) of this part to contain any run-on which might enter the system; and

   (v) Spilled or leaked waste and accumulated precipitation must be removed from the sump or collection area in as timely a manner as is necessary to prevent overflow of the collection system.

   (Comment: If the collected material is a hazardous waste under Rule 1200-1-11-.02, it must be managed as a hazardous waste in accordance with all applicable requirements of Rules 1200-1-11-.03 through 1200-1-11-.07. If the collected material is discharged through a point source to waters of the state, it may also be subject to the requirements of the Tennessee Water Quality Control Act, as amended (TCA 69-3-101, et seq.).

3. Storage areas that store containers holding only wastes that do not contain free liquids need not have a containment system defined by part 2 of this subparagraph, except as provided by part 4 of this subparagraph or provided that:

   (i) The storage area is sloped or is otherwise designed and operated to drain and remove liquid resulting from precipitation; or

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(ii) The containers are elevated or are otherwise protected from contact with accumulated liquid.

4. Storage areas that store containers holding the wastes listed below that do not contain free liquids must have a containment system defined by part 2 of this subparagraph:

(i) F020, F021, F022, F023, F026, and F027.

(ii) (Reserved)

(g) Special Requirements for Ignitable or Reactive Waste - Containers holding ignitable or reactive waste must be located at least 15 meters (50 feet) from the facility's property line.

(Comment: See part (2)(h)1 of this Rule for additional requirements.)

(h) Special Requirements for Incompatible Wastes

1. Incompatible wastes, or incompatible wastes and materials (see Appendix .06/B for examples), must not be placed in the same container, unless part (2)(h)2 of this Rule is complied with.

2. Hazardous waste must not be placed in an unwashed container that previously held an incompatible waste or material.

(Comment: As required by subparagraph (2)(d) of this Rule, the waste analysis plan must include analyses needed to comply with this subparagraph. Also, part (2)(h)3 of this Rule requires waste analyses, trial tests or other documentation to assure compliance with part (2)(h)2 of this Rule. As required by subparagraph (5)(d) of this Rule, the owner or operator must place the results of each waste analysis and trial test, and any documented information, in the operating record of the facility.)

3. A storage container holding a hazardous waste that is incompatible with any waste or other materials stored nearby in other containers, piles, open tanks, or surface impoundments must be separated from the other materials or protected from them by means of a dike, berm, wall, or other device.

(Comment: The purpose of this subparagraph is to prevent fires, explosions, gaseous emissions, leaching, or other discharge of hazardous waste or hazardous waste constituents which could result from the mixing of incompatible wastes or materials if containers break or leak.)

(i) Closure - At closure, all hazardous waste and hazardous waste residues must be removed from the containment system. Remaining containers, liners, bases, and soil containing or contaminated with hazardous waste or hazardous waste residues must be decontaminated or removed.

(Comment: As closure, as throughout the operating period, unless the owner or operator can demonstrate in accordance with Rule 1200-1-11-

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.02(1)(c)4 that the waste removed from the containment system is not a hazardous waste, the owner or operator becomes a generator of hazardous waste and must manage it in accordance with Rules 1200-1-11-.03 through 1200-1-11-.07.)

(10) Tanks

(a) Applicability

1. The regulations in this paragraph apply to owners and operators of facilities that use tanks to treat or store hazardous waste, except as subparagraphs (1)(b) and (1)(d) of this Rule and part 2 of this subparagraph provide otherwise.

2. The regulations in this paragraph do not apply to facilities that treat or store hazardous waste in covered underground tanks that cannot be entered for inspection.

(b) Design of Tanks - Tanks must have sufficient shell strength and, for closed tanks, pressure controls (e.g., vents) to assure that they do not collapse or rupture. The Commissioner will review the design of the • tanks, including the foundation, structural support, seams and pressure controls. The Commissioner shall require that a minimum shell thickness • be maintained at all times to ensure sufficient shell strength. Factors to be considered in establishing minimum thickness include the width, height, and materials of construction of the tank, and the specific gravity of the waste which will be placed in the tank. In reviewing the design of the tank and establishing a minimum thickness, the Commissioner shall rely • upon appropriate industrial design standards and other available information.

(Comment: Design standards for certain types of tanks are published by the American Petroleum Institute, Underwriter's Laboratories, the American Concrete Institute, and several other organizations.)

(c) General Operating Requirements

1. Wastes and other materials (e.g., treatment reagents) which are incompatible with the material of construction of the tank must not be placed in the tank unless the tank is protected from accelerated corrosion, erosion, or abrasion through the use of:

(i) An inner liner or coating which is compatible with the waste or material and which is free of leaks, cracks, holes or other deterioration; or

(ii) Alternative means of protection (e.g., cathodic protection or corrosion inhibitors).

2. The owner or operator must use appropriate controls and practices to prevent overfilling. These must include:

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(i) Controls to prevent overfilling (e.g., waste feed cutoff system or by-pass system to a standby tank); and

(ii) For uncovered tanks, maintenance of sufficient freeboard to prevent overtopping by wave or wind action or by precipitation.

(d) Inspections

1. The owner or operator must inspect:

(i) Overfilling control equipment (e.g., waste feed cut-off systems and by-pass systems) at least once each operating day to ensure that it is in good working order;

(ii) Data gathered from monitoring equipment (e.g., pressure and temperature gauges) where present, at least once each operating day to ensure that the tank is being operated according to its design;

(iii) For uncovered tanks, the level of waste in the tank, at least once each operating day, to ensure compliance with subpart (c)2(ii) of this paragraph;

(iv) The construction materials of the above-ground portions of the tank, at least weekly, to detect corrosion or erosion and leaking of fixtures and seams; and

(v) The area immediately surrounding the tank, at least weekly, to detect obvious signs of leakage (e.g., wet spots or dead vegetation).

2. As part of the inspection schedule required in part (2)(f)2 of this Rule and in addition to the specific requirements of part 1 of this subparagraph, the owner or operator must develop a schedule and procedure for assessing the condition of the tank. The schedule and procedure must be adequate to detect cracks, leaks, corrosion or erosion which may lead to cracks or leaks, or wall thinning to less than the thickness required under subparagraph (b) of this paragraph. Procedures for emptying a tank to allow entry and inspection of the interior must be established when necessary to detect corrosion or erosion of the tank sides and bottom. The frequency of these assessments must be based on the material of construction of the tank, type of corrosion or erosion protection used, rate of corrosion or erosion observed during previous inspections, and the characteristics of the waste being treated or stored.

3. (i) As part of the contingency plan required under paragraph (4) of this Rule, the owner or operator must specify the procedures he intends to use to respond to tank spills or leakage, including procedures and timing for expeditious removal of leaked or spilled waste and repair of the tank.

(ii) For Hazardous Wastes F020, F021, F022, F023, F026, and F027, the contingency plan must also include the procedures for responding to a spill or leak of these wastes from tanks into the containment system. These procedures shall include measures for immediate removal of the waste from the system and replacement or repair of the leaking tank.

(Comment: As required in part (2)(f)3 of this Rule, the owner or operator must remedy any leak, crack, or wall thinning in violation of subparagraph (b) of this paragraph, or equipment or process malfunction in violation of subparagraph (c) of this paragraph, which he discovers during inspection.

See 29 CFR 1910.94(d)(11) for Occupational Safety and Health Administration requirements relating to entry of tanks for inspection.)

(e) Closure - At closure, all hazardous waste and hazardous waste residues must be removed from tanks, discharge control equipment, and discharge confinement structures.

(Comment: At closure, as throughout the operating period, unless the owner or operator can demonstrate in accordance with Rule 1200-1-11-.02(1)(c)4 that waste removed from his tank is not a hazardous waste, the owner or operator becomes a generator of hazardous waste and must manage it in accordance with all applicable requirements of Rules 1200-1-11-.03 through 1200-1-11-.07.)

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(f) Special Requirements for Ignitable or Reactive Wastes

1. Ignitable or reactive waste must not be placed in a tank unless:

   (i) The waste is treated, rendered, or mixed before or immediately after placement in the tank so that (I) the resulting waste, mixture, or dissolution of material no longer meets the definition of ignitable or reactive waste under Rule 1200-1-11-.02(3)(b) or (d), and (II) part (2)(h)2 of this Rule is complied with; or

   (ii) The waste is stored and treated in such a way that it is protected from any material or conditions which may cause the waste to ignite or react; or

   (iii) The tank is used solely for emergencies.

2. The owner or operator of a facility which treats or stores ignitable or reactive waste in covered tanks must comply with buffer zone requirements for tanks contained in Tables 2-1 through 2-6 of the National Fire Protection Association's "Flammable and Combustible Liquids Code" (1977 or 1981), (incorporated by reference, see Rule 1200-1-11-.01(2)(b)).

(Comment: As required by subparagraph (2)(d) of this Rule, the waste analysis plan must include analyses needed to comply with this subparagraph. Part (2)(h)1 of this Rule contains additional requirements for ignitable and reactive wastes. Also, part (2)(h)3 of this Rule requires waste analyses, trial tests, or other documentation to ensure compliance with part (2)(h)2 of this Rule. As required by subparagraph (5)(d) of this Rule, the owner or operator must place the results of each waste analysis and trial test, and any documented information, in the operating record of the facility.)

(g) Special Requirements for Incompatible Wastes

1. Incompatible wastes, or incompatible wastes and materials, must not be placed in the same tank, unless part (2)(h)2 of this Rule is complied with.

2. Hazardous waste must not be placed in an unwashed tank which previously held an incompatible waste or material, unless part (2)(h)2 of this Rule is complied with.

(Comment: As required by subparagraph (2)(d) of this Rule, the waste analysis plan must include analyses needed to comply with this subparagraph. Also, part (2)(h)3 of this Rule requires waste analyses, trial tests, or other documentation to ensure compliance with part (2)(h)2 of this Rule. As required by subparagraph (5)(d) of this Rule, the owner or operator must place the results of each waste analysis and trial test, and

any documented information, in the operating record of the facility.)

(h) Special Requirements for Hazardous Wastes F020, F021, F022, F023, F026, and F027

1. In addition to the other requirements of this paragraph, the following requirements apply to tanks storing or treating hazardous wastes F020, F021, F022, F023, F026, and F027.

(i) Tanks must have systems designed and operated to detect and adequately contain spills or leaks. The design and operation of any containment system must reflect consideration of all relevant factors, including:

(I) Capacity of the tank;
(II) Volumes and characteristics of wastes stored or treated in the tank;
(III) Method of collection of spills or leaks;
(IV) The design and construction materials of the tank and containment system; and
(V) The need to prevent precipitation and run-on from entering into the system.

(ii) As part of the contingency plan required by paragraph (4) of this Rule, the owner or operator must specify such procedures for responding to a spill or leak from the tank into the containment system as may be necessary to protect human health and the environment. These procedures shall include measures for immediate removal of the waste from the system and replacement or repair of the leaking tank.

(11) Surface Impoundments

(a) Applicability - The regulations in this paragraph apply to owners and operators of facilities that use surface impoundments to treat, store, or dispose of hazardous waste, except as subparagraphs (1)(b) and (1)(d) of this Rule provide otherwise.

(b) Design and Operating Requirements

1. Any surface impoundment that is not covered by part 3 of this subparagraph or Rule 1200-1-11-.05(11)(b) must have a liner for all portions of the impoundment (except for existing portions of such impoundments). The liner must be designed, constructed, and installed to prevent any migration of wastes out of the impoundment to the adjacent subsurface soil or ground water or surface water at any time during the active life (including the closure period) of the impoundment. The liner may be constructed of materials that may allow wastes to migrate into the liner (but not into the adjacent subsurface soil or ground water or surface water) during the active

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life of the facility, provided that the impoundment is closed in accordance with subpart (i)1(i) of this paragraph. For impoundments that will be closed in accordance with subpart (i)1(ii) of this paragraph, the liner must be constructed of materials that can prevent wastes from migrating into the liner during the active life of the facility. The liner must be:

(i) Constructed of materials that have appropriate chemical properties and sufficient strength and thickness to prevent failure due to pressure gradients (including static head and external hydrogeologic forces), physical contact with the waste or leachate to which they are exposed, climatic conditions, the stress of installation, and the stress of daily operation;

(ii) Placed upon a foundation or base capable of providing support to the liner and resistance to pressure gradients above and below the liner to prevent failure of the liner due to settlement, compression, or uplift; and

(iii) Installed to cover all surrounding earth likely to be in contact with the waste or leachate.

2. The owner or operator will be exempted from the requirements of part 1 of this subparagraph if the Commissioner finds, based on a demonstration by the owner or operator, that alternate design and operating practices, together with location characteristics, will prevent the migration of any hazardous constituents (see subparagraph (6)(d) of this Rule) into the ground water or surface water at any future time. In deciding whether to grant an exemption, the Commissioner will consider:

(i) The nature and quantity of the wastes;

(ii) The proposed alternate design and operation;

(iii) The hydrogeologic setting of the facility, including the attenuative capacity and thickness of the liners and soils present between the impoundment and ground water or surface water; and

(iv) All other factors which would influence the quality and mobility of the leachate produced and the potential for it to migrate to ground water or surface water.

3. The owner or operator of each new surface impoundment, each new surface impoundment unit at an existing facility, each replacement of an existing surface impoundment unit, and each lateral expansion of an existing surface impoundment unit, must install two or more liners and a leachate collection system between such liners. The liners and leachate collection system must protect human health and

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the environment. The requirements of this part shall apply with respect to all waste received after the issuance of the permit. The requirement for the installation of two or more liners in this paragraph may be satisfied by the installation of a top liner designed, operated, and constructed of materials to prevent the migration of any constituent into such liner during the period such facility remains in operation (including any post-closure monitoring period), and a lower liner designed, operated, and constructed to prevent the migration of any constituent through such liner during such period. For the purpose of the preceding sentence, a lower liner shall be deemed to satisfy such requirement if it is constructed of at least a 3-foot thick layer of recompacted clay or other natural material with a permeability of no more than 1×10^{-7} centimeter per second.

4. Part 3 of this subparagraph will not apply if the owner or operator demonstrates to the Commissioner, and the Commissioner finds for such surface impoundment, that alternative design and operating practices, together with location characteristics, will prevent the migration of any hazardous constituent into the ground water or surface water at least as effectively as such liners and leachate collection systems.

5. The double liner requirement set forth in part 3 of this subparagraph may be waived by the Commissioner for any monofill, if:

   (i) The monofill contains only hazardous wastes from foundry furnace emission controls or metal casting molding sand, and such wastes do not contain constituents which would render the wastes hazardous for reasons other than the EP toxicity characteristics in Rule 1200-1-11-.02(3)(e); and

   (ii) (I) I. The monofill has at least one liner for which there is no evidence that such liner in leaking. For the purposes of this subitem the term "liner" means a liner designed, constructed, installed, and operated to prevent hazardous waste from passing into the liner at any time during the active life of the facility, or a liner designed, constructed, installed, and operated to prevent hazardous waste from migrating beyond the liner to adjacent subsurface soil, ground water, or surface water at any time during the active life of the facility. In the case of any surface impoundment which has been exempted from the requirements of part 3 of this subparagraph on the basis of a liner designed, constructed, installed, and operated to prevent hazardous waste from passing beyond the liner, at the closure of such impoundment, the owner or operator must remove or decontaminate all waste residues, all contaminated liner material, and contaminated soil to the extent practicable. If all contaminated soil is not

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removed or decontaminated, the owner or operator of such impoundment will comply with appropriate post-closure requirements, including but not limited to groundwater monitoring and corrective action;

II. The monofil is located more than one-quarter mile from an underground source of drinking water (as that term is defined in 40 CFR 144.3; and

III. The monofill is in compliance with generally applicable ground-water monitoring requirements for facilities with permits under Section 68-46-108 of the Act; or

(II) The owner or operator demonstrates that the monofill is located, designed and operated so as to assure that there will be no migration of any hazardous constituent into the ground water or surface water at any future time.

6. A surface impoundment must be designed, constructed, maintained, and operated to prevent overtopping resulting from normal or abnormal operations; overfilling; wind and wave action; rainfall; run-on; malfunctions of level controllers, alarms, and other equipment; and human error.

7. A surface impoundment must have dikes that are designed, constructed, and maintained with sufficient structural integrity to prevent massive failure of the dikes. In ensuring structural integrity, it must not be presumed that the liner system will function without leakage during the active life of the unit.

8. The Commissioner will specify in the permit all design and operating practices that are necessary to ensure that the requirements of this subparagraph are satisfied.

(c)-(f) Reserved.

(g) <u>Monitoring and Inspection</u>

1. During construction and installation, liners (except in the case of existing portions of surface impoundments exempt from part (b)1 of this paragraph) and cover systems (e.g., membranes, sheets, or coatings) must be inspected for uniformity, damage, and imperfections (e.g., holes, cracks, thin spots, or foreign materials). Immediately after construction or installation:

(i) Synthetic liners and covers must be inspected to ensure tight seams and joints and the absence of tears, punctures, or blisters; and

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(ii) Soil-based and admixed liners and covers must be inspected for imperfections including lenses, cracks, channels, root holes, or other structural non-uniformities that may cause an increase in the permeability of the liner or cover.

2. While a surface impoundment is in operation, it must be inspected weekly and after storms to detect evidence of any of the following:

   (i) Deterioration, malfunctions, or improper operation of overtopping control systems;

   (ii) Sudden drops in the level of the impoundment's contents; and

   (iii) Severe erosion or other signs of deterioration in dikes or other containment devices.

3. Prior to the issuance of a permit, and after any extended period of time (at least six months) during which the impoundment was not in service, the owner or operator must obtain a certification from a qualified engineer that the impoundment's dike, including that portion of any dike which provides freeboard, has structural integrity. The certification must establish, in particular, that the dike:

   (i) Will withstand the stress of the pressure exerted by the types and amounts of wastes to be placed in the impoundment; and

   (ii) Will not fail due to scouring or piping, without dependence on any liner system included in the surface impoundment construction.

(h) Emergency Repairs; Contingency Plans

1. A surface impoundment must be removed from service in accordance with part 2 of this subparagraph when:

   (i) The level of liquids in the impoundment suddenly drops and the drop is not known to be caused by changes in the flows into or out of the impoundment; or

   (ii) The dike leaks.

2. When a surface impoundment must be removed from service as required by part 1 of this subparagraph, the owner or operator must:

   (i) Immediately shut off the flow or stop the addition of wastes into the impoundment;

   (ii) Immediately contain any surface leakage which has occurred or is occurring;

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(iii) Immediately stop the leak;

(iv) Take any other necessary steps to stop or prevent catastrophic failure;

(v) If a leak cannot be stopped by any other means, empty the impoundment; and

(vi) Notify the Commissioner of the problem in writing within seven days after detecting the problem.

3. As part of the contingency plan required in paragraph (4) of this Rule, the owner or operator must specify a procedure for complying with the requirements of part 2 of this subparagraph.

4. No surface impoundment that has been removed from service in accordance with the requirements of this subparagraph may be restored to service unless the portion of the impoundment which was failing is repaired and the following steps are taken:

(i) If the impoundment was removed from service as the result of actual or imminent dike failure, the dike's structural integrity must be recertified in accordance with part (g)3 of this paragraph.

(ii) If the impoundment was removed from service as the result of a sudden drop in the liquid level, then:

(I) For any existing portion of the impoundment, a liner must be installed in compliance with part (b)1 of this paragraph; and

(II) For any other portion of the impoundment, the repaired liner system must be certified by a qualified engineer as meeting the design specifications approved in the permit.

5. A surface impoundment that has been removed from service in accordance with the requirements of this subparagraph and that is not being repaired must be closed in accordance with the provisions of subparagraph (i) of this paragraph.

(i) <u>Closure and Post-closure Care</u>

1. At closure, the owner or operator must:

(i) Remove or decontaminate all waste residues, contaminated containment system components (liners, etc.), contaminated subsoils, and structures and equipment contaminated with waste and leachate, and manage them as hazardous waste unless Rule 1200-1-11-.02(1)(c)4 applies; or

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(ii) (I) Eliminate free liquids by removing liquid wastes or solidifying the remaining wastes and waste residues;

(II) Stabilize remaining wastes to a bearing capacity sufficient to support final cover; and

(III) Cover the surface impoundment with a final cover designed and constructed to:

I. Provide long-term minimization of the migration of liquids through the closed impoundment;

II. Function with minimum maintenance;

III. Promote drainage and minimize erosion or abrasion of the final cover;

IV. Accommodate settling and subsidence so that the cover's integrity is maintained; and

V. Have a permeability less than or equal to the permeability of any bottom liner system or natural subsoils present.

2. If some waste residues or contaminated materials are left in place at final closure, the owner or operator must comply with all post-closure requirements contained in subparagraphs (7)(g)-(j) of this Rule, including maintenance and monitoring throughout the post-closure care period (specified in the permit under subparagraph (7)(g) of this Rule). The owner or operator must:

(i) Maintain the integrity and effectiveness of the final cover, including making repairs to the cap as necessary to correct the effects of settling, subsidence, erosion, or other events;

(ii) Maintain and monitor the ground-water monitoring system and comply with all other applicable requirements of paragraph (6) of this Rule; and

(iii) Prevent run-on and run-off from eroding or otherwise damaging the final cover.

3. (i) If an owner or operator plans to close a surface impoundment in accordance with subpart 1(i) of this subparagraph, and the impoundment does not comply with the liner requirements of part (b)1 of this paragraph, and is not exempt from them in accordance with part (b)2 of this paragraph, then:

(I) The closure plan for the impoundment under subparagraph (7)(c) of this Rule must include both a plan for complying

with subpart 1(i) of this subparagraph and a contingent plan for complying with subpart 1(ii) of this subparagraph in case not all contaminated subsoils can be practicably removed at closure; and

(II) The owner or operator must prepare a contingent post-closure plan under subparagraph (7)(h) of this Rule for complying with part 2 of this subparagraph in case not all contaminated subsoils can be practicably removed at closure.

(ii) The cost estimates calculated under subparagraphs (8)(c) and (8)(e) of this Rule for closure and post-closure care of an impoundment subject to this paragraph must include the cost of complying with the contingent closure plan and the contingent post-closure plan, but are not required to include the cost of expected closure under subpart 1(i) of this subparagraph.

(j) Special Requirements for Ignitable or Reactive Waste - Ignitable or reactive waste must not be placed in a surface impoundment, unless:

1. The waste is treated, rendered, or mixed before or immediately after placement in the impoundment so that:

(i) The resulting waste, mixture, or dissolution of material no longer meets the definition of ignitable or reactive waste under Rule 1200-1-11-.02(3)(b) or (d); and

(ii) Part (2)(h)2 of this Rule is complied with; or

2. The waste is managed in such a way that it is protected from any material or conditions which may cause it to ignite or react; or

3. The surface impoundment is used solely for emergencies.

(k) Special Requirements for Incompatible Wastes - Incompatible wastes, or incompatible wastes and materials, (see Appendix .06/B for examples) must not be placed in the same surface impoundment, unless part (2)(h)2 of this Rule is complied with.

(l) Special Requirements for Hazardous Wastes F020, F021, F022, F023, F026, and F027

1. Hazardous Wastes F020, F021, F022, F023, F026, and F027 must not be placed in a surface impoundment unless the owner or operator

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operates the surface impoundment in accordance with a management plan for these wastes that is approved by the Commissioner pursuant to the standards set out in this paragraph, and in accord with all other applicable requirements of this Rule. The factors to be considered are:

(i) The volume, physical, and chemical characteristics of the wastes, including their potential to migrate through soil or to volatilize or escape into the atmosphere;

(ii) The attenuative properties of underlying and surrounding soils or other materials;

(iii) The mobilizing properties of other materials co-disposed with these wastes; and

(iv) The effectiveness of additional treatment, design, or monitoring techniques.

2. The Commissioner may determine that additional design, operating, and monitoring requirements are necessary for surface impoundments managing hazardous wastes F020, F021, F022, F023, F026, and F027 in order to reduce the possibility of migration of these wastes to ground water, surface water, or air so as to protect human health and the environment.

(12) Waste Piles

(a) Applicability

1. The regulations in this paragraph apply to owners and operators of facilities that store or treat hazardous waste in piles, except as subparagraphs (1)(b) and (1)(d) of this Rule provide otherwise.

2. The regulations in this paragraph do not apply to owners or operators of waste piles that are closed with wastes left in place. Such waste piles are subject to regulation under paragraph (14) of this Rule (Landfills).

3. The owner or operator of any waste pile that is inside or under a structure that provides protection from precipitation so that neither run-off nor leachate is generated is not subject to regulation under subparagraph (b) of this paragraph or under paragraph (6) of this Rule, provided that:

(i) Liquids or materials containing free liquids are not placed in the pile;

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(ii) The pile is protected from surface water run-on by the structure or in some other manner;

(iii) The pile is designed and operated to control dispersal of the waste by wind, where necessary, by means other than wetting; and

(iv) The pile will not generate leachate through decomposition or other reactions.

(b) Design and Operating Requirements

1. A waste pile (except for an existing portion of a waste pile) must have:

(i) A liner that is designed, constructed, and installed to prevent any migration of wastes out of the pile into the adjacent subsurface soil or ground water or surface water at any time during the active life (including the closure period) of the waste pile. The liner may be constructed of materials that may allow waste to migrate into the liner itself (but not into the adjacent subsurface soil or ground water or surface water) during the active life of the facility. The liner must be:

(I) Constructed of materials that have appropriate chemical properties and sufficient strength and thickness to prevent failure due to pressure gradients (including static head and external hydrogeologic forces), physical contact with the waste or leachate to which they are exposed, climatic conditions, the stress of installation, and the stress of daily operation;

(II) Placed upon a foundation or base capable of providing support to the liner and resistance to pressure gradients above and below the liner to prevent failure of the liner due to settlement, compression, or uplift; and

(III) Installed to cover all surrounding earth likely to be in contact with the waste or leachate; and

(ii) A leachate collection and removal system immediately above the liner that is designed, constructed, maintained, and operated to collect and remove leachate from the pile. The Commissioner will specify design and operating conditions in the permit to ensure that the leachate depth over the liner does not exceed 30 cm (one foot). The leachate collection and removal system must be:

(I) Constructed of materials that are:

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I. Chemically resistant to the waste managed in the pile and the leachate expected to be generated; and

II. Of sufficient strength and thickness to prevent collapse under the pressure exerted by overlaying wastes, waste cover materials, and by any equipment used at the pile; and

(II) Designed and operated to function without clogging through the scheduled closure of the waste pile.

2. The owner or operator will be exempted from the requirements of part 1 of this subparagraph if the Commissioner finds, based on a demonstration by the owner or operator, that alternate design and operating practices, together with location characteristics, will prevent the migration of any hazardous constituents (see subparagraph (6)(d) of this Rule) into the ground water or surface water at any future time. In deciding whether to grant an exemption, the Commissioner will consider:

(i) The nature and quantity of the wastes;

(ii) The proposed alternate design and operation;

(iii) The hydrogeologic setting of the facility, including attenuative capacity and thickness of the liners and soils present between the pile and ground water or surface water; and

(iv) All other factors which would influence the quality and mobility of the leachate produced and the potential for it to migrate to ground water or surface water.

3. The owner or operator must design, construct, operate, and maintain a run-on control system capable of preventing flow onto the active portion of the pile during peak discharge from at least a 25-year storm.

4. The owner or operator must design, construct, operate, and maintain a run-off management system to collect and control at least the water volume resulting from a 24-hour, 25-year storm.

5. Collection and holding facilities (e.g., tanks or basins) associated with run-on and run-off control systems must be emptied or otherwise managed expeditiously after storms to maintain design capacity of the system.

6. If the pile contains any particulate matter which may be subject to wind dispersal, the owner or operator must cover or otherwise manage the pile to control wind dispersal.

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7. The Commissioner will specify in the permit all design and operating practices that are necessary to ensure that the requirements of this subparagraph are satisfied.

(c) - (d) Reserved.

(e) Monitoring and Inspection

1. During construction or installation, liners (except in the case of existing portions of piles exempt from part (b)1 of this paragraph) and cover systems (e.g., membranes, sheets, or coatings) must be inspected for uniformity, damage, and imperfections (e.g., holes, cracks, thin spots, or foreign materials). Immediately after construction or installation:

   (i) Synthetic liners and covers must be inspected to ensure tight seams and joints and the absence of tears, punctures, or blisters; and

   (ii) Soil-based and admixed liners and covers must be inspected for imperfections including lenses, cracks, channels, root holes, or other structural non-uniformities that may cause an increase in the permeability of the liner or cover.

2. While a waste pile is in operation, it must be inspected weekly and after storms to detect evidence of any of the following:

   (i) Deterioration, malfunctions, or improper operation of run-on and run-off control systems;

   (ii) Proper functioning of wind dispersal control systems, where present; and

   (iii) The presence of leachate in and proper functioning of leachate collection and removal systems, where present.

(f) Reserved.

(g) Special Requirements for Ignitable or Reactive Waste - Ignitable or reactive waste must not be placed in a waste pile unless:

1. The waste is treated, rendered, or mixed before or immediately after placement in the pile so that:

   (i) The resulting waste, mixture, or dissolution of material no longer meets the definition of ignitable or reactive waste under Rule 1200-1-11-.02(3)(b) or (d); and

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(ii) Part (2)(h)2 of this Rule is complied with; or

2. The waste is managed in such a way that it is protected from any material or conditions which may cause it to ignite or react.

(h). Special Requirements for Incompatible Wastes

1. Incompatible wastes, or incompatible wastes and materials, (see Appendix .06/B for examples) must not be placed in the same pile, unless part (2)(h)2 of this Rule is complied with.

2. A pile of hazardous waste that is incompatible with any waste or other material stored nearby in containers, other piles, open tanks, or surface impoundments must be separated from the other materials, or protected from them by means of a dike, berm, wall, or other device.

3. Hazardous waste must not be piled on the same base where incompatible wastes or materials were previously piled, unless the base has been decontaminated sufficiently to ensure compliance with part (2)(h)2 of this Rule.

(i) Closure and Post-closure Care

1. At closure, the owner or operator must remove or decontaminate all waste residues, contaminated containment system components (liners, etc.), contaminated subsoils, and structures and equipment contaminated with waste and leachate, and manage them as hazardous waste unless Rule 1200-1-11-.02(1)(c)4 applies.

2. If, after removing or decontaminating all residues and making all reasonable efforts to effect removal or decontamination of contaminated components, subsoils, structures, and equipment as required in part 1 of this subparagraph, the owner or operator finds that not all contaminated subsoils can be practicably removed or decontaminated, he must close the facility and perform post-closure care in accordance with the closure and post-closure care requirements that apply to landfills (subparagraph (14)(k) of this Rule).

3. (i) The owner or operator of a waste pile that does not comply with the liner requirements of subpart (b)1(i) of this paragraph and is not exempt from them in accordance with parts (a)3 or (b)2 of this paragraph, must:

(I) Include in the closure plan for the pile under subparagraph (7)(c) of this Rule both a plan for complying with part 1 of this subparagraph and a contingent plan for complying with part 2 of this subparagraph in case not all contaminated subsoils can be practicably removed at closure; and

(II) Prepare a contingent post-closure plan under subparagraph (7)(h) of this Rule for complying with part 2 of this subparagraph in case not all contaminated subsoils can be practicably removed at closure.

(ii) The cost estimates calculated under subparagraphs (8)(c) and (e) of this Rule for closure and post-closure care of a pile subject to this part must include the cost of complying with the contingent closure plan and the contingent post-closure plan, but are not required to include the cost of expected closure under part 1 of this subparagraph.

(j) Special Requirements for Hazardous Wastes F020, F021, F022, F023, F026, and F027

1. Hazardous Wastes F020, F021, F022, F023, F026, and F027 must not be placed in waste piles that are not enclosed (as defined in part (a)3 of this paragraph) unless the owner or operator operates the waste pile in accordance with a management plan for these wastes that is approved by the Commissioner pursuant to the standards set out in this paragraph, and in accord with all other applicable requirements of this Rule. The factors to be considered are:

(i) The volume, physical, and chemical characteristics of the wastes, including their potential to migrate through soil or to volatilize or escape into the atmosphere;

(ii) The attenuative properties of underlying and surrounding soils or other materials;

(iii) The mobilizing properties of other materials co-disposed with these wastes; and

(iv) The effectiveness of additional treatment, design, or monitoring techniques.

2. The Commissioner may determine that additional design, operating, and monitoring requirements are necessary for surface impoundments managing hazardous wastes F020, F021, F022, F023, F026, and F027 in order to reduce the possibility of migration of these wastes to ground water, surface water, or air so as to protect human health and the environment.

(13) Land Treatment

(a) Applicability - The regulations in this paragraph apply to owners and operators of facilities that treat or dispose of hazardous waste in land treatment units, except as subparagraphs (1)(b) and (1)(d) of this Rule provide otherwise.

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(b) Treatment Program

1. An owner or operator subject to this paragraph must establish a land treatment program that is designed to ensure that hazardous constituents placed in or on the treatment zone are degraded, transformed, or immobilized within the treatment zone. The Commissioner will specify in the facility permit the elements of the treatment program, including:

   (i) The wastes that are capable of being treated at the unit based on a demonstration under subparagraph (c) of this paragraph;

   (ii) Design measures and operating practices necessary to maximize the success of degradation, transformation, and immobilization processes in the treatment zone in accordance with part (d)1 of this paragraph; and

   (iii) Unsaturated zone monitoring provisions meeting the requirements of subparagraph (i) of this paragraph.

2. The Commissioner will specify in the facility permit the hazardous constituents that must be degraded, transformed, or immobilized under this paragraph. Hazardous constituents are constituents identified in Appendix .02/E of Rule 1200-1-11-.02 that are reasonably expected to be in, or derived from, waste placed in or on the treatment zone.

3. The Commissioner will specify the vertical and horizontal dimensions of the treatment zone in the facility permit. The treatment zone is the portion of the unsaturated zone below and including the land surface in which the owner or operator intends to maintain the conditions necessary for effective degradation, transformation, or immobilization of hazardous constituents. The maximum depth of the treatment zone must be:

   (i) No more than 1.5 meters (5 feet) from the initial soil surface; and

   (ii) More than 1 meter (3 feet) above the seasonal high water table.

(c) Treatment Demonstration

1. For each waste that will be applied to the treatment zone, the owner or operator must demonstrate, prior to application of the waste, that hazardous constituents in the waste can be completely degraded, transformed, or immobilized in the treatment zone.

2. In making this demonstration, the owner or operator may use field tests, laboratory analyses, available data, or, in the case of existing units, operating data. If the owner or operator intends to conduct

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field tests or laboratory analyses in order to make the demonstration required under part 1 of this subparagraph, he must obtain a treatment or disposal permit under Rule 1200-1-11-.07(1)(f). The Commissioner will specify in this permit the testing, analytical, design, and operating requirements (including the duration of the tests and analyses, and, in the case of field tests, the horizontal and vertical dimensions of the treatment zone, monitoring procedures, closure and clean-up activities) necessary to meet the requirements in part 3 of this subparagraph.

3. Any field test or laboratory analysis conducted in order to make a demonstration under part 1 of this subparagraph must:

(i) Accurately simulate the characteristics and operating conditions for the proposed land treatment unit including:

(I) The characteristics of the waste (including the presence of Appendix .02/E constituents);

(II) The climate in the area;

(III) The topography of the surrounding area;

(IV) The characteristics of the soil in the treatment zone (including depth); and

(V) The operating practices to be used at the unit.

(ii) Be likely to show that hazardous constituents in the waste to be tested will be completely degraded, transformed, or immobilized in the treatment zone of the proposed land treatment unit; and

(iii) Be conducted in a manner that protects human health and the environment considering:

(I) The characteristics of the waste to be tested;

(II) The operating and monitoring measures taken during the course of the test;

(III) The duration of the test;

(IV) The volume of waste used in the test; and

(V) In the case of field tests, the potential for migration of hazardous constituents to ground water or surface water.

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(d) Design and Operating Requirements

1. The owner and operator must design, construct, operate, and maintain the unit to maximize the degradation, transformation, and immobilization of hazardous constituents in the treatment zone. The owner or operator must design, construct, operate, and maintain the unit in accord with all design and operating conditions that were used in the treatment demonstration under subparagraph (c) of this paragraph. At a minimum, the Commissioner will specify the • following in the facility permit:

   (i) The rate and method of waste application to the treatment zone;

   (ii) Measures to control soil pH;

   (iii) Measures to enhance microbial or chemical reactions (e.g., fertilization, tilling); and

   (iv) Measures to control the moisture content of the treatment zone.

2. The owner or operator must design, construct, operate, and maintain the treatment zone to minimize run-off of hazardous constituents during the active life of the land treatment unit.

3. The owner or operator must design, construct, operate, and maintain a run-on control system capable of preventing flow onto the treatment zone during peak discharge from at least a 25-year storm.

4. The owner or operator must design, construct, operate, and maintain a run-off management system to collect and control at least the water volume resulting from a 24-hour, 25-year storm.

5. Collection and holding facilities (e.g., tanks or basins) associated with run-on and run-off control systems must be emptied or otherwise managed expeditiously after storms to maintain the design capacity of the system.

6. If the treatment zone contains particulate matter which may be subject to wind dispersal, the owner or operator must manage the unit to control wind dispersal.

7. The owner or operator must inspect the unit weekly and after storms to detect evidence of:

   (i) Deterioration, malfunctions, or improper operation of run-on and run-off control systems; and

   (ii) Improper functioning of wind dispersal control measures.

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8. The Commissioner will specify in the permit all design and operating practices that are necessary to ensure that the requirements of this subparagraph are satisfied.

(e) - (f) Reserved.

(g) Food-chain Crops - The Commissioner may allow the growth of food-chain crops in or on the treatment zone only if the owner or operator satisfies the conditions of this subparagraph. The Commissioner will specify in the facility permit the specific food-chain crops which may be grown.

1. (i) The owner or operator must demonstrate that there is no substantial risk to human health caused by the growth of such crops in or on the treatment zone by demonstration, prior to the planting of such crops, that hazardous constituents other than cadmium:

(I) Will not be transferred to the food or feed portions of the crop by plant uptake or direct contact, and will not otherwise be ingested by food-chain animals (e.g., by grazing); or

(II) Will not occur in greater concentrations in or on the food or feed portions of crops grown on the treatment zone than in or on identical portions of the same crops grown on untreated soils under similar conditions in the same region.

(ii) The owner or operator must make the demonstration required under this part prior to the planting of crops at the facility for all constituents identified in Appendix .02/E of Rule 1200-1-11-.02 that are reasonably expected to be in, or derived from, waste placed in or on the treatment zone.

(iii) In making a demonstration under this part, the owner or operator may use field tests, greenhouse studies, available data, or, in the case of existing units, operating data, and must:

(I) Base the demonstration on conditions similar to those present in the treatment zone, including soil characteristics (e.g., pH, cation exchange capacity), specific wastes, application rates, application methods, and crops to be grown; and

(II) Describe the procedures used in conducting any tests, including the sample selection criteria, sample size, analytical methods, and statistical procedures.

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(iv) If the owner or operator intends to conduct field tests or greenhouse studies in order to make the demonstration required under this part, he must obtain a permit for conducting such activities.

2. The owner or operator must comply with the following conditions if cadmium is contained in wastes applied to the treatment zone:

(i) (I) The pH of the waste and soil mixture must be 6.5 or greater at the time of each waste application, except for waste containing cadmium at concentrations of 2 mg/kg (dry weight) or less;

(II) The annual application of cadmium from waste must not exceed 0.5 kilograms per hectare (kg/ha) on land used for production of tobacco, leafy vegetables, or root crops grown for human consumption. For other food-chain crops, the annual cadmium application rate must not exceed:

Time Period	Annual Cd application rate (kg/ha)
Present to June 30, 1984	2.0
July 1, 1984 to December 31, 1986	1.25
Beginning January 1, 1987	0.5

(III) The cumulative application of cadmium from waste must not exceed 5 kg/ha if the waste and soil mixture has a pH of less than 6.5; and

(IV) If the waste and soil mixture has a pH of 6.5 or greater or is maintained at a pH of 6.5 or greater during crop growth, the cumulative application of cadmium from waste must not exceed: 5 kg/ha if soil cation exchange capacity (CEC) is less than 5 meq/100g; 10 kg/ha if soil CEC is 5-15 meq/100g; and 20 kg/ha if soil CEC is greater than 15 meg/100g; or

(ii) (I) Animal feed must be the only food-chain crop produced;

(II) The pH of the waste and soil mixture must be 6.5 or greater at the time of waste application or at the time the crop is planted, whichever occurs later, and this pH level must be maintained whenever food-chain crops are grown;

(III) There must be an operating plan which demonstrates how the animal feed will be distributed to preclude ingestion by humans. The operating plan must describe the measures to be taken to safeguard against possible health hazards from

cadmium entering the food chain, which may result from alternative land uses; and

(IV) Future property owners must be notified by a stipulation in the land record or property deed which states that the property has received waste at high cadmium application rates and that food-chain crops must not be grown except in compliance with subpart 2(ii) of this subparagraph.

(h) Reserved.

(i) Unsaturated Zone Monitoring - An owner or operator subject to this paragraph must establish an unsaturated zone monitoring program to discharge the following responsibilities:

1. The owner or operator must monitor the soil and soil-pore liquid to determine whether hazardous constituents migrate out of the treatment zone.

   (i) The Commissioner will specify the hazardous constituents to be monitored in the facility permit. The hazardous constituents to be monitored are those specified under part (b)2 of this paragraph. •

   (ii) The Commissioner may require monitoring for principal hazardous constitutents (PHCs) in lieu of the constituents specified under part (b)2 of this paragraph. PHCs are hazardous constituents contained in the wastes to be applied at the unit that are the most difficult to treat, considering the combined effects of degradation, transformation, and immobilization. The Commissioner will establish PHCs if he finds, based on waste analyses, treatment demonstrations, or other data, that effective degradation, transformation, or immobilization of the PHCs will assure treatment at at least equivalent levels for the other hazardous constituents in the wastes. • •

2. The owner or operator must install an unsaturated zone monitoring system that includes soil monitoring using soil cores and soil-pore liquid monitoring using devices such as lysimeters. The unsaturated zone monitoring system must consist of a sufficient number of sampling points at appropriate locations and depths to yield samples that:

   (i) Represent the quality of background soil-pore liquid quality and the chemical make-up of soil that has not been affected by leakage from the treatment zone; and

   (ii) Indicate the quality of soil-pore liquid and the chemical make-up of the soil below the treatment zone.

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3. The owner or operator must establish a background value for each hazardous constituent to be monitored under part 1 of this subparagraph. The permit will specify the background values for each consitutuent or specify the procedures to be used to calculate the background values.

   (i) Background soil values may be based on a one-time sampling at a background plot having characteristics similar to those of the treatment zone.

   (ii) Background soil-pore liquid values must be based on at least quarterly sampling for one year at a background plot having characteristics similar to those of the treatment zone.

   (iii) The owner or operator must express all background values in a form necessary for the determination of statistically significant increases under part 6 of this subparagraph.

   (iv) In taking samples used in the determination of all background values, the owner or operator must use an unsaturated zone monitoring system that complies with subpart 2(i) of this subparagraph.

4. The owner or operator must conduct soil monitoring and soil-pore liquid monitoring immediately below the treatment zone. The Commissioner will specify the frequency and timing of soil and soil-pore liquid monitoring in the facility permit after considering the frequency, timing, and rate of waste application, and the soil permeability. The owner or operator must express the results of soil and soil-pore liquid monitoring in a form necessary for the determination of statistically significant increases under part 6 of this subparagraph.

5. The owner or operator must use consistent sampling and analysis procedures that are designed to ensure sampling results that provide a reliable indication of soil-pore liquid quality and the chemical make-up of the soil below the treatment zone. At a minimum, the owner or operator must implement procedures and techniques for:

   (i) Sample Collection;
   (ii) Sample preservation and shipment;
   (iii) Analytical procedures; and
   (iv) Chain of custody control.

6. The owner or operator must determine whether there is a statistically significant change over background values for any hazardous constituent to be monitored under part 1 of this subparagraph below the treatment zone each time he conducts soil monitoring and soil-pore liquid monitoring under part 4 of this subparagraph.

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(i) In determining whether a statistically significant increase has occurred, the owner or operator must compare the value of each constituent, as determined under part 4 of this paragraph, to the background value for that constituent according to the statistical procedure specified in the facility permit under this part.

(ii) The owner or operator must determine whether there has been a statistically significant increase below the treatment zone within a reasonable time period after completion of sampling. The Commissioner will specify that time period in the facility permit after considering the complexity of the statistical test and the availability of laboratory facilities to perform the analysis of soil and soil-pore liquid samples.

(iii) The owner or operator must determine whether there is a statistically significant increase below the treatment zone using a statistical procedure that provides reasonable confidence that migration from the treatment zone will be identified. The Commissioner will specify a statistical procedure in the facility permit that he finds:

(I) Is appropriate for the distribution of the data used to establish background values; and

(II) Provides a reasonable balance between the probability of falsely identifying migration from the treatment zone and the probability of failing to identify real migration from the treatment zone.

7. If the owner or operator determines, pursuant to part 6 of this subparagraph, that there is a statistically significant increase of hazardous constituents below the treatment zone, he must:

(i) Notify the Commissioner of this finding in writing within seven days. The notification must indicate what constituents have shown statistically significant increases.

(ii) Within 90 days, submit to the Commissioner an application for a permit modification to modify the operating practices at the facility in order to maximize the success of degradation, transformation, or immobilization processes in the treatment zone.

8. If the owner or operator determines, pursuant to part 6 of this subparagraph, that there is a statistically significant increase of hazardous constituents below the treatment zone, he may demonstrate that a source other than regulated units caused the increase or that the increase resulted from an error in sampling, analysis, or evalution. While the owner or operator may make a

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demonstration under this part in addition to, or in lieu of, submitting a permit modification application under subpart 7(ii) of this subparagraph, he is not relieved of the requirement to submit a permit modification application within the time specified in subpart 7(ii) unless the demonstration made under this part successfully shows that a source other than regulated units caused the increase or that the increase resulted from an error in sampling, analysis, or evaluation. In making a demonstration under this part, the owner or operator must:

(i) Notify the Commissioner in writing within seven days of determining a statistically significant increase below the treatment zone that he intends to make a determination under this part;

(ii) Within 90 days, submit a report to the Commissioner demonstrating that a source other than the regulated units caused the increase or that the increase resulted from error in sampling, analysis, or evaluation;

(iii) Within 90 days, submit to the Commissioner an application for a permit modification to make any appropriate changes to the unsaturated zone monitoring program at the facility; and

(iv) Continue to monitor in accord with the unsaturated zone monitoring program established under this subparagraph.

(j) Recordkeeping - The owner or operator must include hazardous waste application dates and rates in the operating record required under subparagraph (5)(d) of this rule.

(k) Closure and Post-closure Care

1. During the closure period the owner or operator must:

(i) Continue all operations (including pH control) necessary to maximize degradation, transformation, or immobilization of hazardous constituents within the treatment zone as required under part (d)1 of this paragraph, except to the extent such measures are inconsistent with subpart (viii) of this part.

(ii) Continue all operations in the treatment zone to minimize run-off of hazardous constituents as required under part (d)2 of this paragraph;

(iii) Maintain the run-on control system required under part (d)3 of this paragraph;

(iv) Maintain the run-off management system required under part (d)4 of this paragraph;

(v) Control wind dispersal of hazardous waste if required under part (d)6 of this paragraph;

(vi) Continue to comply with any prohibitions or conditions concerning growth of food-chain crops under subparagraph (g) of this paragraph;

(vii) Continue unsaturated zone monitoring in compliance with subparagraph (i) of this paragraph, except that soil-pore liquid monitoring may be terminated 90 days after the last application of waste to the treatment zone; and

(viii) Establish a vegetative cover on the portion of the facility being closed at such time that the cover will not substantially impede degradation, transformation, or immobilization of hazardous constituents in the treatment zone. The vegetative cover must be capable of maintaining growth without extensive maintenance.

2. For the purpose of complying with subparagraph (7)(f) of this Rule, when closure is completed the owner or operator may submit to the Commissioner certification by an independent qualified soil scientist, in lieu of an independent registered professional engineer, that the facility has been closed in accordance with the specifications in the approved closure plan.

3. During the post-closure care period the owner or operator must:

(i) Continue all operations (including pH control) necessary to enhance degradation and transformation and sustain immobilization of hazardous constituents in the treatment zone to the extent that such measures are consistent with other post-closure care activities;

(ii) Maintain a vegetative cover over closed portions of the facility;

(iii) Maintain the run-on control system required under part (d)3 of this paragraph;

(iv) Maintain the run-off management system required under part (d)4 of this paragraph;

(v) Control wind dispersal of hazardous waste if required under part (d)6 of this paragraph;

(vi) Continue to comply with any prohibitions or conditions concerning growth of food-chain crops under subparagraph (g) of this paragraph; and

(vii) Continue unsaturated zone monitoring in compliance with subparagraph (i) of this paragraph, except that soil-pore liquid monitoring may be terminated 90 days after the last application of waste to the treatment zone.

4. The owner or operator is not subject to regulation under subpart 1 (viii) and part 3 of this subparagraph if the Commissioner finds, based upon a demonstration by the owner or operator, that the level of hazardous constituents in the treatment zone soil does not exceed the background value of those constituents by an amount that is statistically significant when using the test specified in subpart (iii) of this part. The owner or operator may submit such a demonstration to the Commissioner at any time during the closure or post-closure care periods. For the purposes of this part:

(i) The owner or operator must establish background soil values and determine whether there is a statistically significant increase over those values for all hazardous constituents specified in the facility permit under part (b) 2 of this paragraph.

(I) Background soil values may be based on a one-time sampling of a background plot having characteristics similar to those of the treatment zone.

(II) The owner or operator must express background values and values for hazardous constituents in the treatment zone in a form necessary for the determination of statistically significant increases under subpart (iii) of this part.

(ii) In taking samples used in the determination of background and treatment zone values, the owner or operator must take samples at a sufficient number of sampling points and at appropriate locations and depths to yield samples that represent the chemical make-up of soil that has not been affected by leakage from the treatment zone and the soil within the treatment zone, respectively.

(iii) In determining whether a statistically significant increase has occurred, the owner or operator must compare the value of each constituent in the treatment zone to the background value for that constituent using a statistical procedure that provides reasonable confidence that constituent presence in the treatment zone will be identified. The owner or operator must use a statistical procedure that:

(I) Is appropriate for the distribution of the data used to establish background values; and

(II) Provides a reasonable balance between the probability of falsely identifying hazardous constituent presence in the

treatment zone and the probability of failing to identify real presence in the treatment zone.

5. The owner or operator is not subject to regulation under paragraph (8) of this Rule if the Commissioner finds that the owner or operator satisifies part 4 of this subparagraph and if unsaturated zone monitoring under subparagraph (i) of this paragraph indicates that hazardous constituents have not migrated beyond the treatment zone during the active life of the land treatment unit.

(l) Special Requirements for Ignitable or Reactive Waste - The owner or operator must not apply ignitable or reactive waste to the treatment zone unless:

1. The waste is immediately incorporated into the soil so that:

(i) The resulting waste, mixture, or dissolution of material no longer meets the definition of ignitable or reactive waste under Rule 1200-1-11-.02(3)(b)or (d); and

(ii) Part (2)(h)2 of this Rule is complied with; or

2. The waste is managed in such a way that it is protected from any material or conditions which may cause it to ignite or react.

(m) Special Requirements for Incompatible Wastes - The owner or operator must not place incompatible wastes, or incompatible wastes and materials (see Appendix .06/B for examples), in or on the same treatment zone, unless part (2)(h)2 of this Rule is complied with.

(n) Special Requirements for Hazardous Wastes F020, F021, F022, F023, F026, and F027

1. Hazardous Wastes F020, F021, F022, F023, F026, and F027 must not be placed in a land treatment unit unless the owner or operator operates the waste pile in accordance with a management plan for these wastes that is approved by the Commissioner pursuant to the standards set out in this paragraph, and in accord with all other applicable requirements of this Rule. The factors to be considered are:

(i) The volume, physical, and chemical characteristics of the wastes, including their potential to migrate through soil or to volatilize or escape into the atmosphere;

(ii) The attenuative properties of underlying and surrounding soils or other materials;

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(iii) The mobilizing properties of other materials co-disposed with these wastes; and

(iv) The effectiveness of additional treatment, design, or monitoring techniques.

2. The Commissioner may determine that additional design, operating, and monitoring requirements are necessary for surface impoundments managing hazardous wastes F020, F021, F022, F023, F026, and F027 in order to reduce the possibility of migration of these wastes to ground water, surface water, or air so as to protect human health and the environment.

(14) Landfills

(a) Applicability - The regulations in this paragraph apply to owners or operators of facilities that dispose of hazardous waste in landfills, except as subparagraphs (1)(b) and (1)(d) of this Rule provide otherwise.

(b) Design and Operating Requirements

1. Any landfill that is not covered by part 3 of this subparagraph or Rule 1200-1-11-.05(14)(b)1 must have a liner system for all portions of the landfill (except for existing portions of such landfill). The liner system must have:

(i) A liner that is designed, constructed, and installed to prevent any migration of wastes out of the landfill to the adjacent subsurface soil or ground water or surface water at any time during the active life (including the closure period) of the landfill. The liner must be constructed of materials that prevent wastes from passing into the liner during the active life of the facility. The liner must be:

(I) Constructed of materials that have appropriate chemical properties and sufficient strength and thickness to prevent failure due to pressure gradients (including static head and external hydrogeologic forces), physical contact with the waste or leachate to which they are exposed, climatic conditions, the stress of installation, and the stress of daily operation;

(II) Placed upon a foundation or base capable of providing support to the liner and resistance to pressure gradients above and below the liner to prevent failure of the liner due to settlement, compression, or uplift; and

(III) Installed to cover all surrounding earth likely to be in contact with the waste or leachate; and

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(ii) A leachate collection and removal system immediately above the liner that is designed, constructed, maintained, and operated to collect and remove leachate from the landfill. The Commissioner will specify design and operating conditions in the permit to ensure that the leachate depth over the liner does not exceed 30 cm (one foot). The leachate collection and removal system must be:

(I) Constructed of materials that are:

I. Chemically resistant to the waste managed in the landfill and the leachate expected of be generated; and

II. Of sufficient strength and thickness to prevent collapse under the pressures exerted by overlying wastes, waste cover materials, and by any equipment used at the landfill; and

(II) Designed and operated to function without clogging through the scheduled closure of the landfill.

2. The owner or operater will be exempted from the requirements of part 1 of this subparagraph if the Commissioner finds, based on a demonstration by the owner or operator, that alternative design and operating practices, together with location characteristics, will prevent the migration of any hazardous constituents (see subparagraph (6)(d) of this Rule) into the ground water or surface water at any future time. In deciding whether to grant an exemption, the Commissioner will consider:

(i) The nature and quantity of the wastes:

(ii) The proposed alternate design and operation;

(iii) The hydrogeologic setting of the facility, including the attenuative capacity and thickness of the liners and soils present between the landfill and ground water or surface water; and

(iv) All other factors which would influence the quality and mobility of the leachate produced and the potential for it to migrate to ground water or surface water.

3. The owner or operator of each new landfill, each new landfill unit at an existing facility, each replacement of an existing landfill unit, and each lateral expansion of an existing landfill unit, must install two or more liners and a leachate collection system above and between the liners. The liners and leachate collection systems must protect human health and the environment. The requirement for the installation of two or more liners in this part may be satisfied by the installation of a top liner designed, operated and constructed of

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materials to prevent the migration of any constituent into such liner during the period such facility remains in operation (including any post-closure monitoring period), and a lower liner designed, operated, and constructed to prevent the migration of any constituent through such liner during such period. For the purpose of the preceding sentence, a lower liner shall be deemed to satisfy such requirement if it is constructed of at least a 3-foot thick layer of recompacted clay or other natural material with a permeability of no more than 1×10^{-7} centimeter per second.

4. Part 3 of this subparagraph will not apply if the owner or operator demonstrates to the Commissioner, and the Commissioner finds for such landfill, that alternative design and operating practices, together with location characteristics, will prevent the migration of any hazardous constitutent into the ground water or surface water at least as effectively as such liners and leachate collection systems.

5. The double liner requirement set forth in part 3 of this subparagraph may be waived by the Commissioner for any monofill, if:

   (i) The monofill contains only hazardous wastes from foundry furnace emission controls or metal casting molding sand, and such wastes do not contain constituents which would render the wastes hazardous for reasons other than the EP toxicity characteristics in Rule 1200-1-11-.02(3)(e); and

   (ii) (I) I. The monofill has at least one liner for which there is no evidence that such liner in leaking;

   II. The monofill is located more than one-quarter mile from an underground source of drinking water (as that term is defined in 40 CFR 144.3); and

   III. The monofill is in compliance with generally applicable ground-water monitoring requirements for facilities with permits under Section 68-46-108 of the Act; or

   (II) The owner or operator demonstrates that the monofill is located, designed and operated so as to assure that there will be no migration of any hazardous constituent into ground water or surface water at any future time.

6. The owner or operator must design, construct, operate, and maintain a run-on control system capable of preventing flow onto the active portion of the landfill during peak discharge from at least a 25-year storm.

7. The owner or operator must design, construct, operate, and maintain a run-off management system to collect and control at least the water volume resulting from a 24-hour, 25-year storm.

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8. Collection and holding facilities (e.g., tanks or basins) associated with run-on and run-off control systems must be emptied or otherwise managed expeditiously after storms to maintain design capacity of the system.

9. If the landfill contains any particulate matter which may be subject to wind dispersal, the owner or operator must cover or otherwise manage the landfill to control wind dispersal.

10. The Commissioner will specify in the permit all design and operating practices that are necessary to ensure that the requirements of this subparagraph are satisfied.

11. The owner or operator must not accept a hazardous waste from a particular generating facility for landfilling unless and until such action has been specifically authorized either in the permit (as, for example, for an on-site facility permitted to handle a specific waste stream) or in a written approval granted by the Commissioner (in accordance with subparts (i) and (ii) of this part) pursuant to a case-by-case request from the owner or operator.

    (i) Such case-by-case requests must be submitted to the Commissioner in duplicate, and must include the waste analysis information the owner or operator has obtained under subparagraph (2)(d) of this Rule and any other information the Commissioner might reasonably require. Such a request shall not be considered by the Commissioner unless the subject hazardous waste falls within the scope of those hazardous wastes which the landfill is allowed to handle under the facility permit.

    (ii) The Commissioner shall not approve the landfilling of a hazardous waste if he or it finds that:

        (I) The waste because of its high toxicity, tendency to leach or migrate, or other characteristic represents an unusually high danger to public health or the environment; and

        (II) An alternative to land disposal which is both technologically and economically feasible exists.

(c) Reserved.

(d) Monitoring and Inspection

1. During construction or installation, liners (except in the case of existing portions of landfills exempt from part (b)1 of this paragraph) and cover systems (e.g., membranes, sheets, or coatings) must be inspected for uniformity, damage, and imperfections (e.g., holes, cracks, thin spots, or foreign materials). Immediately after construction or installation:

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(i) Synthetic liners and covers must be inspected to ensure tight seams and joints and the absence of tears, punctures, or blisters; and

(ii) Soil-based and admixed liners and covers must be inspected for imperfections including lenses, cracks, channels, root holes, or other structural non-uniformities that may cause an increase in the permeability of the liner or cover.

2. While a landfill is in operation, it must be inspected weekly and after storms to detect evidence of any of the following:

(i) Deterioration, malfunctions, or improper operation of run-on and run-off control systems.

(ii) Proper functioning of wind dispersal control systems, where present; and

(iii) The presence of leachate in and proper functioning of leachate collection and removal systems, where present.

(e)-(i) Reserved.

(j) Surveying and Recordkeeping - The owner or operator of a landfill must maintain the following items in the operating record required under subparagraph (5)(d) of this Rule:

1. On a map, the exact location and dimensions, including depth, of each cell with respect to permanently surveyed benchmarks; and

2. The contents of each cell and the approximate location of each hazardous waste type within each cell.

(k) Closure and Post-closure Care

1. At final closure of the landfill or upon closure of any cell the owner or operator must cover the landfill or cell with a final cover designed and constructed to:

(i) Provide long-term minimization of migration of liquids through the closed landfill;

(ii) Function with minimum maintenance;

(iii) Promote drainage and minimize erosion or abrasion of the cover;

(iv) Accommodate settling and subsidence so that the cover's integrity is maintained; and

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(v) Have a permeability less than or equal to the permeability of any bottom liner system or natural subsoils present.

2. After final closure, the owner or operator must comply with all post-closure requirements contained in subparagraph (7)(g)-(j) of this Rule, including maintenance and monitoring throughout the post-closure care period (specified in the permit under subparagraph (7)(g) of this Rule). The owner or operator must:

(i) Maintain the integrity and effectiveness of the final cover, including making repairs to the cap as necessary to correct the effects of settling, subsidence, erosion, or other events;

(ii) Continue to operate the leachate collection and removal system until leachate is no longer detected;

(iii) Maintain and monitor the ground-water monitoring system and comply with all other applicable requirements of paragraph (6) of this Rule;

(iv) Prevent run-on and run-off from eroding or otherwise damaging the final cover; and

(v) Protect and maintain surveyed benchmarks used in complying with subparagraph (j) of this paragraph.

(l) Reserved.

(m) Special Requirements for Ignitable or Reactive Waste

1. Except as provided in part 2 of this subparagraph, and in subparagraph (q) of this paragraph, ignitable or reactive waste must not be placed in a landfill, unless the waste is treated, rendered, or mixed before or immediately after placement in a landfill so that:

(i) The resulting waste, mixture, or dissolution of material no longer meets the definition of ignitable or reactive waste under Rule 1200-1-11-.02(3)(b) or (d); and

(ii) Part (2)(h)2 of this Rule is complied with.

2. Ignitable wastes in containers may be landfilled without meeting the requirements of part 1 of this subparagraph, provided that the wastes are disposed of in such a way that they are protected from any material or conditions which may cause them to ignite. At a minimum, ignitable wastes must be disposed of in non-leaking containers which are carefully handled and placed so as to avoid heat, sparks, rupture, or any other condition that might cause ignition of the wastes; must be covered daily with soil or other non-combustible material to minimize the potential for ignition of the wastes; and

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must not be disposed of in cells that contain or will contain other wastes which may generate heat sufficient to cause ignition of the waste.

(n) Special Requirements for Incompatible Wastes - Incompatible wastes, or incompatible wastes and materials, (see Appendix .06/B for examples) must not be placed in the same landfill cell, unless part (2)(h)2 of this Rule is complied with.

(o) Special Requirements for Bulk and Containerized Liquids •

1. After the effective date of this regulation, the placement of bulk or non-containerized liquid hazardous waste or waste containing free liquids (whether or not absorbents have been added) in any landfill is prohibited. •

2. Containers holding free liquids must not be placed in a landfill unless:

   (i) All free-standing liquid (I) has been removed by decanting, or other methods; (II) has been mixed with absorbent or solidified so that free-standing liquid is no longer observed; or (III) has been otherwise eliminated; or

   (ii) The container is very small, such as an ampule; or

   (iii) The container is designed to hold free liquids for use other than storage, such as a battery or capacitor; or

   (iv) The container is a lab pack as defined in subparagraph (q) of this paragraph and is disposed of in accordance with that subparagraph.

3. After the effective date of this regulation, the placement of any liquid which is not a hazardous waste in a landfill is prohibited unless the owner or operator demonstrates to the Commissioner, or the Commissioner determines, that: •

   (i) The only reasonably available alternative to the placement in such landfill is placement in a landfill or unlined surface impoundment, whether or not permitted or operating under interim status, which contains or may reasonably be anticipated to contain, hazardous waste; and •

   (ii) Placement in such owner or operator's landfill will not present a risk of contamination of any underground source of drinking water (as that term is defined in 40 CFR 144.3). •

4. To demonstrate the absence or presence of free liquids in either a containerized or a bulk waste, the following test must be used: Method 9095 (Paint Filter Liquids Test) as described in "Test Methods •

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for Evaluating Solid Wastes, Physical/Chemical Methods." (EPA Publication No. SW-846, incorporated by reference, see Rule 1200-1-11-.01(2)(b))

(p) Special Requirements for Containers - Unless they are very small, such as a ampule, containers must be either:

1. At least 90 percent full when placed in the landfill; or

2. Crushed, shredded, or similarly reduced in volume to the maximum practical extent before burial in the landfill.

(q) Disposal of Small Containers of Hazardous Waste in Overpacked Drums (Lab Packs) - Small containers of hazardous waste in overpacked drums (lab packs) may be placed in a landfill if the following requirements are met:

1. Hazardous waste must be packaged in non-leaking inside containers. The inside containers must be of a design and constructed of a material that will not react dangerously with, be decomposed by, or be ignited by the contained waste. Inside containers must be tightly and securely sealed. The inside containers must be of the size and type specified in the U.S. Department of Transportation (DOT) hazardous materials regulations (49 CFR Parts 173, 178, and 179) if those regulations specify a particular inside container for the waste.

2. The inside containers must be overpacked in an open head DOT-specification metal shipping container (49 CFR Parts 178 and 179) of no more than 416-liter (110 gallon) capacity and surrounded by, at a minimum, a sufficient quantity of absorbent material to completely absorb all of the liquid contents of the inside containers. The metal outer container must be full after packing with inside containers and absorbent material.

3. The absorbent material used must not be capable of reacting dangerously with, being decomposed by, or being ignited by the contents of the inside containers in accordance with part (4)(h)2 of this Rule.

4. Incompatible wastes, as defined in Rule 1200-1-11-.01(2)(a), must not be placed in the same outside container.

5. Reactive wastes, other than cyanide- or sulfide-bearing waste as defined in Rule 1200-1-11-.02(3)(d)1(v), must be treated or rendered non-reactive prior to packaging in accordance with parts 1 through 4 of this subparagraph. Cyanide- and sulfide-bearing reactive waste may be packed in accordance with parts 1 through 4 of this subparagraph without first being treated or rendered non-reactive.

(r) Special Requirements for Hazardous Wastes F020, F021, F022, F023, F026, and F027

1. Hazardous Wastes F020, F021, F022, F023, F026, and F027 must not be placed in a landfill unless the owner or operator operates the landfill in accordance with a management plan for these wastes that is approved by the Commissioner pursuant to the standards set out in this paragraph, and in accord with all other applicable requirements of this Rule. The factors to be considered are:

   (i) The volume, physical, and chemical characteristics of the wastes, including their potential to migrate through soil or to volatilize or escape into the atmosphere;

   (ii) The attenuative properties of underlying and surrounding soils or other materials;

   (iii) The mobilizing properties of other materials co-disposed with these wastes; and

   (iv) The effectiveness of additional treatment, design, or monitoring techniques.

2. The Commissioner may determine that additional design, operating, and monitoring requirements are necessary for surface impoundments managing hazardous wastes F020, F021, F022, F023, F026, and F027 in order to reduce the possibility of migration of these wastes to ground water, surface water, or air so as to protect human health and the environment.

(15) Incinerators

(a) Applicability

1. The regulations in this paragraph apply to owners and operators of facilities that incinerate hazardous waste, except as subparagraphs (1)(b) and (1)(d) of this Rule provide otherwise. The following facility owners or operators are considered to incinerate hazardous waste:

   (i) Owners or operators of hazardous waste incinerators (as defined in Rule 1200-1-11-.01(2)(a)); and

   (ii) Owners or operators who burn hazardous waste in boilers or in industrial furnaces in order to destroy the wastes.

2. After consideration of the waste analysis included with Part B of the permit application, the Commissioner in establishing the permit conditions, must exempt the applicant from all requirements of this paragraph except subparagraphs (b) (Waste Analysis) and (h) (Closure):

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(i) If the Commissioner finds that the waste to be burned is:

(I) Listed as a hazardous waste in Rule 1200-1-11-.02(4) solely because it is ignitable (Hazard Code I), corrosive (Hazard Code C), or both; or

(II) Listed as a hazardous waste in Rule 1200-1-11-.02(4) solely because it is reactive (Hazard Code R) for characteristics other than those listed in Rule 1200-1-11-.02(3)(d)1(iv) and (v), and will not be burned when other hazardous wastes are present in the combustion zone; or

(III) A hazardous waste solely because it possesses the characteristic of ignitability, corrosivity, or both, as determined by the test for characteristics of hazardous wastes under Rule 1200-1-11-.02(3); or

(IV) A hazardous waste solely because it possesses any of the reactivity characteristics described by Rule 1200-1-11-.02(3)(d)1(i), (ii), (iii), (vi), (vii), and (viii), and will not be burned when other hazardous wastes are present in the combustion zone; and

(ii) If the waste analysis shows that the waste contains none of the hazardous constituents listed in Appendix .02/E of Rule 1200-1-11-.02, which would reasonably be expected to be in the waste.

3. If the waste to be burned is one which is described by items 2(i)(I) through (IV) of this subparagraph and contains insignificant concentrations of the hazardous constituents listed in Appendix .02/E of Rule 1200-1-11-.02, then the Commissioner may, in establishing permit conditions, exempt the applicant from all requirements of this paragraph, except subparagraphs (b) (Waste Analysis) and (h) (Closure), after consideration of the waste analysis included with Part B of the permit application, unless the Commissioner finds that the waste will pose a threat to human health and the environment when burned in an incinerator.

4. The owner or operator of an incinerator may conduct trial burns subject only to the requirements of Rule 1200-1-11-.07(1)(e) (incinerator permits).

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(b) Waste Analysis

1. As a portion of the triai burn plan required by Rule 1200-1-11-.07(1)(e), or with Part B of the permit application, the owner or operator must have included an analysis of the waste feed sufficient to provide all information required by part (1)(e)2 or part (5)(b)5 of Rule 1200-1-11-.07. Owners or operators of new hazardous waste incinerators must provide the information required by Rule 1200-1-11-.07(1)(e)3 or (5)(b)5 to the greatest extent possible.

2. Throughout normal operation the owner or operator must conduct sufficient waste analysis to verify that waste feed to the incinerator is within the physical and chemical composition limits specified in his permit (under part (f)2 of this paragraph).

(c) Principal Organic Hazardous Constituents (POHCs)

1. Principal Organic Hazardous Constituents (POHCs) in the waste feed must be treated to the extent required by the performance standard of subparagraph (d) of this paragraph.

2. (i) One or more POHCs will be specified in the facility's permit, from among those constituents listed in Appendix .02/E of Rule 1200-1-11-.02, for each waste feed to be burned. This specification will be based on the degree of difficulty of incineration of the organic constituents in the waste and on their concentration or mass in the waste feed, considering the results of waste analyses and trial burns or alternative data submitted with Part B of the facility's permit application. Organic constituents which represent the greatest degree of difficulty of incineration will be those most likely to be designated as POHCs. Constituents are more likely to be designated as POHCs if they are present in large quantities or concentrations in the waste.

(ii) Trial POHCs will be designated for performance of trial burns in accordance with the procedure specified in Rule 1200-1-11-.07(1)(e) for obtaining incinerator permits.

(d) Performance Standards - An incinerator burning hazardous waste must be designed, constructed, and maintained so that, when operated in accordance with operating requirements specified under subparagraph (f) of this paragraph, it will meet the following performance standards:

1. (i) Except as provided in subpart (ii) of this part, an incinerator burning hazardous waste must achieve a destruction and removal efficiency (DRE) of 99.99% for each principal organic hazardous constituent (POHC) designated (under subparagraph (c) of this paragraph) in its permit for each waste feed. DRE is determined for each POHC from the following equation:

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$$DRE = \frac{(W_{in} - W_{out})}{W_{in}} \times 100\%$$

Where:
W_{in} = Mass feed rate of one principal organic hazardous constituent (POHC) in the waste stream feeding the incinerator, and
W_{out} = Mass emission rate of the same POHC present in exhaust emissions prior to release to the atmosphere.

(ii) An incinerator burning hazardous wastes F020, F021, F022, F023, F026, and F027 must achieve a destruction and removal efficiency (DRE) of 99.9999% for each principal organic hazardous constituent (POHC) designated (under subparagraph (c) of this paragraph) in its permit. This performance must be demonstrated on POHCs that are more difficlut to incinerate than tetra-, penta- and hexachlorodibenzo-p-dioxins and dibenzofurans. DRE is determined for each POHC from the equation in subpart (i) of this part. In addition, the owner or operator of the incinerator must notify the Commissioner of his intent to incinerate Hazardous Wastes F020, F021, F022, F023, F026, or F027.

2. An incinerator burning hazardous waste and producing stack emissions of more than 1.8 kilograms per hour (4 pounds per hour) of hydrogen choride (HCl) must control HCl emissions such that the rate of emission is no greater than the larger of either 1.8 kilograms per hour or 1% of the HCl in the stack gas prior to entering any pollution control equipment.

3. An incinerator burning hazardous waste must not emit particulate matter in excess of 180 milligrams per dry standard cubic meter (0.08 grains per dry standard cubic foot) when corrected for the amount of oxygen in the stack gas according to the formula:

$$P_c = P_m \times \frac{14}{21-Y}$$

Where P_c is the corrected concentration of particulate matter, P_m is the measured concentration of particulate matter, and Y is the measured concentration of oxygen in the stack gas, using the Orsat method for oxygen analysis of dry flue gas, presented in 40 CFR 60, Appendix A (Method 3). This correction procedure is to be used by all hazardous waste incinerators except those operating under conditions of oxygen enrichment. For these facilities, the Commissioner will select an appropriate correction procedure, to be specified in the facility permit.

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4. For purposes of permit enforcement, compliance with the operating requirements specified in the permit (under subparagraph (f) of this paragraph) will be regarded as compliance with this paragraph. However, evidence that compliance with those permit conditions is insufficient to ensure compliance with the performance requirements of this paragraph may be "information" justifying modification or revocation and reissuance of a permit under Rule 1200-1-11-.07(9)(c).

(e) Hazardous Waste Incinerator Permits

1. The owner or operator of a hazardous waste incinerator may burn only wastes specified in his permit and only under operating conditions specified for those wastes under subparagraph (f) of this paragraph except:

   (i) In approved trial burns under Rule 1200-1-11-.07(1)(e); or

   (ii) Under exemptions created by subparagraph (a) of this paragraph.

2. Other hazardous wastes may be burned only after operating conditions have been specified in a new permit or a permit modification as applicable. Operating requirements for new wastes may be based on either trial burn results or alternative data included with Part B of a permit application under Rule 1200-1-11-.07(5)(b)5.

3. The permit for a new hazardous waste incinerator must establish appropriate conditions for each of the applicable requirements of this paragraph, including but not limited to allowable waste feeds and operating conditions necessary to meet the requirements of subparagraph (f) of this paragraph, sufficient to comply with the following standards:

   (i) For the period beginning with initial introduction of hazardous waste to the incinerator and ending with initiation of the trial burn, and only for the minimum time required to establish operating conditions required in subpart (ii) of this part, not to exceed a duration of 720 hours operating time for treatment of hazardous waste, the operating requirements must be those most likely to ensure compliance with the performance standards of subparagraph (d) of this paragraph, based on the Commissioner's engineering judgment. The Commissioner may extend the duration of this period once for up to 720 additional hours when good cause for the extension is demonstrated by the applicant.

   (ii) For the duration of the trial burn, the operating requirements must be sufficient to demonstrate compliance with the performance standards of subparagraph (d) of this paragraph and must be in accordance with the approved trial burn plan;

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(iii) For the period immediately following completion of the trial burn, and only for the minimum period sufficient to allow sample analysis, data computation, and submission of the trial burn results by the applicant, and review of the trial burn results and modification of the facility permit by the Commissioner, the operating requirements must be those most likely to ensure compliance with the performance standards of subparagraph (d) of this paragraph, based on the Commissioner's engineering judgment.

(iv) For the remaining duration of the permit, the operating requirements must be those demonstrated, in a trial burn or by alternative data specified in Rule 1200-1-11-.07(5)(b)5(iii), as sufficient to ensure compliance with the performance standards of subparagraph (d) of this paragraph.

(f) Operating Requirements

1. An incinerator must be operated in accordance with operating requirements specified in the permit. These will be specified on a case-by-case basis as those demonstrated (in a trial burn or in alternative data as specified in part (e)2 of this paragraph and included with Part B of a facility's permit application) to be sufficient to comply with the performance standards of subparagraph (d) of this paragraph.

2. Each set of operating requirements will specify the composition of the waste feed (including acceptable variations in the physical or chemical properties of the waste feed which will not affect compliance with the performance requirement of subparagraph (d) of this paragraph) to which the operating requirements apply. For each such waste feed, the permit will specify acceptable operating limits including the following conditions:

(i) Carbon monoxide (CO) level in the stack exhaust gas;

(ii) Waste feed rate;

(iii) Combustion temperature;

(iv) An appropriate indicator of combustion gas velocity;

(v) Allowable variations in incinerator system design or operating procedures; and

(vi) Such other operating requirements as are necessary to ensure that the performance standards of subparagraph (d) of this paragraph are met.

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3. During start-up and shut-down of an incinerator, hazardous waste (except wastes exempted in accordance with subparagraph (a) of this paragraph) must not be fed into the incinerator unless the incinerator is operating within the conditions of operation (temperature, air feed rate, etc.) specified in the permit.

4. Fugitive emissions from the combustion zone must be controlled by:

   (i) Keeping the combustion zone totally sealed against fugitive emissions; or

   (ii) Maintaining a combustion zone pressure lower than atmospheric pressure; or

   (iii) An alternative means of control demonstrated (with Part B of the permit application) to provide fugitive emissions control equivalent to maintenance of combustion zone pressure lower than atmospheric pressure.

5. An incinerator must be operated with a functioning system to automatically cut off waste feed to the incinerator when operating conditions deviate from limits established under part 1 of this subparagraph.

6. An incinerator must cease operation when changes in waste feed, incinerator design, or operating conditions exceed limits designated in its permit.

(g) Monitoring and Inspections

1. The owner or operator must conduct, as a minimum, the following monitoring while incinerating hazardous waste:

   (i) Combustion temperature, waste feed rate, and the indicator of combustion gas velocity specified in the facility permit must be monitored on a continuous basis.

   (ii) CO must be monitored on a continuous basis at a point in the incinerator downstream of the combustion zone and prior to release to the atmosphere.

   (iii) Upon request by the Commissioner, sampling and analysis of the waste and exhaust emissions must be conducted to verify that the operating requirements established in the permit achieve the performance standards of subparagraph (d) of this paragraph.

2. The incinerator and associated equipment (pumps, valves, conveyors, pipes, etc.) must be subjected to thorough visual inspection, at least daily, for leaks, spills, fugitive emissions, and signs of tampering.

3. The emergency waste feed cutoff system and associated alarms must be tested at least weekly to verify operability, unless the applicant demonstrates to the Commissioner that weekly inspections will unduly restrict or upset operations and that less frequent inspection will be adequate. At a minimum, operational testing must be conducted at least monthly.

4. This monitoring and inspection data must be recorded and the records must be placed in the operating log required by subparagraph (5)(d) of this Rule.

(h) Closure - At closure the owner or operator must remove all hazardous waste and hazardous waste residues (including, but not limited to, ash, scrubber waters, and scrubber sludges) from the incinerator site.

(Comment: At closure, as throughout the operating period, unless the owner or operator can demonstrate, in accordance with Rule 1200-1-11-.02(1)(c)4, that the residue removed from the incinerator is not a hazardous waste, the owner or operator becomes a generator of hazardous waste and must manage it in accordance with all applicable requirements of Rules 1200-1-11-.03 through 1200-1-11-.07.)

(16) Thermal Treatment - The regulations of Rule 1200-1-11-.05(16)(b), (c), (d), (e), and (f) apply to owners and operators of facilities that thermally treat hazardous waste in devices other than incinerators, except as subparagraph (1)(b) of this Rule provides otherwise. Thermal treatment in incinerators is subject to the requirements of paragraph (15) of this Rule.

(17) Chemical, Physical, and Biological Treatment - The regulations of Rule 1200-1-11-.05(17)(b), (c), (d), (e), (f), and (g) apply to owners and operators of facilities which treat hazardous waste by chemical, physical, or biological methods in other than tanks, surface impoundments, and land treatment facilities, except as subparagraph (1)(b) provides otherwise. Chemical, physical, and biological treatment of hazardous waste in tanks, surface impoundments, and land treatment facilities must be conducted in accordance with paragraphs (10), (11), and (13) of this Rule, respectively.

(18) Underground Injection - Except as subparagraph (1)(b) of this Rule provides otherwise:

(a) The owner or operator of a facility which disposes of hazardous waste by underground injection is excluded from the requirements of paragraphs (7) and (8) of this Rule.

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APPENDIX .06/A

RECORDKEEPING INSTRUCTIONS

The recordkeeping provisions of subparagraph (5)(d) of this Rule specify that an owner or operator must keep a written operating record at his facility. This appendix provides additional instructions for keeping portions of the operating record. See part (5)(d)2 of this Rule for additional recordkeeping requirements.

The following information must be recorded, as it becomes available, and maintained in the operating record until closure of the facility in the following manner:

(a) Records of each hazardous waste received, treated, stored, or disposed of at the facility which include the following:

(1) A description by its common name and the appropriate waste codes which apply to the waste. The waste description also must include the waste's physical form, i.e., liquid, sludge, solid, or contained gas. If the waste is not listed in Rule 1200-1-11-.02(4), the description also must include the process that produced it (for example, solid filter cake from production of ---, Waste Code W051).

Each hazardous waste liquid in Rule 1200-1-11-.02(4), and each hazardous waste characteristic defined in Rule 1200-1-11-.02(3), has a Waste Code assigned to it. In addition, each individual hazardous waste generated in this state will, as part of the generator notification process of Rule 1200-1-11-.03(2), be assigned a waste code by the Department which will be based upon the waste codes specified in Rule 1200-1-11-.02. These Department-assigned waste codes must be used when recording hazardous wastes accepted from generators in this state. The EPA Hazardous Waste Numbers which apply to the waste must be used when recording hazardous wastes received from out-of-state generators. Where a hazardous waste contains more than one Department-coded or EPA-numbered hazardous waste, or where more than one hazardous waste characteristic applies to the waste, all applicable Department-assigned waste codes or all applicable EPA Hazardous Waste Numbers must be recorded.

(2) The estimated or manifest-reported weight, or volume and density, where applicable, in one of the units of measure specified in Table 1.

(3) The method(s) (by handling code(s) as specified in Table 2) and date(s) of treatment, storage, or disposal.

TABLE 1

Unit of Measure	Symbol*	Density
Pounds	P	--
Short Tons (2000 lbs)	T	--
Gallons (U.S.)	G	P/G
Cubic Yards	Y	T/Y
Kilograms	K	--
Tonnes (1000 kg)	M	--
Liters	L	K/L
Cubic Meters	C	M/C

*Single digit symbols are used here for data processing purposes.

TABLE 2

HANDLING CODES FOR TREATMENT, STORAGE AND DISPOSAL METHODS

Enter the handling code(s) listed below that most closely represents the technique(s) used at the facility to treat, store, or dispose of each quantity of hazardous waste received.

1. Storage

S01 Container (barrel, drum, etc.)
S02 Tank
S03 Waste pile
S04 Surface impoundment
S05 Other (specify)

2. Treatment
(a) Thermal Treatment

T06 Liquid injection incinerator
T07 Rotary kiln incinerator
T08 Fluidized bed incinerator
T09 Multiple hearth incinerator
T10 Infrared furnace incinerator
T11 Molten salt destructor
T12 Pyrolysis
T13 Wet Air oxidation
T14 Calcination
T15 Microwave discharge
T16 Cement kiln
T17 Lime kiln
T18 Other (specify)

(b) Chemical Treatment

T19 Absorption mound
T20 Absorption field
T21 Chemical fixation
T22 Chemical oxidation
T23 Chemical precipitation
T24 Chemical reduction
T25 Chlorination
T26 Chlorinolysis
T27 Cyanide destruction
T28 Degradation
T29 Detoxification
T30 Ion exchange
T31 Neutralization

T32 Ozonation
T33 Photolysis
T34 Other (specify)

(c) Physical Treatment
(1) Separation of components

T35 Centrifugation
T36 Clarification
T37 Coagulation
T38 Decanting
T39 Encapsulation
T40 Filtration
T41 Flocculation
T42 Flotation
T43 Foaming
T44 Sedimentation
T45 Thickening
T46 Ultrafiltration
T47 Other (specify)

(2) Removal of Specific Components

T48 Absorpotion-molecular sieve
T49 Activated carbon
T50 Blending
T51 Catalysis
T52 Crystallization
T53 Dialysis
T54 Distillation
T55 Electrodialysis
T56 Electrolysis
T57 Evaporation
T58 High gradient magnetic separation
T59 Leaching
T60 Liquid ion exchange
T61 Liquid-liquid extraction
T62 Reverse osmosis
T63 Solvent recovery
T64 Stripping
T65 Sand filter
T66 Other (specify)

(d) Biological Treatment

T67 Activated sludge
T68 Aerobic lagoon
T69 Aerobic tank
T70 Anaerobic lagoon
T71 Composting

T72 Septic tank
T73 Spray irrigation
T74 Thickening filter
T75 Tricking filter
T76 Waste stabilization pond
T77 Other (specify)
T78-79 (Reserved)

3. Disposal

D80 Underground injection
D81 Landfill
D82 Land treatment
D83 Ocean disposal
D84 Surface impoundment (to be closed as a landfill)
D85 Other (specify)

APPENDIX .06/B

EXAMPLES OF POTENTIALLY INCOMPATIBLE WASTE

Many hazardous wastes, when mixed with other waste or materials at a hazardous waste facility, can produce effects which are harmful to human health and the environment, such as (1) heat or pressure, (2) fir or explosion, (3) violent reaction, (4) toxic dusts, mists, fumes, or gases, or (5) flammable fumes or gases.

Below are examples of potentially incompatible wastes, waste compounds, and materials, along with the harmful consequences which result from mixing materials in one group with materials in another group. The list is intended as a guide to owners or operators of treatment, storage, and disposal facilities, and to enforcement and permit granting officials, to indicate the need for special precautions when managing these potentially incompatible waste materials or components.

This list is not intended to be exhaustive. An owner or operator must, as the regulations require, adequately analyze his wastes so that he can avoid creating uncontrolled substances or reactions of the type listed below, whether they are listed below or not.

It is possible for potentially incompatible wastes to be mixed in a way that precludes a reaction (e.g., adding acid to water rather than water to acid) or that neutralizes them (e.g., a strong acid mixed with a strong base), or that controls substances produced (e.g., by generating flammable gases in a closed tank equipped so that ignition cannot occur, and burning the gases in an incinerator).

In the lists below, the mixing of a Group A material with a Group B material may have the potential consequence as noted.

Group 1-A	Group 1-B
Acetylene sludge	Acid sludge
Akaline caustic liquids	Acid and water
Alkaline cleaner	Battery acid
Alkaline corrosive liquids	Chemical cleaners
Alkaline corrosive battery fluid	Electrolyte, acid
Caustic wastewater	Etching acid liquid or solvent
Lime sludge and other corrosive alkalies	Pickling liquor and other corrosive acids
Lime wastewater	Spent acid
Lime and water	Spent mixed acid
Spent caustic	Spent sulfuric acid

Potential consequences: Heat generation; violent reaction.

Group 2-A	Group 2-B
Aluminum Beryllium Calcium Lithium Magnesium Potassium Sodium Zinc powder Other reactive metals and metal hydrides	Any waste in Group 1-A or 2-B

Potential consequences: Fire or explosion; generation of flammable hydrogen gas.

Group 3-A	Group 3-B
Alcohols Water	Any concentrated waste in Groups 1-A or 1-B Calcium Lithium Metal hydrides Potassium SO_2Cl_2, $SOCl_2$, PCl_3, CH_3SiCl_3 Other water-reactive waste

Potential consequences: Fire, explosion, or heat generation; generation of flammable or toxic gases.

Group 4-A	Group 4-B
Alcohols Aldehydes Halogenated hydrocarbons Nitrated hydrocarbons Unsaturated hydrocarbons Other reactive organic compounds and solvents	Concentrated Group 1-A or 1-B wastes Group 2-A wastes

Potential consequences: Fire, explosion, or violent reaction.

Group 5-A	Group 5-B
Spent cyanide and sulfide solutions	Group 1-B wastes

Potential consequences: Generation of toxic hydrogen cyanide or hydrogen sulfide gas.

Group 6-A	Group 6-B
Chlorates	Acetic acid and other organic acids
Chlorine	Concentrated mineral acids
Chlorites	Group 2-A wastes
Hypochlories	Group 4-A wastes
Nitrates	Other flammable and combustible wastes
Nitric acid, fuming	
Perchlorates	
Permanganates	
Peroxides	
Other strong oxidizers	

Potential consquences: Fire, explosion, or violent reaction.

Source: "Law, Regulations, and Guidelines for Handling of Hazardous Waste." California Department of Health, February 1975.

APPENDIX .06/C

COCHRAN'S APPROXIMATION TO THE BEHRENS-FISHER STUDENTS' T-TEST

Using all the available background data (n_B readings), calculate the background mean (X_B) and background variance (s_B^2). For the single monitoring well under investigation (n_m reading), calculate the monitoring mean (X_m) and monitoring variance (s_m^2).

For any set of data ($X_1, X_2 \ldots X_n$) the mean is calculated by:

$$X = \frac{X_1 + X_2 \ldots + X_n}{n}$$

and the variance is calculated by:

$$s^2 = \frac{(X_1 - X)^2 + (X_2 - X)^2 \ldots + (X_n - X)^2}{n-1}$$

where "n" denotes the number of observations in the set of data.

The t-test uses these data summary measures to calculate a t-statistic (t*) and a comparison t-statistic (t_c). The t* value is compared to the t_c value and a conclusion reached as to whether there has been a statistically significant change in any indicator parameter.

The t-statistic for all parameters except pH and similar monitoring parameters is:

$$t^* = \frac{X_m - X_B}{\frac{S_m^2}{n_m} + \frac{s_B^2}{n_B}}$$

If the value of this t-statistic is negative then there is no significant difference between the monitoring data and background data. It should be noted that significantly small negative values may be indicative of a failure of the assumption made for test validity or errors have been made in collecting the background data.

The t-statistic (t_c) against which t* will be compared, necessitates finding t_B and t_m from standard (one-tailed) tables where,

t_B = t-tables with (n_B - 1) degrees of freedom, at the 0.05 level of significance.

t_m = t-tables with (n_m -1) degrees of freedom, at the 0.05 level of significance.

Finally, the special weightings W_B and W_m are defined as:

$$W_B = \frac{S_B^2}{n_B} \quad \text{and} \quad W_m = \frac{s_m^2}{n_m}$$

and so the comparison t-statistic is:

$$t_c = \frac{W_B t_B + W_m t_m}{W_B + W_m}$$

The t-statistic (t*) is now compared with the comparison t-statistic (t_c) using the following decision rule:

> If <u>t* is equal to or larger than</u> t_c, then conclude that there most likely <u>has been a significant increase</u> in this specific parameter.
>
> If <u>t* is less than</u> t_c, then conclude that most likely <u>there has not been a change</u> in this specific parameter.

The t-statistic for testing pH and similar monitoring parameters is constructed in the same manner as previously described except the negative sign (if any) is discarded and the caveat concerning the negative value is ignored. The standard (two-tailed) tables are used in the construction of t_c for pH and similar monitoring parameters.

If t* is equal to or larger than t_c, then conclude that there most likely <u>has been a significant increase</u> (if the initial t* had been negative, this would imply a significant decrease). IF t* is less than t_c, then conclude that there most likely has been no change.

A further discussion of the test may be found in <u>Statistical Methods</u> (6th Edition, Section 4.14) by G. W. Snedecor and W. G. Cochran, or <u>Principles and Procedures of Statistics</u> (1st Edition, Section 5.8) by R.G.D. Steel and J. H. Torrie.

Standard t-Tables
0.05 Level of Significance

Degrees of Freedom	t-values (one-tail)	t-values (two-tail)
1	6.314	12.706
2	2.920	4.303
3	2.353	3.182
4	2.132	2.776
5	2.015	2.571
6	1.943	2.447
7	1.895	2.365
8	1.860	2.306
9	1.833	2.262
10	1.812	2.228
11	1.796	2.201
12	1.782	2.179
13	1.771	2.160
14	1.761	2.145
15	1.753	2.131
16	1.746	2.120
17	1.740	2.110
18	1.734	2.101
19	1.729	2.093
20	1.725	2.086
21	1.721	2.080
22	1.717	2.074
23	1.714	2.069
24	1.711	2.064
25	1.708	2.060
30	1.697	2.042
40	1.684	2.021

Adopted from Table III of "Statistical Tables for Biological, Agricultural, and Medical Research" (1947, R.A. Fisher and F. Yates).

RULE 1200-1-11-.07 PERMITTING OF HAZARDOUS WASTE TREATMENT, STORAGE, AND DISPOSAL FACILITIES

(1) General

(a) Purpose - The purpose of this Rule is to establish the procedures, documentation, and other requirements which must be met in order for a person to be permitted to operate a hazardous waste treatment, storage, or disposal facility in Tennessee.

(b) Scope/Applicability

1. The requirements of this Rule apply as specified to owners and operators of new and existing hazardous waste management facilities in Tennessee. Except as may be specifically provided otherwise in this Rule or in Rule 1200-1-11-.02:

(i) No new hazardous waste management facility in Tennessee can lawfully treat, store, or dispose of hazardous waste unless the owner or operator has a permit under the Act; and

(ii) No existing hazardous waste management facility in Tennessee can lawfully treat, store, or dispose of hazardous waste unless the owner and operator has a permit under the Act or interim status as provided in paragraph (3) of this Rule.

2. 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 unit which closes after July 26, 1982, during any post-closure care period required under Rule 1200-1-11-.06(7)(g) and during any compliance period specified under Rule 1200-1-11-.06(6)(g), including any extension of the compliance period under Rule 1200-1-11-.06(6)(g)3.

3. Owners and operators of certain facilities require permits under the Act as well as permits under other environmental regulatory programs for certain aspects of the facility operation. Permits under the Act are required for:

(i) Injection wells that dispose of hazardous waste, and associated surface facilities that treat, store, or dispose of hazardous waste. However, the owner or operator with permits issued under the Tennessee Water Quality Control Act (TCA 69-3-101 et seq.), through Chapters 1200-4-1 through 1200-4-5 of the Rules of the State of Tennessee, and under Part C of the Federal Safe Drinking Water Act (42 U.S.C. 3001 et seq.), will be deemed to have a permit under the Act for the injection well itself if they comply with the requirements of subpart (c)1(ii) and part (c)2 of this paragraph (permit by rule for injection wells).

(ii) Wastewater treatment units. However, the owner or operator of an on-site wastewater treatment unit will be deemed to have a permit under the Act if they comply with the requirements of subpart (c)1(iii) of this paragraph (permit-by-rule for on-site wastewater treatment units).

(iii) Treatment, storage, or disposal of hazardous waste at facilities requiring a pollutant discharge permit under TCA 69-3-101 et seq. However, the owner or operator of a publicly owned treatment works receiving hazardous waste will be deemed to have a permit under the Act for that waste if they comply with the requirements of subpart (c)1(i) and part (c)2 of this paragraph (permit by rule for POTWs).

4. The following persons are among those who are not required to obtain a permit under the Act and this Rule:

(i) Generators who accumulate hazardous waste on-site for less than 90 days as provided in Rule 1200-1-11-.03(4)(e);

(ii) Persons who own or operate facilities solely for the treatment, storage, or disposal of hazardous waste excluded from regulation under this Rule by Rules 1200-1-11-.02(1)(d) (exclusions) or (e) (small generator exemption);

(iii) Owners or operators of totally enclosed treatment facilities as defined in Rule 1200-1-11-.01(2)(a);

(iv) Owners or operators of elementary neutralization units as defined in Rule 1200-1-11-.01(2)(a);

(v) Transporters storing manifested shipments of hazardous waste in containers meeting applicable DOT and PSC packaging regulations at a transfer facility for a period of ten days or less;

(vi) Persons adding absorbent material to waste in a container (as defined in Rule 1200-1-11-.01(2)(a)) and persons adding waste to absorbent material in a container, provided that these actions occur at the time waste is first placed in the container and Rules 1200-1-11-.06 (2)(h)2, (9)(b), and (9)(c) are complied with; and

(vii) Owners and operators of facilities which treat or store hazardous waste that is to be recycled, except to the extent the requirements of this Rule are referred to in Rule 1200-1-11-.02(1)(f) and Rule 1200-1-11-.09.

5. (i) A person is not required to obtain a permit under the Act for treatment or containment activities taken during immediate response to any of the following situations:

(I) A discharge of a hazardous waste;

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(II) An imminent and substantial threat of a discharge of hazardous waste; or

(III) A discharge of a material which, when discharged, becomes a hazardous waste.

(ii) Any person who continues or initiates hazardous waste treatment or containment activities after the immediate response is over is subject to all applicable requirements of this Rule for those activities.

6. The Commissioner may issue or deny a permit for one or more units at a facility without simultaneously issuing or denying a permit to all of the units at the facility. The interim status of any unit for which a permit has not been issued or denied is not affected by the issuance or denial of a permit to any other unit at the facility.

(c) Permits By Rule

1. Notwithstanding any other provision of this Rule, the following shall be deemed to have a permit under the Act if the conditions listed are met:

(i) The owner or operator of a POTW which accepts for treatment hazardous waste, if the owner or operator:

(I) Has a permit under TCA 69-3-101, et seq.;

(II) Complies with the conditions of that permit;

(III) Complies with the notification requirement of part 2 of this subparagraph;

(IV) Complies with the following regulations:

I. Rule 1200-1-11-.06(5)(b)(use of manifest system);

II. Rule 1200-1-11-.06(5)(c)(manifest discrepancies);

III. Rule 1200-1-11-.06(5)(d)1 and 2(i) (operating record);

IV. Rule 1200-1-11-.06(5)(f) (annual report); and

V. Rule 1200-1-11-.06(5)(g)(unmanifested waste report);

(V) If the waste meets all Federal, State, and local pretreatment requirements which would be applicable to the waste if it were being discharged into the POTW through a sewer, pipe, or similar conveyance.

(ii) The owner or operator of an injection well disposing of hazardous wastes, if the owner or operator:

(I) Has permits for underground injection issued under the Tennessee Water Quality Control Act (T.C.A. 69-3-101 et seq.), through Chapters 1200-4-1 through 1200-4-5 of the Rules of the State of Tennessee, and under Part C of the Federal Safe Drinking Water Act (42 U.S.C. 3001 et seq.);

(II) Complies with the conditions of those permits and the following requirements:

I. Rule 1200-1-11-.06(5)(b) (use of manifest system);

II. Rule 1200-1-11-.06(5)(c)(manifest discrepancies);

III. Rule 1200-1-11-.06(5)(d)1, 2(i), and 2(ii)(operating record);

IV. Rule 1200-1-11-.06(5)(f)(annual report);

V. Rule 1200-1-11-.06(5)(g)(unmanifested waste report);

VI. Rule 1200-1-11-.06(2)(g)(personnel training); and

VII. When abandonment is completed, the owner or operator must submit to the Commissioner certification by the owner or operator and certification by an independent registered professional engineer that the facility has been closed in accordance with the plugging and abandonment plan approved as part of his underground injection permit.

(iii) The owner or operator of an on-site wastewater treatment unit as defined in Rule 1200-1-11-.01(2)(a), if the owner or operator:

(I) Complies with the notification requirement of part 2 of this subparagraph; and

(II) Meets all appropriate standards of Tennessee Rules Chapters 1200-4-1 through 1200-4-5 that are in effect on the effective date of this regulation.

2. An owner or operator of an existing facility subject to a permit by rule under part 1 of this subparagraph must notify the Department in accordance with the requirements of this part.

(i) Notification must be filed within 90 days of the date the facility becomes subject to these Rules.

(ii) Notification must be filed only on notification forms obtained from the Department.

(iii) The notification shall include, but not necessarily be limited to, the following information about the facility:

(I) The organization/facility name and mailing address;

(II) The site location (county, city, street address);

(III) The installation identification number assigned to the facility by EPA; or, if no EPA installation identification number has been assigned, one of the following:

I. If known, the facility's Dunn and Bradstreet Universal Numbering System (DUNS) identification number, or

II. For a federal facility, its General Services Administration (GSA) Real Property Number;

(IV) The name, title, and telephone number of the facility operator or other responsible individual at the facility who could be contacted for clarification of information submitted;

(V) A description of hazardous waste handled, by listing or other identification based on the wastes hazardous characteristics (Rules 1200-1-11-.02);

(VI) An estimate of the quantity of each such waste handled in a year;

(VII) A brief description of hazardous waste storage, treatment, and disposal methods utilized; and

(VIII) A certification, to be signed and dated by the facility operator or his authorized representative.

3. Upon being notified as per part 2 of this subparagraph, the Commissioner shall issue an installation identification number to the facility; such number to be included on all manifests, all reports and official documents, and any other correspondence between the facility and the Department.

(d) Emergency Permits - Notwithstanding any other provisions of this Rule, in the event the Commissioner finds an imminent and substantial endangerment to human health or the environment the Commissioner may issue a temporary emergency permit to a non-permitted facility to allow treatment, storage, or disposal of hazardous waste, or to a permitted facility to allow treatment, storage, or disposal of a hazardous waste not covered by an effective permit. This emergency permit:

1. May be oral or written. If oral, it shall be followed within five days by a written emergency permit;

2. Shall not exceed 90 days in duration;

3. Shall clearly specify the hazardous wastes to be received, and the manner and location of their treatment, storage or disposal;

4. May be terminated by the Commissioner at any time without process if he determines that termination is appropriate to protect public health and the environment;

5. Shall be accompanied by a public notice which includes the following information:

   (i) Name and address of the office granting the emergency authorization;

   (ii) Name and location of the permitted hazardous waste management facility;

   (iii) A brief description of the wastes involved;

   (iv) A brief description of the action authorized and reasons for authorizing it;

   (v) Duration of the emergency permit; and

6. Shall incorporate, to the extent possible and not inconsistent with the emergency situation, all applicable requirements of this Rule and Rule 1200-1-11-.06.

(e) Hazardous Waste Incinerator Permits

1. For the purposes of determining operational readiness following completion of physical construction, the Commissioner must establish permit conditions, including but not limited to allowable waste feeds and operating conditions, in the permit to a new hazardous waste incinerator. These permit conditions will be effective for the minimum time required to bring the incinerator to a point of operational readiness sufficient to conduct a trial burn, not to exceed 720 hours operating time for treatment of hazardous waste. The Commissioner may extend the duration of this operational period once, for up to 720 additional hours, at the request of the applicant when good cause is shown. The permit may be modified to reflect the extension according to part (9)(c)5 (Minor modifications of permits) of this Rule.

   (i) Applicants must submit a statement, with Part B of the permit application, which suggests the conditions necessary to operate in compliance with the performance standards of Rule 1200-1-11-.06(15)(d) during this period. This statement should include, at a minimum, restrictions on waste constituents, waste feed rates and the operating parameters identified in Rule 1200-1-11-.06(15)(f).

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(ii) The Commissioner will review this statement and any other relevant information submitted with Part B of the permit application and specify requirements for this period sufficient to meet the performance standards of Rule 1200-1-11-.06(15)(d) based on his engineering judgement.

2. For the purposes of determining feasibility of compliance with the performance standards of Rule 1200-1-11-.06(15)(d) and of determining adequate operating conditions under Rule 1200-1-11-.06(15)(f), the Commissioner must establish conditions in the permit to a new hazardous waste incinerator to be effective during the trial burn.

(i) Applicants must propose a trial burn plan, prepared under subpart (ii) of this part with Part B of the permit application.

(ii) The trial burn plan must include the following information:

(I) An analysis of each waste or mixture of wastes to be burned which includes:

I. Heat value of the waste in the form and composition in which it will be burned.

II. Viscosity (if applicable), or description of physical form of the waste.

III. An identification of any hazardous organic constituents listed in Appendix .02/E of Rule 1200-1-11-.02 which are present in the waste to be burned, except that the applicant need not analyze for constituents listed in Appendix .02/E which would reasonably not be expected to be found in the waste. The constituents excluded from analysis must be identified, and the basis for their exclusion stated. The waste analysis must rely on analytical techniques specified in "Test Methods for the Evaluation of Solid Waste, Physical/Chemical Methods" (incorporated by reference, see Rule 1200-1-11-.01(2)(b)), or their equivalent.

IV. An approximate quantification of the hazardous constituents identified in the waste, within the precision produced by the analytical methods specified in "Test Methods for the Evaluation of Solid Waste, Physical/Chemical Methods," (incorporated by reference, see Rule 1200-1-11-.01(2)(b)) or their equivalent.

(II) A detailed engineering description of the incinerator for which the permit is sought including:

I. Manufacturer's name and model number of incinerator (if available).

II. Type of incinerator.

III. Linear dimensions of the incinerator unit including the cross sectional area of combustion chamber.

IV. Description of the auxiliary fuel system (type/feed).

V. Capacity of prime mover.

VI. Description of automatic waste feed cut-off system(s).

VII. Stack gas monitoring and pollution control equipment.

VIII. Nozzle and burner design.

IX. Construction materials.

X. Location and description of temperature, pressure, and flow indicating and control devices.

(III) A detailed description of sampling and monitoring procedures, including sampling and monitoring locations in the system, the equipment to be used, sampling and monitoring frequency, and planned analytical procedures for sample analysis.

(IV) A detailed test schedule for each waste for which the trial burn is planned including date(s), duration, quantity of waste to be burned, and other factors relevant to the Commissioner's decision under subpart (v) of this part.

(V) A detailed test protocol, including for each waste identified, the ranges of temperature, waste feed rate, combustion gas velocity, use of auxiliary fuel, and any other relevant parameters that will be varied to affect the destruction and removal efficiency of the incinerator.

(VI) A description of, and planned operating conditions for, any emission control equipment which will be used.

(VII) Procedures for rapidly stopping waste feed, shutting down the incinerator, and controlling emissions in the event of an equipment malfunction.

(VIII) Such other information as the Commissioner reasonably finds necessary to determine whether to approve the trial burn plan in light of the purposes of this paragraph and the criteria in subpart (v) of this part.

(iii) The Commissioner, in reviewing the trial burn plan, shall evaluate the sufficiency of the information provided and may require the applicant to supplement this information, if necessary, to achieve the purposes of this paragraph.

(iv) Based on the waste analysis data in the trial burn plan, the Commissioner will specify as trial Principal Organic Hazardous Constituents (POHCs), those constituents for which destruction and removal efficiencies must be calculated during the trial burn. These trial POHCs will be specified by the Commissioner based on his estimate of the difficulty of incineration of the constituents identified in the waste analysis, their concentration or mass in the waste feed, and, for wastes listed in Rule 1200-1-11-.02 (4), the hazardous waste organic constituent or constituents identified in Appendix .02/D of Rule 1200-1-11-.02 as the basis for listing.

(v) The Commissioner shall approve a trial burn plan if he finds that;

(I) The trial burn is likely to determine whether the incinerator performance standard required by Rule 1200-1-11-.06 (15) (d) can be met;

(II) The trial burn itself will not present an imminent hazard to human health or the environment;

(III) The trial burn will help the Commissioner to determine operating requirements to be specified under Rule 1200-1-11-.06(15)(f); and

(IV) The information sought in items (I) and (III) of this subpart cannot reasonably be developed through other means.

(vi) During each approved trial burn (or as soon after the burn as is practicable), the applicant must make the following determinations:

(I) A quantitative analysis of the trial POHCs in the waste feed to the incinerator.

(II) A quantitative analysis of the exhaust gas for the concentration and mass emissions of the trial POHCs, oxygen (O_2) and hydrogen chloride (HCL).

(III) A quantitative analysis of the scrubber water (if any), ash residues, and other residues, for the purpose of estimating the fate of the trial POHCs.

(IV) A computation of destruction and removal efficiency (DRE), in accordance with the DRE formula specified in Rule 1200-1-11-.06 (15) (d) 1.

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(V) If the HCL emission rate exceeds 1.8 kilograms of HCL per hour (4 pounds per hour), a computation of HCL removal efficiency in accordance with Rule 1200-1-11-.06(15)(d)2.

(VI) A computation of particulate emissions, in accordance with Rule 1200-1-11-.06 (15) (d) 3.

(VII) An identification of sources of fugitive emissions and their means of control.

(VIII) A measurement of average, maximum, and minimum temperatures and combustion gas velocity.

(IX) A continuous measurement of carbon monoxide (CO) in the exhaust gas.

(X) Such other information as the Commissioner may specify as necessary to ensure that the trial burn will determine compliance with the performance standards in Rule 1200-1-11-.06 (15) (d) and to establish the operating conditions required by Rule 1200-1-11-.06 (15) (f) as necessary to meet that performance standard.

(vii) The applicant must submit to the Commissioner a certification that the trial burn has been carried out in accordance with the approved trial burn plan, and must submit the results of all the determinations required in subpart (vi) of this part. This submission shall be made within 90 days of completion of the trial burn, or later if approved by the Commissioner.

(viii) All data collected during any trial burn must be submitted to the Commissioner following the completion of the trial burn.

(ix) All submissions required by this part must be certified on behalf of the applicant by the signature of a person authorized to sign a permit application or a report under subparagraph (2) (a) of this Rule.

(x) Based on the results of the trial burn, the Commissioner shall set the operating requirements in the final permit according to Rule 1200-1-11-.06 (15) (f). The permit modification shall proceed as a minor modification according to part (9) (c) 5 of this Rule.

3. For the purposes of allowing operation of a new hazardous waste incinerator following completion of the trial burn and prior to final modification of the permit conditions to reflect the trial burn results, the Commissioner may establish permit conditions, including but not limited to allowable waste feeds and operating conditions sufficient to meet the requirements of Rule 1200-1-11-.06 (15) (f), in the permit to a new hazardous waste incinerator. These permit conditions will be effective for the minimum time required to

complete sample analysis, data computation and submission of the trial burn results by the applicant, and modification of the facility permit by the Commissioner.

(i) Applicants must submit a statement, with Part B of the permit application, which identifies the conditions necessary to operate in compliance with the performance standards of Rule 1200-1-11-.06 (15) (d), during this period. This statement should include, at a minimum, restrictions on waste constituents, waste feed rates and the operating parameters identified in Rule 1200-1-11-.06 (15)(f).

(ii) The Commissioner will review this statement and any other relevant information submitted with Part B of the permit application and specify those requirements for this period most likely to meet the performance standards of Rule 1200-1-11-.06(15)(d) based on his engineering judgment.

4. For the purposes of determining feasibility of compliance with the performance standards of Rule 1200-1-11-.06 (15) (d) and of determining adequate operating conditions under Rule 1200-1-11-.06 (15) (f), the applicant for a permit to an existing hazardous waste incinerator may prepare and submit a trial burn plan and perform a trial burn in accordance with subparts 2 (ii) through 2 (ix) of this subparagraph. Applicants who submit trial burn plans and receive approval before submission of a permit application must complete the trial burn and submit the results, specified in subpart 2(vi) of this subparagraph, with Part B of the permit application. If completion of this process conflicts with the date set for submission of the Part B application, the applicant must contact the Commissioner to establish a later date for submission of the part B application or the trial burn results. If the applicant submits a trial burn plan with Part B of the permit application, the trial burn must be conducted and the results submitted within a time period to be specified by the Commissioner.

(f) <u>Permits for Land Treatment Demonstrations Using Field Tests or Laboratory Analyses</u>

1. For the purpose of allowing an owner or operator to meet the treatment demonstration requirements of Rule 1200-1-11-.06(13)(c), the Commissioner may issue a treatment demonstration permit. The permit must contain only those requirements necessary to meet the standards in Rule 1200-1-11-.06(13)(c)3. The permit may be issued either as a treatment or disposal permit covering only the field test or laboratory analyses, or as a two-phase facility permit covering the field tests, or laboratory analyses, and design, construction, operation and maintenance of the land treatment unit.

(i) The Commissioner may issue a two-phase facility permit if he or it finds that, based on information submitted in Part B of the application, substantial, although incomplete or inconclusive,

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information already exists upon which to base the issuance of a facility permit.

(ii) If the Commissioner finds that not enough information exists upon which he or it can establish permit conditions to attempt to provide for compliance with all of the requirements of Rule 1200-1-11-.06(13), he must issue a treatment demonstration permit covering only the field test or laboratory analyses.

2. If the Commissioner finds that a phased permit may be issued, he will establish, as requirements in the first phase of the facility permit, conditions for conducting the field tests or laboratory analyses. These permit conditions will include design and operating parameters (including the duration of the tests or analyses and, in the case of field tests, the horizontal and vertical dimensions of the treatment zone), monitoring procedures, post-demonstration clean-up activities, and any other conditions which the Commissioner finds may be necessary under Rule 1200-1-11-.06(13)(c)3. The Commissioner will include conditions in the second phase of the facility permit to attempt to meet all Rule 1200-1-11-.06(13) requirements pertaining to unit design, construction, operation, and maintenance. The Commissioner will establish these conditions in the second phase of the permit based upon the substantial but incomplete or inconclusive information contained in the Part B application.

(i) The first phase of the permit will be effective as provided in part (7)(i)2 of this Rule.

(ii) The second phase of the permit will be effective as provided in part 4 of this subparagraph.

3. When the owner or operator who has been issued a two-phase permit has completed the treatment demonstration, he must submit to the Commissioner a certification, signed by a person authorized to sign a permit application or report under parts (2)(a)7 and 8 of this Rule, that the field tests or laboratory analyses have been carried out in accordance with the conditions specified in phase one of the permit for conducting such tests or analyses. The owner or operator must also submit all data collected during the field tests or laboratory analyses within 90 days of completion of those tests or analyses unless the Commissioner approves a later date.

4. If the Commissioner determines that the results of the field tests or laboratory analyses meet the requirements of Rule 1200-1-11-.06(13)(c), he will modify the second phase of the permit to incorporate any requirements necessary for operation of the facility in compliance with Rule 1200-1-11-.06(13), based upon the results of the field tests or laboratory analyses.

(i) This permit modification may proceed as a minor modification under part (9)(c)5 of this Rule, provided any such change is

minor, or otherwise will proceed as a modification under subpart (9)(c)3(ii) of this Rule.

(ii) If no modifications of the second phase of the permit are necessary, or if only minor modifications are necessary and have been made, the Commissioner will give notice of his final decision to the permit applicant and to each person who submitted written comments on the phased permit or who requested notice of final decision on the second phase of the permit. The second phase of the permit then will become effective as specified in part (7)(i)2 of this Rule.

(iii) If modifications under subpart (9)(c)3(ii) of this Rule are necessary, the second phase of the permit will become effective only after those modifications have been made.

(g) Research, Development, and Demonstration Permits

1. The Commissioner may issue a research, development, and demonstration permit for any hazardous waste treatment facility which proposes to utilize an innovative and experimental hazardous waste treatment technology or process for which permit standards for such experimental activity have not been promulgated under Rules 1200-1-11-.06 or 1200-1-11-.09. Any such permit shall include such terms and conditions as will assure protection of human health and the environment. Such permits:

(i) Shall provide for the construction of such facilities as necessary, and for operation of the facility for not longer than one year unless renewed as provided in part 4 of this subparagraph, and

(ii) Shall provide for the receipt and treatment by the facility of only those types and quantities of hazardous waste which the Commissioner deems necessary for purposes of determining the efficacy and performance capabilities of the technology or process and the effects of such technology or process on human health and the environment, and

(iii) Shall include such requirements as the Commissioner deems necessary to protect human health and the environment (including, but not limited to, requirements regarding monitoring, operation, financial responsibility, closure, and remedial action), and such requirements as the Commissioner deems necessary regarding testing and providing of information to the Commissioner with respect to the operation of the facility.

2. For the purpose of expediting review and issuance of permits under this section, the Commissioner may, consistent with the protection of human health and the environment, modify or waive permit application and permit issuance requirements in Rule 1200-1-11-.07 except that there may be no modification or waiver of regulations

regarding financial responsibility (including insurance) or of procedures regarding public participation.

3. The Commissioner may order an immediate termination of all operations at the facility at any time he determines that termination is necessary to protect human health and the environment.

4. Any permit issued under this section may be renewed not more than three times. Each such renewal shall be for a period of not more than 1 year.

(h) Confidentiality of Information - Permit application information which meets the definition of proprietary information set forth in Rule 1200-1-11-.01(4) shall be subject to the confidential handling provided in that paragraph. However, such proprietary information shall not include the name and address of permit applicants or permittees.

(i) Project Supervision - A registered engineer must plan, design, and inspect the construction of any hazardous waste treatment, storage, or disposal works; also, a registered engineer must assist in the start-up of and outline correct operating procedures for any new or altered facility. Any registered engineer herein required shall be governed by the terms of TCA Title 62, Chapter 2.

(2) Application For a Permit

(a) General

1. Any person who is required to have a permit (including new applicants and permittees with expiring permits) shall complete, sign, and submit an application to the Commissioner as described in this paragraph. Persons currently authorized with interim status (paragraph (3) of this Rule) shall apply for permits when required by the Commissioner. Persons covered by permits by rule (subparagraph (1)(c) of this Rule) need not apply. Procedures for application, issuance, and administration of emergency permits are found elsewhere in this Rule (subparagraph (1)(d)). Procedures for application, issuance, and administration of research, development, and demonstration permits are found exclusively in subparagraph (1)(g) of this Rule. Additionally, subparagraphs (1)(e) and (f) of this Rule provide special requirements concerning applications for, respectively, hazardous waste incinerator permits and permits for land treatment demonstrations.

2. When a facility is owned by one person but is operated by another person, it is the operator's duty to obtain a permit, except that the owner must also sign the permit application.

3. The Commissioner shall not issue a permit before receiving a complete application for a permit except for permits by rule or emergency permits. An application for a permit is complete when the Commissioner receives an application form and any supplemental

information which are completed to his satisfaction. An application for a permit is complete notwithstanding the failure of the owner or operator to submit the exposure information described in subparagraph (f) of this paragraph.

4. Permit applicants shall keep records of all data and supplemental information used to complete permit applications for a period of at least 3 years from the date the application is signed.

5. Four copies of the required permit application information must be submitted to the Commissioner.

6. All reports, plans, specifications, and manuals must be prepared in proper technical format, typewritten, and bound. Any documents prepared by firms other than the owner or operator of the facility shall be accompanied by the letter of transmittal to the client.

7. All permit applications will be signed as follows:

   (i) For a corporation: by a responsible corporate officer. For the purpose of this part, a responsible corporate officer means (I) a president, secretary, treasurer, or vice-president of the corporation in charge of a principal business function, or any other person who performs similar policy - or decision making functions for the corporation, or (II) the manager of one or more manufacturing, production or operation facilities employing more than 250 persons or having gross annual sales or expenditures exceeding 25 million dollars (in second quarter 1980 dollars), if authority to sign documents has been assigned or delegated to the manager in accordance with corporate procedures.

   Note: The Department does not require specific assignments or delegations of authority to responsible corporate officers identified in subpart (i). The Department will presume that these responsible corporate officers have the requisite authority to sign permit applications unless the corporation has notified the Commissioner to the contrary. Corporate procedures governing authority to sign permit applications may provide for assignment or delegation to applicable corporate positions under item (i)(II) rather than to specific individuals.

   (ii) For a partnership or sole proprietorship: by a general partner or the proprietor, respectively.

   (iii) For a municipality, State, Federal, or other public agency: by either a principal executive officer or ranking elected official. For purposes of this part, a principal executive officer of a Federal agency includes: (I) the chief executive officer of the agency, or (II) a senior executive officer having responsiblity for the overall operations of a principal geographic unit of the agency (e.g., Regional Administrators of EPA).

8. All reports required by permits and other information requested by the Commissioner shall be signed by a person described in part 7 of this paragraph, or by a duly authorized representative of that person. A person is a duly authorized representative only if:

   (i) The authorization is made in writing by a person described in part 7 of this subparagraph;

   (ii) The authorization specifies either an individual or a position having responsibility for the overall operation of the regulated facility or activity, such as the position of plant manager, operator of a well or a well field, superintendent, or person of equivalent responsibility. (A duly authorized representative may thus be either a named individual or any individual occupying a named position); and

   (iii) The written authorization is submitted to the Commissioner.

9. If an authorization under part 8 of this subparagraph is no longer accurate because a different individual or position has responsibility for the overall operation of the facility, a new authorization satisfying the requirements of part 8 of this subparagraph must be submitted to the Commissioner prior to or together with any reports or information to be signed by an authorized representative.

10. Any person signing a document under parts 7 or 8 of this subparagraph shall make the following certification:

    "I certify under penalty of law that this document and all attachments were prepared under my direction or supervision in accordance with a system designed to assure that qualified personnel properly gather and evaluate the information submitted. Based on my inquiry of the person or persons who manage the system, or those persons directly responsible for gathering the information, the information submitted is, to the best of my knowledge and belief, true, accurate, and complete. I am aware that there are significant penalties for submitting false information, including the possibility of fine and imprisonment for knowing violations.

(b) <u>Existing Facilities</u>

1. Owners and operators of existing hazardous waste management facilities or of hazardous waste management facilities in existence on the effective date of statutory or regulatory amendments under the Act that render the facility subject to the requirement to have a permit must submit Part A of their permit application no later than whichever of the following dates first occurs:

   (i) Ninety days after the effective date of regulations which first require them to comply with the standards set forth in Rules 1200-1-11-.05 or 1200-1-11-.09, or

(ii) Thirty days after the date they first became subject to the standards set forth in Rules 1200-1-11-.05 or 1200-1-11-.06.

2. Owners and operators of existing facilities who submitted Part A applications (or their equivalent) to the Commissioner under emergency rules promulgated earlier under the Act shall not be required to resubmit their Part A application unless required to do so under subparagraph (d) of this paragraph.

3. The Commissioner may by issuance of a public notice extend the date by which owners and operators of specified classes of existing hazardous waste management facilities must submit Part A of their permit application if he finds that (1) there has been substantial confusion as to whether the owners and operators of such facilities were required to file a permit application and (2) such confusion is attributable to ambiguities in Rules 1200-1-11-.01, 1200-1-11-.02, or 1200-1-11-.05.

4. The Commissioner may by compliance order issued under TCA 68-46-111 extend the date by which the owner and operator of an existing hazardous waste management facility must submit Part A of their permit application.

5. The owner and operator or an existing facility must submit Part B of their permit application as required by the Commissioner or Board. The Commissioner or Board may require such submission at any time after the due date of the Part A application for the facility, except that any owner or operator of an existing facility shall be allowed at least six months from the date of request to submit Part B of the application. Any owner or operator of an existing facility may voluntarily submit Part B of the application at any time.

6. Failure to furnish a requested Part B application on time, or to furnish in full the information required by the Part B application, is grounds for termination of interim status.

7. The Commissioner shall assign an installation identification number to the owner or operator of an existing facility upon receipt of the Part A application.

(c) <u>New Facilities</u>

1. Except as provided in part 4 of this subparagraph, no person shall begin physical construction on a new hazardous waste management facility without having submitted Part A and Part B of its permit application and received an effective permit.

2. An application for a permit for a new facility may be filed with the Commissioner at any time after the effective date of these Rules. All applications must be submitted at least 180 days before physical construction is expected to commence.

3. The owner or operator of a proposed new hazardous waste treatment or disposal facility which he anticipates will receive hazardous wastes generated off-site must submit his Part A permit application, completed to the best of his ability, to the Commissioner at least 120 days prior to submission of his Part B permit application. Failure to do so will result in the Commissioner delaying the processing of the Part B application for an equivalent amount of time.

(d) Updating Permit Application

1. If any owner or operator of a hazardous waste management facility has filed Part A of a permit application and has not yet filed Part B, the owner or operator shall file an amended Part A application with the Commissioner:

   (i) No later than thirty days after the date on which additional hazardous wastes listed or otherwise identified by revision of Rule 1200-1-11-.02 become subject to the requirements of this Rule, if the facility is treating, storing, or disposing of any those newly listed or identified wastes; and

   (ii) As necessary to comply with provisions of paragraph (3) of this Rule for changes during interim status.

2. The owner or operator of a facility who fails to comply with the updating requirements of part 1 of this subparagraph does not receive interim status as to the wastes not covered by duly filed Part A applications.

(e) Reapplications - Any hazardous waste management facility with an effective permit shall submit a new application at least 180 days before the expiration date of the effective permit, unless permission for a later date has been granted by the Commissioner. (The Commissioner shall not grant permission for applications to be submitted later than the expiration date of the existing permit.)

(f) Exposure Information

1. After the effective date of this regulation, any Part B permit application submitted by an owner or operator of a facility that stores, treats, or disposes hazardous waste in a surface impoundment or a landfill must be accompanied by information, reasonably ascertainable by the owner or operator, on the potential for the public to be exposed to hazardous wastes or hazardous constituents through releases related to the unit. At a minimum, such information must address:

   (i) Reasonably foreseeable potential releases from both normal operations and accidents at the unit, including releases associated with transportation to or from the unit;

(ii) The potential pathways of human exposure to hazardous wastes or constituents resulting from the releases described under subpart (i); and

(iii) The potential magnitude and nature of the human exposure resulting from such releases.

2. By 30 days after the effective date of this regulation, owners and operators of a landfill or a surface impoundment who have already submitted a Part B application must submit the exposure information required in part 1 of this subparagraph.

(3) Interim Status

(a) Qualifying for Interim Status

1. Except as set forth in parts 2 and 3 of this subparagraph, any person who owns or operates an "existing hazardous waste management facility" or a facility in existence on the effective date of statutory or regulatory amendments under the Act that render the facility subject to the requirement to have a permit shall have interim status and shall be treated as having been issued a permit to the extent he or she has complied with the requirements of paragraph (2) of this Rule governing submission of Part A applications.

2. If the Department has reason to believe upon examination of a Part A application that it fails to meet the requirements of paragraph (4) of this Rule, it shall notify the owner or operator in writing of the apparent deficiency. Such notice shall specify the grounds for the Department's belief that the application is deficient. The owner or operator shall have 30 days from receipt to respond to such a notification and to explain or cure the alleged deficiency in his Part A application. If, after such notification and opportunity for response, the Department determines that the application is deficient it may take appropriate enforcement action.

3. Part 1 of this subparagraph shall not apply to any facility which has been previously denied a permit pursuant to Rule 1200-1-11-.07, or if authority to operate the facility under interim status has been previously terminated as set forth in subparagraph (e) of this paragraph, or if authority to operate the facility under the Act has been otherwise terminated.

(b) Coverage - During the interim status period the facility shall not:

1. Treat, store, or dispose of hazardous waste not specified in Part A of the permit application.

2. Employ processes not specified in Part A of the permit application; or

3. Exceed the design capacities specified in Part A of the permit application.

(c) Changes During Interim Status

1. New hazardous wastes not previously identified in Part A of the permit application may be treated, stored, or disposed of at a facility if the owner or operator submits a revised Part A permit application prior to such a change.

2. Increases in the design capacity of processes used at a facility may be made if the owner or operator submits a revised Part A permit application prior to such a change (along with a justification explaining the need for the change) and the Commissioner approves the change because of a lack of available treatment, storage, or disposal capacity at other hazardous waste management facilities.

3. Changes in the processes for the treatment, storage, or disposal of hazardous waste may be made at a facility or additional processes may be added if the owner or operator submits a revised Part A permit application prior to such a change (along with a justification explaining the need for the change) and the Commissioner approves the change because:

   (i) It is necessary to prevent a threat to public health or the environment because of an emergency situation, or

   (ii) It is necessary to comply with these Rules (including the interim status standards in Rule 1200-1-11-.05) or State or local laws.

4. Changes in the ownership or operational control of a facility during interim status may be made if the new owner or operator submits a revised Part A permit application no later than 90 days prior to the scheduled change. When a transfer of ownership or operational control of a facility occurs, the old owner or operator shall comply with the requirements of Rule 1200-1-11-.05(8) (financial requirements), until the new owner or operator has demonstrated to the Commissioner that he is complying with that Rule. All other interim status duties are transferred effective immediately upon the date of the change of ownership or operational control of the facility. Upon demonstration to the Commissioner by the new owner or operator of compliance with Rule 1200-1-11-.05(8), the Commissioner shall notify the old owner or operator in writing that it no longer needs to comply with that Rule as of the date of the demonstration.

5. No facility shall be physically modified during interim status until the plans for such modification have been submitted to the Department and approved by the Department. Preventive maintenance and replacement of existing equipment shall not be deemed to be a modification.

6. In no event shall changes be made to a facility during interim status which amount to reconstruction of the facility. Reconstruction occurs when the capital investment in the changes to the facility exceeds fifty percent of the capital cost of a comparable entirely new facility.

(d) Interim Status Standards. During interim status, owners or operators shall comply with the interim status standards in Rule 1200-1-11-.05.

(e) Termination of Interim Status - Interim status terminates:

1. When final administrative disposition of a permit application is made; or

2. When it is terminated as provided in part (2)(b)6 of this Rule (NOTE: Such termination is to occur as set forth in subparagraph (9)(d) of this Rule.); or

3. For facilities where no hazardous waste remains after closure, when prior to the due date of his Part B application, the owner or operator voluntarily closes his facility in accordance with Rule 1200-1-11-.05(7)(b) through (f) and the Commissioner grants his request to withdraw his interim status and Part A application.

(4) Contents of Part A

(a) Required Information - The Part A permit application must include, but shall not necessarily be limited to, the following information:

1. The activities conducted by the applicant which require it to obtain a permit under this Rule;

2. The name, mailing address, and location of the facility for which the application is submitted;

3. Up to four SIC codes which best reflect the principal products or services provided by the facility;

4. The operator's name, address, telephone number, ownership status, and status as Federal, State, private, public, or other entity.

5. A listing of all permits or construction approvals received or applied for by this facility under any of the following programs:

(i) State or Federal programs regulating underground injections;

(ii) State or Federal programs regulating point source discharges to waters of the State;

(iii) State, Federal, or local programs regulating emissions to the air;

(iv) State or Federal programs regulating discharges of dredge or fill material to waters of the state; and

(v) Other relevant State or Federal environmental permit programs;

6. A topographic map (or other map if a topographic map is unavailable) extending one mile beyond the property boundaries of the source depicting the facility and each of its intake and discharge structures; each of its hazardous waste treatment, storage, or disposal facilities; each well where fluids from the facility are injected underground; and those wells, springs, other surface water bodies, and drinking water wells listed in public records or otherwise known to the applicant within 1/4 mile of the facility property boundary;

7. A brief description of the nature of the business;

8. The latitude and longitude of the facility;

9. The name, address, and telephone number of the owner of the facility;

10. An indication of whether the facility is new or existing and whether it is a first or revised application;

11. For existing facilities, a scale drawing of the facility showing the location of all past, present, and future treatment, storage, and disposal areas;

12. For existing facilities, photographs of the facility clearly delineating all existing structures; existing treatment, storage, and disposal areas; and sites of future treatment, storage, and disposal areas;

13. A description of the processes to be used for treating, storing, and disposing of hazardous waste, and the design capacity of these items; and

14. A specification of the hazardous wastes listed or designated under Rule 1200-1-11-.02 to be treated, stored, or disposed of at the facility, an estimate of the quantity of such wastes to be treated, stored, or disposed of annually and a general description of the processes to be used for such wastes.

(b) Required Form - Part A permit applications must be submitted on forms provided by the Department and completed as per the accompanying instructions.

Note: The Part A permit application information requirements as stated in this paragraph are substantially equivalent to those similarly required by EPA under 40 CFR 270.10 and 270.13. Thus, copies of the EPA Part A permit application submitted to EPA will, if properly completed, suffice as the copies of the Part A permit application required by this paragraph.

(5) Contents of Part B - Part B information requirements presented in this paragraph reflect the standards promulgated in Rule 1200-1-11-.06. These information requirements are deemed necessary in order for the Department to determine compliance with those standards. If owners and operators of hazardous waste management facilities can demonstrate to the satisfaction of the Commissioner that any information prescribed in this paragraph can not be provided to the extent required or is unnecessary, inapplicable, or otherwise irrelevant to his facility, the Commissioner may make allowance for submission of such information on a case-by-case basis. Information required in this paragraph shall be submitted to the Commissioner and signed in accordance with parts (2)(a)7 through 10 of this Rule. Certain technical data, such as design drawings and specifications, and engineering studies shall be certified by a registered professional engineer, as set forth in subparagraph (1)(i) of this Rule. Part B of the permit application includes the following:

(a) General Information Requirements - The following information is required for all hazardous waste management facilities, except as Rule 1200-1-11-.06 (1) provides otherwise:

1. A general description of the facility.

2. Chemical and physical analyses of the hazardous wastes to be handled at the facility. At a minimum, these analyses shall contain all the information which must be known to treat, store, or dispose of the wastes properly in accordance with Rule 1200-1-11-.06.

3. A copy of the waste analysis plan required by Rule 1200-1-11-.06 (2) (d) 2 and, if applicable, Rule 1200-1-11-.06 (2) (d) 3.

4. A description of the security procedures and equipment required by Rule 1200-1-11-.06(2)(e) or a justification demonstrating the reasons for requesting a waiver of this requirement.

5. A copy of the general inspection schedule required by Rule 1200-1-11-.06(2)(f)2. Note: Include, where applicable, as part of the inspection schedule, specific requirements in subparagraphs (9)(e), (10)(d), (11)(g), (12)(e), (13)(d), and (14)(d) of Rule 1200-1-11-.06.

6. A justification of any request for a waiver(s) of the preparedness and prevention requirements of Rule 1200-1-11-.06 (3).

7. A copy of the contingency plan required by Rule 1200-1-11-.06(4). Note: Include where applicable, as part of the contingency plan, specific requirements in subparagraphs (10)(h), (11)(h) and (12)(f) of Rule 1200-1-11-.06.

8. A description of procedures, structures, or equipment used at the facility to:

(i) Prevent hazards in unloading operations (for example, ramps, special forklifts);

(ii) Prevent runoff from hazardous waste handling areas to other areas of the facility or environment, or to prevent flooding (for example, berms, dikes, trenches);

(iii) Prevent contamination of water supplies;

(iv) Mitigate effects of equipment failure and power outages; and

(v) Prevent undue exposure of personnel to hazardous waste (for example, protective clothing).

9. A description of precautions to prevent accidental ignition or reaction of ignitable, reactive, or incompatible wastes as required to demonstrate compliance with Rule 1200-1-11-.06 (2) (h) including documentation demonstrating compliance with Rule 1200-1-11-.06 (2) (h) 3.

10. Traffic pattern, estimated volume (number, types of vehicles) and control (for example, show turns across traffic lanes, and stacking lanes (if appropriate); describe access road surfacing and load bearing capacity; show traffic control signals).

11. Facility location information:

(i) Owners and oeprators of all facilities shall provide an identification of whether the facility is located within a 100 year floodplain. This identification must indicate the source of data for such determination and include a copy of the relevant Federal Insurance Administration (FIA) flood map is not available. Information shall also be provided identifying the 100-year flood level and any other special flooding factors (e.g., wave action) which must be considered in designing, constructing, operating, or maintaining the facility to withstand washout from a 100-year flood.

(Comment: Where maps for the National Flood Insurance Program produced by the Federal Insurance Administration (FIA) of the Federal Emergency Management Agency are available, they will normally be determinative of whether a facility is located within or outside of the 100-year floodplain. However, where the FIA map excludes an area (usually areas of the floodplain less than 200 feet in width), these areas must be considered and a determination made as to whether they are in the 100-year floodplain. Where FIA maps are not available for a propsed facility location, the owner or operator must use equivalent mapping techniques to determine whether the facility is within the 100-year floodplain, and if so located, what the 100-year flood elevation would be.)

(ii) Owners and operators of facilities located in the 100-year floodplain must provide the following information:

(I) Engineering analysis to indicate the various hydrodynamic and hydrostatic forces expected to result at the site as a consequence of a 100-year flood.

(II) Structural or other engineering studies showing the design of operational units (e.g., tanks, incinerators) and flood protection devices (e.g., floodwalls, dikes) at the facility and how these will prevent washout.

(III) If applicable, and in lieu of items (I) and (II) above, a detailed description of procedures to be followed to remove hazardous waste to safety before the facility is flooded, including:

I. Timing of such movement relative to flood levels, including estimated time to move the waste, to show that such movement can be completed before floodwaters reach the facility.

II. A description of the location(s) to which the waste will be moved and demonstration that those facilities will be eligible to receive hazardous waste in accordance with the regulations under Rules 1200-1-11-.05, 1200-1-11-.06, and 1200-1-11-.07.

III. The planned procedures, equipment, and personnel to be used and the means to ensure that such resources will be available in time for use.

IV. The potential for accidental discharges of the waste during movement.

(iii) Existing facilities NOT in compliance with Rule 1200-1-11-.06 (2) (i) 2 shall provide a plan showing how the facility will be brought into compliance and a schedule for compliance.

12. An outline of both the introductory and continuing training programs by owners or operators to prepare persons to operate or maintain the hazardous waste management facility in a safe manner as required to demonstrate compliance with Rule 1200-1-11-.06 (2) (g). A brief description of how training will be designed to meet actual job tasks in accordance with requirements in Rule 1200-1-11-.06 (2) (g) 1 (iii).

13. A copy of the closure plan and, where applicable, the post-closure plan required by Rule 1200-1-11-.06(7)(c) and (h). Note: Include, where applicable, as part of the plans, specific requirements in subparagraphs (9)(i), (10)(e), (11)(i), (12)(i), (13)(k), (14)(k), and (15)(h) of Rule 1200-1-11-.06.

14. For existing facilities, documentation that a notice has been placed in the deed or appropriate alternate instrument as required by Rule 1200-1-11-.06 (7) (j).

15. The most recent closure cost estimate for the facility prepared in accordance with Rule 1200-1-11-.06 (8) (c) plus a copy of the financial assurance mechanism adopted in compliance with Rule 1200-1-11-.06 (8) (d).

16. Where applicable, the most recent post-closure cost estimate for the facility prepared in accordance with Rule 1200-1-11-.06 (8) (e) plus a copy of the financial assurance mechanism adopted in compliance with Rule 1200-1-11-.06 (8) (f).

17. A topographic map showing a distance of 1000 feet around the facility at a scale of 2.5 centimeters (1 inch) equal to not more than 61.0 meters (200 feet). Contours must be shown on the map. The contour interval must be sufficient to clearly show the pattern of surface water flow in the vicinity of and from each operational unit of the facility (for example, contours with an interval of 1.5 meters (5 feet) if relief is greater than 6.1 meters (20 feet), or an interval of 0.6 meters (2 feet) if relief is less than 6.1 meters (20 feet)). Owners and operators of hazardous waste management facilities located in mountainous areas should use larger contour intervals to adequately show topographic profiles of facilities. The map shall clearly show the following:

    (i) Map scale and date.

    (ii) 100-year floodplain area.

    (iii) Surface waters including intermittent streams.

    (iv) Surrounding land uses (residential, commercial, agricultural, recreational).

    (v) A wind rose (i.e., prevailing windspeed and direction).

    (vi) Orientation of the map (north arrow).

    (vii) Legal boundaries of the hazardous waste management facility site.

    (viii) Access control (fences, gates).

    (ix) Injection and withdrawal wells both on-site and off-site.

    (x) Buildings; treatment, storage, or disposal operations; or other structures (recreation areas, runoff control systems, access and internal roads, storm, sanitary, and process sewerage systems, loading and unloading areas, fire control facilities, etc.).

    (xi) Barriers for drainage or flood control.

(xii) Location of operational units within the hazardous waste management facility site, where hazardous waste is (or will be) treated, stored, or disposed (include equipment cleanup areas).

Note: For large hazardous waste management facilities, the Department will allow the use of other scales on a case-by-case basis.

18. Where applicable, a copy of the insurance policy or other documentation which comprises compliance with Rule 1200-1-11-.06(8)(n). For a new facility, documentation showing the amount of insurance meeting the specifications of Rule 1200-1-11-.06(8)(n)1 and, if applicable, Rule 1200-1-11-.06(8)(n)2, that the owner or operator plans to have in effect before initial receipt of hazardous waste from treatment, storage, or disposal. A request for a variance in the amount of required coverage, for a new or existing facility, may be submitted as specified in Rule 1200-1-11-.06(8)(n)3.

(b) Specific Information Requirements -The following additional information is required from owners or operators of specific types of hazardous waste management facilities:

1. For facilities that store containers of hazardous waste, except as otherwise provided in Rule 1200-1-11-.06 (9) (a):

(i) A description of the containment system to demonstrate compliance with Rule 1200-1-11-.06 (9) (f). Show at least the following:

(I) Basic design parameters, dimensions, and materials of construction.

(II) How the design promotes drainage or how containers are kept from contact with standing liquids in the containment system.

(III) Capacity of the containment system relative to the number and volume of containers to be stored.

(IV) Provisions for preventing or managing run-on.

(V) How accumulated liquids can be analyzed and removed to prevent overflow.

(ii) For storage areas that store containers holding wastes that do not contain free liquids, a demonstration of compliance with Rule 1200-1-11-.06(9)(f)3, including:

(I) Test procedures and results or other documentation or information to show that the wastes do not contain free liquids; and

(II) A description of how the storage area is designed or operated to drain and remove liquids or how containers are kept from contact with standing liquids.

(iii) Sketches, drawings, or data demonstrating compliance with Rule 1200-1-11-.06(9)(g) (location of buffer zone and containers holding ignitable or reactive wastes) and Rule 1200-1-11-.06(9)(h)3 (location of incompatible wastes), where applicable.

(iv) Where incompatible wastes are stored or otherwise managed in containers, a description of the procedures used to ensure compliance with Rule 1200-1-11-.06(9)(h)1 and 2, and Rule 1200-1-11-.06(2)(h)2 and 3.

2. For facilities that use tanks to store or treat hazardous waste, except as otherwise provided in Rule 1200-1-11-.06(10)(a), a description of design and operation procedures which demonstrate compliance with the requirements of Rule 1200-1-11-.06(10)(b), (c), (f), and (g) including:

(i) References to design standards or other available information used (or to be used) in design and construction of the tank.

(ii) A description of design specifications including identification of construction materials and lining materials (include pertinent characteristics such as corrosion or erosion resistance).

(iii) Tank dimensions, capacity, and shell thickness.

(iv) A diagram of piping, instrumentation, and process flow.

(v) Description of feed systems, safety cutoff, bypass systems, and pressure controls (e.g., vents).

(vi) Description of procedures for handling incompatible, ignitable, or reactive wastes, including the use of buffer zones.

(vii) Where applicable, a description of the containment and detection systems to demonstrate compliance with Rule 1200-1-11-.06(10)(h)1 must include at least the following:

(I) Drawings and a description of the basic design parameters, dimensions, and materials of construction of the containment system.

(II) Capacity of the containment system relative to the design capacity of the tank(s) within the system.

(III) Description of the system to detect leaks and spills, and how precipitation and run-on will be prevented from entering into the detection system.

3. For facilities that store, treat, or dispose of hazardous waste in surface impoundments, except as otherwise provided in Rule 1200-1-11-.06(1)(b) or (d):

(i) A list of the hazardous wastes placed or to be placed in each surface impoundment;

(ii) Detailed plans and an engineering report describing how the surface impoundment is or will be designed, constructed, operated, and maintained to meet the requirements of Rule 1200-1-11-.06(11)(b). This submission must address the following items as specified in Rule 1200-1-11-.06(11)(b):

(I) The liner system (except for an existing portion of a surface impoundment). If an exemption from the requirements for a liner is sought as provided by Rule 1200-1-11-.06(11)(b)2, submit detailed plans and engineering and hydrogeologic reports as appropriate, describing alternate design and operating practices that will, in conjunction with location aspects, prevent the migration of any hazardous constituents into the ground water or surface water at any future time;

(II) Prevention of overtopping; and

(III) Structural integrity of dikes;

(iii) A description of how each surface impoundment, including the liner and cover systems and appurtenances for control of overtopping, will be inspected in order to meet the requirements of Rule 1200-1-11-.06(11)(g)1 and 2. This information should be included in the inspection plan submitted under part (a)5 of this paragraph;

(iv) A certification by a qualified engineer which attests to the structural integrity of each dike, as required under Rule 1200-1-11-.06(11)(g)3. For new units, the owner or operator must submit a statement by a qualified engineer that he will provide such a certification upon completion of construction in accordance with the plans and specifications;

(v) A description of the procedure to be used for removing a surface impoundment from service, as required under Rule 1200-1-11-.06(11)(h)2 and 3. This information should be included in the contingency plan submitted under part (a)7 of this paragraph;

(vi) A description of how hazardous waste residues and contaminated materials will be removed from the unit at closure, as required under Rule 1200-1-11-.06(11)(i)1(i). For any wastes not to be removed from the unit upon closure, the owner or operator must submit detailed plans and an engineering report describing how Rule 1200-1-11-.06(11)(i)1(ii) and 2 will be complied with. This

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information should be included in the closure plan and, where applicable, the post-closure plan submitted under part (a)13 of this paragraph;

(vii) If ignitable or reactive wastes are to be placed in a surface impoundment, an explanation of how Rule 1200-1-11-.06(11)(j) will be complied with;

(viii) If incompatible wastes, or incompatible wastes and materials, will be placed in a surface impoundment, an explanation of how Rule 1200-1-11-.06(11)(k) will be complied with.

(ix) A waste management plan for Hazardous Wastes F020, F021, F022, F023, F026 and F027 describing how the surface impoundment is or will be designed, constructed, operated, and maintained to meet the requirements of Rule 1200-1-11-.06(11)(l). This submission must address the following items as specified in Rule 1200-1-11-.06(11)(l):

(I) The volume, physical, and chemical characteristics of the wastes, including their potential to migrate through soil or to volatilize or escape into the atmosphere;

(II) The attenuative properties of underlying and surrounding soils or other materials;

(III) The mobilizing properties of other materials co-disposed with these wastes; and

(IV) The effectiveness of additional treatment, design, or monitoring techniques.

4. For facilties that store or treat hazardous waste in waste piles, except as otherwise provided in Rule 1200-1-11-.06(1)(b) or (d):

(i) A list of hazardous wastes placed or to be placed in each waste pile;

(ii) If an exemption is sought to Rule 1200-1-11-.06(12)(b) and Rule 1200-1-11-.06(6) as provided by Rule 1200-1-11-.06(12)(a)3 or Rule 1200-1-11-.06(6)(a)2(ii), an explanation of how the standards of Rule 1200-1-11-.06(12)(a)3 will be complied with or detailed plans and an engineering report describing how the requirements of Rule 1200-1-11-.06(6)(a)2(ii) will be met.

(iii) Detailed plans and an engineering report describing how the pile is or will be designed, constructed, operated and maintained to meet the requirements of Rule 1200-1-11-.06(12)(b). This submission must address the following items as specified in Rule 1200-1-11-.06(12)(b):

(I) The liner system (except for an existing portion of a pile).

If an exemption from the requirement for a liner is sought, as provided by Rule 1200-1-11-.06(14)(b)2, the owner or operator must submit detailed plans and engineering and hydrogeologic reports as appropriate, describing alternate design and operating practices that will, in conjunction with location aspects, prevent the migration of any hazardous constituents into the ground water or surface water at any future time;

(II) Control of run-on;

(III) Control of run-off;

(IV) Management of collection and holding units associated with run-on and run-off control systems, and

(V) Control of wind dispersal of particulate matter, where applicable;

(iv) A description of how each waste pile, including the liner and appurtenances for control of run-on and run-off, will be inspected in order to meet the requirements of Rule 1200-1-11-.06(12)(e)1 and 2. This information should be included in the inspection plan submitted under part (a)5 of this paragraph;

(v) If treatment is carried out on or in the pile, details of the process and equipment used, and the nature and quality of the residuals;

(vi) If ignitable or reactive wastes are to be placed in a waste pile, an explanation of how the requirements of Rule 1200-1-11-.06(12)(g) will be complied with;

(vii) If incompatible wastes, or incompatible wastes and materials will be placed in the waste pile, an explanation of how Rule 1200-1-11-.06(12)(h) will be complied with;

(viii) A description of how hazardous waste residues and contaminated materials will be removed from the waste pile at closure, as required under Rule 1200-1-11-.06(12)(i)1. For any waste not to be removed from the waste pile upon closure, the owner or operator must submit detailed plans and an engineering report describing how Rule 1200-1-11-.06(14)(k)1 and 2 will be complied with. This information should be included in the closure plan and, where applicable, the post-closure plan submitted under part (a)13 of this paragraph.

(ix) A waste management plan for Hazardous Wastes F020, F021, F022, F023, F026 and F027 describing how a waste pile that is not enclosed (as defined in Rule 1200-1-11-.06(12)(a)3) is or will be designed, constructed, operated, and maintained to meet the requirements of Rule 1200-1-11-.06(12)(j). This submission must

address the following items as specified in Rule 1200-1-11-.06(12)(j):

(I) The volume, physical, and chemical characteristics of the wastes to be disposed in the waste pile, including their potential to migrate through soil or to volatilize or escape into the atmosphere;

(II) The attenuative properties of underlying and surrounding soils or other materials;

(III) The mobilizing properties of other materials co-disposed with these wastes; and

(IV) The effectiveness of additional treatment, design, or monitoring techniques.

5. For facilties that use land treatment to dispose of hazardous waste, except as otherwise provided in Rule 1200-1-11-.06(1)(b) or (d):

(i) A description of plans to conduct a treatment demonstration as required under Rule 1200-1-11-.06(13)(c). The description must include the following information:

(I) The wastes for which the demonstration will be made and the potential hazardous constituents in the wastes;

(II) The data sources to be used to make the demonstation (e.g., literature, laboratory data, field data, or operating data);

(III) Any specific laboratory or field test that will be conducted, including:

I. the type of test (e.g., column leaching, degradation);

II. materials and methods, including analytical procedures;

III. expected time for completion; and

IV. characteristics of the unit that will be simulated in the demonstration, including treatment zone characteristics, climatic conditions, and operating practices;

(ii) A description of a land treatment program, as required under Rule 1200-1-11-.06(13)(b). This information must be submitted with the plans for the treatment demonstration, and updated following the treatment demonstration. The land treatment program must address the following items:

(I) The wastes to be land treated;

(II) Design measures and operating practices necessary to maximize treatment in accordance with Rule 1200-1-11-.06(13)(d)1 including:

I. Waste application method and rate;

II. Measures to control soil pH;

III. Enhancement of microbial or chemical reactions; and

IV. Control of moisture content;

(III) Provisions for unsaturated zone monitoring, including:

I. Sampling equipment, procedures, and frequency;

II. Procedures for selecting sampling locations;

III. Analytical procedures;

IV. Chain of custody control;

V. Procedures for establishing background values;

VI. Statistical methods for interpreting results; and

VII. The justification for any hazardous constituents recommended for selection as principal hazardous constituents, in accordance with the criteria for such selection in Rule 1200-1-11-.06(13)(i)1;

(IV) A list of hazardous constituents reasonably expected to be in, or derived from, the wastes to be land treated based on waste analysis performed pursuant to Rule 1200-1-11-.06(2)(d); and

(V) The proposed dimensions of the treatment zone;

(iii) A description of how the unit is or will be designed, constructed, operated, and maintained in order to meet the requirements of Rule 1200-1-11-.06(13)(d). This submission must address the following items:

(I) Control of run-on;

(II) Collection and control of run-off;

(III) Minimization of run-off of hazardous constituents from the treatment zone;

(IV) Management of collection and holding facilities associated with run-on and run-off control systems;

(V) Periodic inspection of the unit. This information should be included in the inspection plan submitted under part (a)5 of this paragraph; and

(VI) Control of wind dispersal of particulate matter, if applicable;

(iv) If food-chain crops are to be grown in or on the treatment zone of the land treatment unit, a description of how the demonstration required under Rule 1200-1-11-.06(13)(g)1 will be conducted including:

(I) Characteristics of the food-chain crop for which the demonstration will be made;

(II) Characteristics of the waste, treatment zone, and waste application method and rate to be used in the demonstration;

(III) Procedures for crop growth, sample collection, sample analysis, and data evaluation;

(IV) Characteristics of the comparison crop including the location and conditions under which it was or will be grown.

(v) If food-chain crops are to be grown, and cadmium is present in the land-treated waste, a description of how the requirements of Rule 1200-1-11-.06(13)(g)2 will be complied with;

(vi) A description of the vegetative cover to be applied to closed portions of the facility, and a plan for maintaining such cover during the post-closure care period, as required under Rule 1200-1-11-.06(13)(k)1(viii) and 3(ii). This information should be included in the closure plan and, where applicable, the post-closure care plan submitted under part (a)13 of this paragraph;

(vii) If ignitable or reactive wastes will be placed in or on the treatment zone, an explanation of how the requirements of Rule 1200-1-11-.06(13)(l) will be complied with;

(viii) If incompatible wastes, or incompatible wastes and materials, will be placed in or on the the same treatment zone, an explanation of how Rule 1200-1-11-.06(13)(m) will be complied with.

(ix) A waste management plan for Hazardous Wastes F020, F021, F022, F023, F026 and F027 describing how a land treatment facility is or will be designed, constructed, operated, and maintained to meet the requirements of Rule 1200-1-11-.06(14)(n). This submission must address the following items as specified in Rule 1200-1-11-.06(14)(n):

(I) The volume, physical, and chemical characteristics of the wastes, including their potential to migrate through soil or to volatilize or escape into the atmosphere;

(II) The attenuative properties of underlying and surrounding soils or other materials;

(III) The mobilizing properties of other materials co-disposed with these wastes; and

(IV) The effectiveness of additional treatment, design, or monitoring techniques.

6. For facilities that dispose of hazardous waste in landfills, except as otherwise provided in Rule 1200-1-11-.06(1)(b) or (d):

(i) A list of the hazardous wastes placed or to be placed in each landfill or landfill cell;

(ii) Detailed plans and an engineering report describing how the landfill is or will be designed, constructed, operated, and maintained to comply with the requirements of Rule 1200-1-11-.06(14)(b). This submission must address the following items as specified in Rule 1200-1-11-.06(14)(b):

(I) The liner system and leachate collection and removal system (except for an existing portion of a landfill). If an exemption from the requirements for a liner and a leachate collection and removal system is sought as provided by Rule 1200-1-11-.06(14)(b)2, submit detailed plans and engineering and hydrogeologic reports as appropriate, describing alternate design and operating practices that will, in conjunction with location aspects, prevent the migration of any hazardous constituent into the ground water or surface water at any future time;

(II) Control of run-on;

(III) Control of run-off;

(IV) Management of collection and holding facilities associated with run-on and run-off control systems;

(V) Control of wind dispersal of particulate matter, where applicable; and

(iii) If an exemption from paragraph (6) of Rule 1200-1-11-.06 is sought, as provided by Rule 1200-1-11-.06(14)(c)1, the owner or operator must submit detailed plans and an engineering report explaining the location of the saturated zone in relation to the landfill, the design of a double-liner system that incorporates a

leak detection system between the liners, and a leachate collection and removal system above the liners;

(iv) A description of how each landfill, including the liner and cover systems, will be inspected in order to meet the requirements of Rule 1200-1-11-.06(14)(d)1 and 2. This information should be included in the inspection plan submitted under part (a)5 of this paragraph;

(v) Detailed plans and an engineering report describing the final cover which will be applied to each landfill or landfill cell at closure in accordance with Rule 1200-1-11-.06(14)(k)1, and a description of how each landfill will be maintained and monitored after closure in accordance with Rule 1200-1-11-.06(14)(k)2. This information should be included in the closure and post-closure plans submitted under part (a)13 of this paragraph.

(vi) If ignitable or reactive wastes will be landfilled, an explanation of how the requirements of Rule 1200-1-11-.06(14)(m) will be complied with;

(vii) If incompatible wastes, or incompatible wastes and materials will be landfilled, an explanation of how Rule 1200-1-11-.06(14)(n) will be complied with;

(viii) If containers of hazardous waste are to be landfilled, an explanation of how the requirements of Rule 1200-1-11-.06(14)(p) or (q), as applicable, will be complied with.

(ix) A waste management plan for Hazardous Wastes F020, F021, F022, F023, F026 and F027 describing how a landfill is or will be designed, constructed, operated, and maintained to meet the requirements of Rule 1200-1-11-.06(14)(r). This submission must address the following items as specified in Rule 1200-1-11-.06(14)(r):

(I) The volume, physical, and chemical characteristics of the wastes, including their potential to migrate through soil or to volatilize or escape into the atmosphere;

(II) The attenuative properties of underlying and surrounding soils or other materials;

(III) The mobilizing properties of other materials co-disposed with these wastes; and

(IV) The effectiveness of additional treatment, design, or monitoring techniques.

7. For facilities that incinerate hazardous waste, except as Rule 1200-1-11-.06(15)(a) provides otherwise, the applicant must fulfill the requirements of subparts (i), (ii), or (iii) of this part.

(i) When seeking exemption under Rule 1200-1-11-.06(15)(a)2 or 3 (ignitable, corrosive or reactive wastes only):

(I) Documentation that the waste is listed as a hazardous waste in Rule 1200-1-11-.02(4) solely because it is ignitable (Hazard Code I), corrosive (Hazard Code C), or both; or

(II) Documentation that the waste is listed as a hazardous waste in Rule 1200-1-11-.02(4) solely because it is reactive (Hazard Code R) for characteristics other than those listed in Rule 1200-1-11-.02(3)(d)1(iv) and (v), and will not be burned when other hazardous wastes are present in the combustion zone; or

(III) Documentation that the waste is a hazardous waste solely because it possesses the characteristic of ignitability, corrosivity, or both, as determined by the tests for characteristics of hazardous wastes under Rule 1200-1-11-.02(3); or

(IV) Documentation that the waste is a hazardous waste solely because it possesses the reactivity characteristics listed in Rule 1200-1-11-.02(3)(d)1(i), (ii), (iii), (vi), (vii), or (viii), and that it will not be burned when other hazardous wastes are present in the combustion zone; or

(ii) Submit a trial burn plan or the results of a trial burn including all required determinations, in accordance with subparagraph (1)(e) of this Rule; or

(iii) In lieu of a trial burn, the applicant may submit the following information:

(I) An analysis of each waste or mixture of wastes to be burned including:

I. Heat value of the waste in the form and composition in which it will be burned.

II. Viscosity (if applicable), or description of physical form of the waste.

III. An identification of any hazardous organic constituents listed in Appendix .02/E of Rule 1200-1-11-.02, which are present in the waste to be burned, except that the applicant need not analyze for constituents listed in Appendix .02/E which would reasonably not be expected to be found in the waste. The constituents excluded from analysis must be identified and the basis for their exclusion stated. The waste analysis must rely on analytical techniques specified in "Test Methods for the Evaluation of Solid Waste, Physical/Chemical Methods

(incorporated by reference, see Rule 1200-1-11-.01(2)(b) and references in Appendix .02/C of Rule 1200-1-11-.02) or their equivalent.

IV. An approximate quantification of the hazardous constituents identified in the waste, within the precision produced by the analytical methods specified in "Test Methods for the Evaluation of Solid Waste, Physical/Chemical Methods" (incorporated by reference, see Rule 1200-1-11-.01(2)(b)).

V. A quantification of those hazardous constituents in the waste which may be designated as POHC's based on data submitted from other trial or operational burns which demonstrate compliance with the performance standard in Rule 1200-1-11-.06(15)(d).

(II) A detailed engineering description of the incinerator, including:

I. Manufacturer's name and model number of incinerator.

II. Type of incinerator.

III. Linear dimension of incinerator unit including cross sectional area of combustion chamber.

IV. Description of auxiliary fuel system (type/feed).

V. Capacity of prime mover.

VI. Description of automatic waste feed cutoff system(s).

VII. Stack gas monitoring and pollution control monitoring system.

VIII. Nozzle and burner design.

IX. Construction materials.

X. Location and description of temperature, pressure, and flow indicating devices and control devices.

(III) A description and analysis of the waste to be burned compared with the waste for which data from operational or trial burns are provided to support the contention that a trial burn is not needed. The data should include those items listed in item (I) of this subpart. This analysis should specify the POHCs which the applicant has identified in the waste for which a permit is sought, and any differences from the POHCs in the waste for which burn data are provided.

(IV) The design and operating conditions of the incinerator unit to be used, compared with that for which comparative burn data are available.

(V) A description of the results submitted from any previously conducted trial burn(s) including:

I. Sampling and analysis techniques used to calculate performance standards in Rule 1200-1-11-.06(15)(d).

II. Methods and results of monitoring temperatures, waste feed rates, carbon monoxide, and an appropriate indicator of combustion gas velocity (including a statement concerning the precision and accuracy of this measurement).

(VI) The expected incinerator operation information to demonstrate compliance with Rule 1200-1-11-.06(15)(d) and (f) including:

I. Expected carbon monoxide (CO) level in the stack exhaust gas.

II. Waste feed rate.

III. Combustion zone temperature.

IV. Indication of combustion gas velocity.

V. Expected stack gas volume, flow rate and temperature.

VI. Computed residence time for waste in the combustion zone.

VII. Expected hydrochloric acid removal efficiency.

VIII. Expected fugitive emissions and their control procedures.

IX. Proposed waste feed cut-off limits based on the identified significant operating parameters.

(VII) Such supplemental information as the Commissioner finds necessary to achieve the purposes of this subpart. •

(VIII) Waste analysis data, including that submitted in item (I) of this subpart, sufficient to allow the Commissioner to specify as permit Principal Organic Hazardous Constituents (permit POHC's) those constituents for which destruction and removal efficiencies will be required. •

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(iv) The Commissioner shall approve a permit application without a trial burn if he or it finds that:

(I) The wastes are sufficiently similar; and

(II) The incinerator units are sufficiently similar, and the data from other trial burns are adequate to specify (under Rule 1200-1-11-.06(15)(f)) operating conditions that will ensure that the performance standards in Rule 1200-1-11-.06(15)(d) will be met by the incinerator.

(c) Additional Information Requirements - The following additional information regarding protection of ground water is required from owners or operators of hazardous waste surface impoundments, piles, land treatment units, and landfills, except as otherwise provided in Rule 1200-1-11-.06(6)(a)2:

1. A summary of the ground-water monitoring data obtained during the interim status period under Rule 1200-1-11-.05(6), where applicable.

2. Identification of the uppermost aquifer and aquifers hydraulically interconnected beneath the facility property, including ground-water flow direction and rate, and the basis for such identification (i.e., the information obtained from hydrogeologic investigations of the facility area).

3. On the topographic map required under part (a)17 of this paragraph, a delineation of the waste management area, the property boundary, the proposed "point of compliance" as defined under Rule 1200-1-11-.06(6)(f), the proposed location of ground-water monitoring wells as required under 1200-1-11-.06(6)(h) and, to the extent possible, the information required in part 2 of this subparagraph;

4. A description of any plume of contamination that has entered the ground water from a regulated unit at the time that the application is submitted that:

   (i) Delineates the extent of the plume on the topographic map required under part (a)17 of this paragraph;

   (ii) Identifies the concentration of each Appendix .02/E constituent throughout the plume or identifies the maximum concentrations of each Appendix .02/E constituent in the plume.

5. Detailed plans and an engineering report describing the proposed ground-water monitoring program to be implemented to meet the requirements of Rule 1200-1-11-.06(6)(h);

6. If the presence of hazardous constituents has not been detected in the ground water at the time of permit application, the owner or operator must submit sufficient information, supporting data, and analyses to establish a detection monitoring program which meets

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the requirements of Rule 1200-1-11-.06(6)(i). This submission must address the following items as specified under Rule 1200-1-11-.06(6)(i);

(i) A proposed list of indicator parameters, waste constituents, or reaction products that can provide a reliable indication of the presence of hazardous constituents in the ground water;

(ii) A proposed ground-water monitoring system;

(iii) Background values for each proposed monitoring parameter or constituent, or procedures to calculate such values; and

(iv) A description of proposed sampling, analysis and statistical comparison procedures to be utilized in evaluating ground-water monitoring data.

7. If the presence of hazardous constituents has been detected in the ground water at the point of compliance at the time of permit application, the owner or operator must submit sufficient information, supporting data, and analyses to establish a compliance monitoring program which meets the requirements of Rule 1200-1-11-.06(6)(j). The owner or operator must also submit an engineering feasibility plan for a corrective action program necessary to meet the requirements of Rule 1200-1-11-.06(6)(k), except as provided in Rule 1200-1-11-.06(6)(i)8(v). To demonstrate compliance with Rule 1200-1-11-.06(6)(j), the owner or operator must address the following items:

(i) A description of the wastes previously handled at the facility;

(ii) A characterization of the contaminated ground water, including concentrations of hazardous constituents;

(iii) A list of hazardous constituents for which compliance monitoring will be undertaken in accordance with Rule 1200-1-11-.06(6)(h) and (j);

(iv) Proposed concentration limits for each hazardous constituent, based on the criteria set forth in Rule 1200-1-11-.06(6)(e)1, including a justification for establishing any alternate concentration limits;

(v) Detailed plans and an engineering report describing the proposed ground-water monitoring system, in accordance with the requirements of Rule 1200-1-11-.06(6)(h); and

(vi) A description of proposed sampling, analysis and statistical comparison procedures to be utilized in evaluating ground-water monitoring data.

8. If hazardous constituents have been measured in the ground water which exceed the concentration limits established under Table 1 of Rule 1200-1-11-.06(6)(e), or if ground water monitoring conducted at the time of permit application under Rule 1200-1-11-.05(6) at the waste boundary indicates the presence of hazardous constituents from the facility in ground water over background concentrations, the owner or operator must submit sufficient information, supporting data, and analyses to establish a corrective action program which meets the requirements of Rule 1200-1-11-.06(6)(k). However, an owner or operator is not required to submit information to establish a correction action program if he demonstrates to the Commissioner that alternate concentration limits will protect human health and the environment after considering the criteria listed in Rule 1200-1-11-.06(6)(e)2. An owner or operator who is not required to establish a corrective action program for this reason must instead submit sufficient information to establish a compliance monitoring program which meets the requirements of Rule 1200-1-11-.06(6)(j) and part 6 of this subparagraph. To demonstrate compliance with Rule 1200-1-11-.06(6)(k), the owner or operator must address, at a minimum, the following items:

(i) A characterization of the contaminated ground water, including concentrations of hazardous constituents;

(ii) The concentration limit for each hazardous constituent found in the ground water as set forth in Rule 1200-1-11-.06(6)(e);

(iii) Detailed plans and an engineering report describing the corrective action to be taken; and

(iv) A description of how the ground-water monitoring program will assess the adequacy of the corrective action.

(d) Treatment Facilities - The following information is required for treatment facilities:

1. A description of the treatment technologies and sequences utilized by types of hazardous wastes handled, to include flow diagrams and mass balances where appropriate; and

2. A description of procedures, structures, or equipment used at the facility to monitor treatment processes.

(6) Reserved.

(7) Processing the Permit

(a) Preliminary Notices - Within 30 days after the date of receipt, the Commissioner shall issue a preliminary public notice under subparagraph (e) of this paragraph for:

1. Each complete Part A permit application received from new facilities; and

2. Each Part B application received from existing facilities.

(b) Review of the Permit Application

1. The Commissioner shall review every permit application for completeness. Upon completing the review, the Commissioner shall notify the applicant in writing whether the application is complete. For new facilities, the Commissioner shall complete his review and issue this notice within 45 days after receipt of the Part B permit application. If the application is incomplete, the Commissioner shall list the information necessary to make the application complete. When the application is for an existing facility, the Commissioner shall specify in the notice of deficiency a date for submitting the necessary information. The Commissioner shall notify the applicant that the application is complete upon receiving this information. After the application is completed, the Commissioner may request additional information from an applicant but only when necessary to clarify, modify, or supplement previously submitted material. Requests for such additional information will not render an application incomplete.

2. If an applicant fails or refuses to correct deficiencies in the application, the permit may be denied and appropriate enforcement actions may be taken under the Act.

3. When the Commissioner decides that a site visit is necessary for any reason in conjunction with the processing of an application, he shall notify the applicant and a date shall be scheduled.

(c) Draft Permits

1. Once an application is complete, the Commissioner shall tentatively decide whether the permit should be issued or denied.

2. If the Commissioner tentatively decides the permit should be denied, he shall prepare a notice of intent to deny. A notice of intent to deny the permit is a type of draft permit which follows the same procedures as any draft permit prepared under this subparagraph (see part 6 of this subparagraph). If the Commissioner finally decides (under subparagraph (h) of this paragraph) that the tentative decision to deny the permit was incorrect, the Commissioner shall withdraw the notice of intent to deny and proceed to prepare a draft permit as set forth in part 4 of this subparagraph.

3. If the Commissioner tentatively decides the permit should be issued, he shall prepare a draft permit as set forth in part 4 of this subparagraph.

4. A draft permit shall contain (either expressly or by reference) all applicable terms and conditions from subparagraphs (8)(a)-(f) of this Rule. +

5. (i) For new facilities, except as provided in subpart (ii) of this part, the Commissioner shall issue the notice of intent to deny or the draft permit within 45 days after notifying the applicant that his application was complete (see part (b)1 of this paragraph).

   (ii) If the Commissioner finds it necessary to request additional information from an applicant after the application is deemed complete (see part (b)1 of this paragraph), the 45-day time limit shall be automatically extended a period of time equal to the time it takes for the applicant to submit the requested information (such time to be calculated from the postmarked date of the Commmissioner's written request to the date the Department receives the information).

6. All draft permits shall be subject to the procedures of subparagraphs (d), (e), (f), (g), (h), and (i) of this paragraph, unless otherwise specified in those subparagraphs.

(d) Fact Sheets

1. A fact sheet shall be prepared for every draft permit (or notice of intent to deny the permit) for:

   (i) Disposal facilities or sites (including landfills, injection wells, surface impoundments, and land treatment facilities);

   (ii) Incinerators;

   (iii) Storage facilities and treatment facilities which handle or are proposed to handle (other than possibly in emergencies) hazardous wastes which are generated off-site by persons other than the owner or operator; and

   (iv) Other facilities which the Commissioner finds is the subject of widespread public interest or raises major issues.

2. The fact sheet shall briefly set forth the principal facts and the significant factual, legal, methodological and policy questions considered in preparing the draft permit; to include, when applicable:

   (i) A brief description of the type of facility or activity which is the subject of the draft permit;

   (ii) The type and quantity of wastes which are proposed to be or are being treated, stored, or disposed of;

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(iii) A brief summary of the basis for the draft permit conditions including references to applicable statutory or regulatory provisions and appropriate supporting references to the permit application;

(iv) Reasons why any requested waivers or alternatives to required standards do or do not appear justified;

(v) A description of the procedures for reaching a final decision on the draft permit, including:

(I) The beginning and ending dates of the comment period under subparagraph (e) of this paragraph and the address where comments will be received;

(II) Procedures for requesting a public hearing; and

(III) Any other procedures by which the public may participate in the final decision; and

(vi) Name and telephone number of a person to contact for additional information.

3. The Commissioner shall send this fact sheet to the applicant and on request, to any other person.

(e) Public Notice of Permit Actions and Public Comment Period

1. Scope

(i) The Commissioner shall give public notice that the following actions have occurred:

(I) A Part A permit application as described in subparagraph (a) of this paragraph has been received;

(II) A notice of intent to deny a permit has been prepared under part (c)2 of this paragraph;

(III) A draft permit has been prepared under parts (c)2 or (c)3 of this paragraph; or

(IV) A public hearing has been scheduled under subparagraph (g) of this paragraph.

(ii) No public notice is required when a request for permit modification, revocation and reissuance, or termination is denied under paragraph (9) of this Rule. Written notice of that denial shall be given to the permittee.

(iii) Public notices may describe more than one permit or permit action.

2. Timing

(i) Public notice of the preparation of a notice of intent to deny a permit or of a draft permit, as required under part 1 of this subparagraph, shall allow at least 45 days for public comment.

(ii) Public notice of a public hearing shall be given at least 30 days before the hearing. (Public notice of the hearing may be given at the same time as public notice of the draft permit and the two notices may be combined.)

3. Methods - Public notice of activities described in subpart 1(i) of this subparagraph shall be given by the following methods:

(i) By mailing a copy of a notice to the following persons (any person otherwise entitled to receive notice under this paragraph may waive his or her rights to receive notice for any classes and categories of permits):

(I) The applicant;

(II) Any other agency which the Commissioner knows has issued or is required to issue an environmental permit for the same facility or activity;

(III) Any unit of local government having jurisdiction over the area where the facility is or is proposed to be located;

(IV) Each State agency having any authority under State law with respect to the construction or operation of such facility; and

(V) Persons on a mailing list developed by:

I. Including those who request in writing to be on the list;

II. Soliciting persons for "area lists" from participants in past permit proceedings in that area; and

III. Notifying the public of the opportunity to be put on the mailing list through periodic publication in the public press and in other publications deemed appropriate by the Commissioner.

Note: The Commissioner may update the mailing list from time to time by requesting written indication of continued interest from those listed. The Commissioner may delete from the list the name of any person who fails to respond to such a request.

(ii) By publication of a notice in a daily or weekly major local newspaper of general circulation and broadcast over local radio stations; and

(iii) By any other method deemed necessary or appropriate by the Commissioner to give actual notice of the action in question to the persons potentially affected by it.

4. Contents

(i) General Public Notices - Except for the preliminary public notices described in subparagraph (a) of this paragraph, all public notices issued under this part shall contain the following minimum information:

(I) Name and address of the office processing the permit action for which notice is being given;

(II) Name and address of the permittee or permit applicant and, if different, of the facility or activity regulated by the permit;

(III) A brief description of the business conducted at the facility or activity described in the permit application;

(IV) A brief description of the comment procedures required by subparagraphs (f) and (g) of this paragraph and the time and place of any public hearing that will be held, including a statement of procedures to request a public hearing (unless a hearing has already been scheduled), and other procedures by which the public may participate in the final permit decision;

(V) Name, address, and telephone number of a person from whom interested persons may obtain further information, including copies of draft permits and fact sheets; and

(VI) Any additional information considered necessary or proper.

(ii) Public Notices for Public Hearing - In addition to the general public notice described in subpart (i) of this part, the public notice of a public hearing shall contain the following information:

(I) Reference to the dates of previous public notices relating to the permit action;

(II) Date, time, and place of the public hearing; and

(III) A brief description of the nature and purpose of the public hearing, including the applicable rules and procedures.

(iii) Preliminary Notices - The preliminary public notice described in subparagraph (a) of this paragraph shall contain the following information:

(I) The information from items (I), (II), (III), (V), and (VI) of subpart (i) of this part; and

(II) A brief description of the permitting procedures that will be followed, focusing especially upon the opportunities for public participation in the process.

5. Attachments - In addition to the general public notice described in subpart 4(i) of this subparagraph, all persons identified in items 3(i)(I), (II), (III), and (IV) of this subparagraph shall be mailed a copy of the fact sheet (if any) and the draft permit (if any).

(f) Public Comments and Requests for Public Hearings - During the public comment period provided under subpart (e)2(i) of this paragraph, any interested person may submit written comments on the draft permit and may request a public hearing, if no hearing has already been scheduled. A request for a public hearing shall be in writing and shall state the nature of the issues proposed to be raised in the hearing. All comments shall be considered in making the final decision and shall be answered as provided in subparagraph (j) of this paragraph.

(g) Public Hearings

1. (i) The Commissioner shall hold a public hearing whenever he finds, on the basis of requests, a significant degree of public interest in a draft permit(s).

(ii) The Commissioner may also hold a public hearing at his discretion, whenever for instance, such a hearing might clarify one or more issues involved in the permit decision.

(iii) The Commissioner shall hold a public hearing whenever he receives written notice of opposition to a draft permit and a request for a hearing, within 45 days of public notice under subpart (e)2(i) of this paragraph.

(iv) Whenever possible, the Commissioner shall schedule a hearing under this subparagraph at a location convenient to the nearest population center to the subject facility.

(v) Public notice of the hearing shall be given as specified in subparagraph (e) of this paragraph.

2. Any person may submit oral or written statements and data concerning the draft permit. Reasonable limits may be set upon the time allowed for oral statements, and the submission of statements in writing may be required. The public comment period under subparagraph (e) of this paragraph shall automatically be extended to the close of any public hearing under this subparagraph. The hearing officer may also extend the comment period by so stating at the hearing.

3. A tape recording or written transcript of the hearing shall be made available to the public.

(h) Reopening of the Public Comment Period

1. If any data, information, or arguments submitted during the public comment period appear to raise substantial new questions concerning a permit action, the Commissioner may (at his discretion or as directed by the Board) take one or more of the following actions:

   (i) Prepare a new draft permit, appropriately modified, under subparagraph (c) of this paragraph;

   (ii) Prepare a fact sheet or revised fact sheet under subparagraph (d) of this paragraph and reopen the comment period under subparagraph (e) of this paragraph; or

   (iii) Reopen or extend the comment period under subparagraph (e) of this paragraph to give interested persons an opportunity to comment on the information or arguments submitted.

2. Comments filed during the reopened comment period shall be limited to the substantial new questions that caused its reopening. The public notice under subparagraph (e) of this paragraph shall define the scope of the reopening.

3. Public notice of any of the actions of part 1 of this subparagraph shall be issued under subparagraph (e) of this paragraph.

(i) Final Permit Decision

1. After the close of the public comment period under subparagraph (e) of this paragraph on a draft permit (including a notice of intent to deny a permit), the Commissioner, as set forth in TCA 68-46-108(a), shall issue a final permit decision. For new facilities, this final decision shall be issued within 60 days after the close of the comment period. The Commissioner shall notify the applicant and each person who has submitted written comments or requested notice of the final permit decision. For the purposes of this subparagraph, a final permit decision means a final decision to issue, deny, modify, revoke and reissue, or terminate a permit.

2. A final permit decision shall become effective upon the date of the service of notice of the decision under part 1 of this subparagraph unless a later date is specified in the decision.

(j) Response to Comments

1. At the time that a final permit decision is issued under subparagraph (i) of this paragraph, the Commissioner shall issue a response to comments. This response shall:

(i) Specify which provisions, if any, of the draft permit have been changed in the final permit decision, and the reasons for the change; and

(ii) Briefly describe and respond to all significant comments on the draft permit raised during the public comment period, or during any public hearing.

2. The response to comments shall be made available to the public.

(k) Appeals - If, in his or its final permit decision under subparagraph (i) of this paragraph, the Commissioner denied the permit or issued it subject to conditions with which the permit applicant disagrees, the applicant may appeal the decision to the Board as set forth in TCA 68-46-113(a)2 and (b). If the Commissioner fails to take any action on a permit application within 45 days after it was submitted to him or it, or fails to meet the time limits imposed by parts (b)1, (c)5, and (i)1 of this paragraph, the permit applicant may appeal to the Board as set forth in TCA 68-46-113(a)3 and (b).

(8) Terms of the Permit

(a) Conditions Applicable to all Permits - The following conditions apply to all permits, and shall be incorporated into the permits either expressly or by reference. If incorporated by reference, a specific citation to this subparagraph must be included in the permit.

1. Duty to Comply - The permittee must 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 such noncompliance is authorized in an emergency permit. (See subparagraph (1)(d) of this Rule.) 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 to Reapply - If the permittee wishes to continue an activity regulated by this permit after the expiration date of this permit, the permittee must apply for and obtain a new permit.

3. Need to Halt or Reduce Activity Not a Defense - It shall not be a defense for a 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 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 back-up or auxiliary facilities 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. Property Rights - This permit does not convey any property rights of any sort, or any exclusive privilege.

8. 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, or 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.

9. Inspection and Entry - The permittee shall allow the Commissioner, or an authorized representative, upon the presentation of credentials and other documents as may be required by law, to:

   (i) Enter at reasonable times upon the permittee's premises where a regulated facility or activity is located or conducted, or where records must be kept under the conditions of this permit;

   (ii) Have access to and copy, at reasonable times, any records that must be kept under the conditions of this permit;

   (iii) Inspect at reasonable times any facilities, equipment (including monitoring and control equipment), practices or operations regulated or required under this permit; and

   (iv) Sample or monitor at reasonable times, for the purposes of assuring permit compliance or as otherwise authorized by the Act, any substances or parameters at any location.

   (v) Make photographs for the purpose of documenting items of compliance or noncompliance at waste management units, or where appropriate to protect legitimate proprietary interests, make such photographs for him.

10. Monitoring and Records

(i) Samples and measurements taken for the purpose of monitoring shall be representative of the monitored activity.

(ii) The permittee shall retain records of all monitoring information, including all calibration and maintenance records and all original strip chart recordings for continuous monitoring instrumentation, copies of all reports required by this permit, the certification required by Rule 1200-1-11-.06(5)(d)2(ix), and records of all data used to complete the application for this permit, for a period of at least 3 years from the date of the sample, measurement, report or application. The permittee shall maintain records from all ground-water monitoring wells and associated ground-water surface elevations, for the active life of the facility, and, for disposal facilities, for the post-closure care period as well. This period may be extended by request of the Commissioner at any time.

(iii) 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.

11. Signatory Requirement - All applications, reports, or information submitted to the Commissioner shall be signed and certified. (See subparagraph (2)(a) of this Rule.)

12. Reporting Requirements

(i) Planned changes - The permittee shall give notice to the Commissioner as soon as possible of any planned physical alterations or additions to the permitted facility.

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(ii) Anticipated noncompliance - The permittee shall give advance notice to the Commissioner as soon as possible of any planned changes in the permitted facility or activity which may result in noncompliance with permit requirements. For a new facility, the permittee may not commence treatment, storage, or disposal of hazardous waste; and for a facility being modified, the permittee may not treat, store, or dispose of hazardous waste in the modified portion of the facility; until:

(I) 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 facility has been constructed or modified in compliance with the permit; and

(II) I. The Commissioner has inspected the modified or newly constructed facility and finds it is in compliance with the conditions of the permit; or

II. Within 15 days of the date of submission of the letter in item (I) of this subpart, 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 treatment, storage, or disposal of hazardous waste.

(iii) Transfers - This permit is not transferable to any person except after notice to the Commissioner. The Commissioner may require modification or revocation and reissuance of the permit to change the name of the permittee and incorporate such other requirements as may be necessary under the Act (See subparagraph (9)(b) of this Rule; in some cases, modification or revocation and reissuance is mandatory.)

(iv) Monitoring reports - Monitoring results shall be reported at the intervals specified elsewhere in this permit.

(v) Compliance schedules - Reports of compliance or noncompliance with, or any progress reports on, interim and final requirements contained in any compliance schedule of this permit shall be submitted no later than 14 days following each schedule date.

(vi) Twenty-four hour reporting

(I) The permittee shall report any noncompliance which may endanger health or the environment orally within 24 hours from the time the permitte 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 the hazardous waste management facility which could threaten the environment or human health outside the facility.

(II) The description of its 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 hazards to the environment and human health outside the facility, where this is applicable; and

VII. Estimated quantity and disposition of recovered material that resulted from the incident.

(III) 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 and its cause; the period of noncompliance including exact dates and times, and if the noncompliance has not been corrected, the anticipated time it is expected to continue; and steps taken or planned to reduce, eliminate, and prevent reoccurrence of the noncompliance. The Commissioner may waive the five day written notice requirement in favor of a written report within fifteen days.

(vii) Manifest discrepancy report: if a significant discrepancy in a manifest is discovered, the permittee must attempt to reconcile the discrepancy. If not resolved within fifteen days, the permittee must submit a letter report including a copy of the manifest to the Commissioner. (See Rule 1200-1-11-.06(5)(c).)

(viii) Unmanifested waste report: such report must be submitted to the Commissioner within 15 days of receipt of unmanifested waste. (See Rule 1200-1-11-.06(5)(g).)

(ix) Annual report: an annual report must be submitted covering facility activities during the previous calendar year. (See Rule 1200-1-11-.06(5)(f).)

(x) Other noncompliance - The permittee shall report all instances of noncompliance not reported under subparts (iv), (v), and (vi) of this part at the time monitoring reports are submitted. The reports shall contain the information listed in subpart (vi) of this part.

(xi) Other information - Where the permittee becomes aware that it failed to submit any relevant facts in a 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.

(b) Facility - Specific Permit Conditions

1. In addition to the conditions required in all permits (subparagraph (a) of this paragraph), the Commissioner shall, as required on a case-by-case basis, establish conditions in permits pursuant to subparagraphs (c) (duration of permits), (d) (schedules of compliance), and (e) (monitoring) of this paragraph.

2. Each permit shall include such terms and conditions as the Commissioner determines are:

   (i) Necessary to achieve compliance with the Act and regulations, including each of the applicable requirements specified in Rules 1200-1-11-.06 and 1200-1-11-.09 (Note: In satisfying this provision, the Commissioner may incorporate applicable requirements of Rules 1200-1-11-.06 or 1200-1-11-.09 directly into the permit or establish other permit conditions that are based on those Rules.); and

   (ii) Otherwise necessary to protect human health and the environment.

3. An applicable requirement is a State statutory or regulatory requirement which takes effect prior to final administrative disposition of a permit. Subparagraph (7)(h) of this Rule provides a means for reopening permit proceedings at the discretion of the Commissioner when applicable new requirements become effective during the permitting process and are of sufficient magnitude to make additional proceedings desirable. An applicable requirement is also any requirement which takes effect prior to the modification or revocation and reissuance of a permit, to the extent allowed in paragraph (9) of this Rule.

4. All permit conditions shall be incorporated either expressly or by reference. If incorporated by reference, a specific citation to the applicable regulations or requirements must be given in the permit.

(c) Duration of Permits

1. Permits shall be effective for a fixed term not to exceed the expected operating life of new facilities or the expected remaining life of existing facilities.

2. The Commissioner may issue any permit for a duration that is less than the full allowable term under part 1 of this subparagraph.

3. Except as provided in subparagraph (9)(a) of this Rule, the term of a permit shall not be extended by modification beyond the maximum duration specified in part 1 of this subparagraph.

4. Each permit for a land disposal facility shall be reviewed by the Commissioner five years after the date of permit issuance or reissuance and shall be modified as necessary, as provided in item (9)(c)3(xiii) of this Rule.

(d) Schedules of Compliance

1. General - The permit may, when appropriate, specify a schedule of compliance leading to compliance with the Act, this Rule, and Rule 1200-1-11-.06.

(i) Any schedule of compliance under this subparagraph shall require compliance as soon as possible.

(ii) Except as provided in item 2(i)(II) of this subparagraph, if a permit establishes a schedule of compliance which exceeds one year from the date of permit issuance, the schedule shall set forth interim requirements and the dates for their achievement.

(I) The time between interim dates shall not exceed one year.

(II) If the time necessary for completion of any interim requirement (such as the construction of a control facility) is more than one year and is not readily divisible into stages for completion, the permit shall specify interim dates for the submission of reports of progress toward completion of the interim requirements and indicate a projected completion date.

(iii) The permit shall be written to require that no later than 14 days following each interim date and the final date of compliance, the permittee shall notify the Commissioner in writing of its compliance or noncompliance with the interim or final requirements.

2. Alternative Schedules of Compliance - A permit applicant or permittee may cease conducting regulated activities (by receiving a terminal volume of hazardous waste; and, for treatment and storage facilities, closing pursuant to applicable requirements; and, for

disposal facilities, closing and conducting post-closure care pursuant to applicable requirements) rather than continue to operate and meet permit requirements as follows:

(i) If the permittee decides to cease conducting regulated activities at a given time within the term of a permit which has already been issued:

(I) The permit may be modified to contain a new or additional schedule leading to timely cessation of activities; or

(II) The permittee shall cease conducting permitted activities before noncompliance with any interim or final compliance schedule requirement already specified in the permit.

(ii) If the decision to cease conducting regulated activities is made before issuance of a permit whose term will include the termination date, the permit shall contain a schedule leading to termination which will ensure timely compliance with applicable requirements.

(iii) If the permittee is undecided whether to cease conducting regulated activities, the Commissioner may issue or modify a permit to contain two schedules as follows:

(I) Both schedules shall contain an identical interim deadline requiring a final decision on whether to cease conducting regulated activities no later than a date which ensures sufficient time to comply with applicable requirements in a timely manner if the decision is to continue conducting regulated activities.

(II) One schedule shall lead to timely compliance with applicable requirements.

(III) The second schedule shall lead to cessation of regulated activities by a date which will ensure timely compliance with applicable requirements.

(IV) Each permit containing two schedules shall include a requirement that after the permittee has made a final decision under item (I) of this subpart it shall follow the schedule leading to compliance if the decision is to continue conducting regulated activities, and follow the schedule leading to termination if the decision is to cease conducting regulated activities.

(iv) The applicant's or permittee's decision to cease conducting regulated activities shall be evidenced by a firm public commitment satisfactory to the Commissioner.

(e) Monitoring - All permits shall specify:

1. Requirements concerning the proper use, maintenance, and installation, when appropriate, of monitoring equipment or methods;

2. Required monitoring, including type, intervals, and frequency sufficient to yield data which are representative of the monitored activity including, when appropriate, continuous monitoring;

3. Applicable reporting requirements based upon the impact of the regulated activity and as specified in Rule 1200-1-11-.06. Reporting shall be no less frequent than specified in the above regulations.

(f) Reserved.

(g) Effect of a Permit

1. Compliance with a permit during its term constitutes compliance, for purposes of enforcement, with the Act. However, a permit may be modified, revoked and reissued, or terminated during its term for cause as set forth in paragraph (9).

2. The issuance of a permit does not convey any property rights of any sort, or any exclusive privilege.

3. The issuance of a permit does not authorize any injury to persons or property or invasion of other private rights, or any infringement of local law or regulations.

(9) Continuation, Transfer, Modification, Revocation and Reissuance, and Termination of Permits

(a) Continuation of Expiring Permits - When a permittee has made timely and sufficient application for a new permit, the existing permit does not expire until the application has been finally determined by the Commissioner and, in case the application is denied, or the terms of the new permit limited, until the last day for seeking review of the Commissioner order or a later date fixed by order of the reviewing court.

(b) Transfer of Permits - A permit may be transferred by the permittee to a new owner or operator only if the permit has been modified or revoked and reissued (under subparagraph (c) of this paragraph) to identify the new permittee and incorporate such other requirements (e.g., financial requirements) as may be necessary under the Act or this Rule.

(c) Modification or Revocation and Reissuance of Permits

1. General - Permits may be modified or revoked and reissued only for the reasons shown in parts 3, 4, or 5 of this subparagraph and only according to the procedures set forth in part 2 of this subparagraph. This process may be initiated either by the Commissioner or at the request of the permittee. All such requests from the permittee shall be in writing and shall contain the reasons for the request.

2. Procedures

(i) When the Commissioner receives a request from the permittee or other information (e.g., complaints, inspection findings, monitoring data, required reports) indicating that modification or revocation and reissuance of the permit may be in order, he may determine whether or not one or more of the causes listed in parts 3, 4, or 5 of this subparagraph exist.

(ii) If the Commissioner determines cause exists, he may proceed to modify or revoke and reissue the permit accordingly, subject to the limitations of part 6 of this subparagraph. If a permit modification satisfies the criteria in part 5 of this subparagraph for "minor modifications", the permit may be modified without following further the procedures of this part, except for subpart (vi).

(iii) If the Commissioner determines cause does not exist under parts 3, 4, or 5 of this subparagraph, he shall not modify or revoke and reissue the permit. If the modification or revocation and reissuance was requested by the permittee, the Commissioner shall give to the permittee such notice as is required by TCA 4-5-320.

(iv) If the Commissioner tentatively decides to modify or revoke and reissue a permit, he shall prepare a draft permit under subparagraph (7)(c) of this Rule incorporating the proposed changes. This draft permit shall be processed as set forth in paragraph (7) of this Rule. The Commissioner may request additional information and, in the case of a modified permit, may require the submission of an updated permit application. In the case of revoked and reissued permits, the Commissioner shall require the submission of a new application.

(v) In a permit modification under this part, only those conditions to be modified shall be reopened when a new draft permit is prepared. All other aspects of the existing permit shall remain in effect for the duration of the unmodified permit. When a permit is revoked and reissued under this part, the entire permit is reopened just as if the permit had expired and was being reissued. During any revocation and reissuance proceeding, the permittee shall comply with all conditions of the existing permit until a new final permit is reissued.

(vi) No minor modification to a permit shall be made under subpart (ii) of this part, and no draft permit shall be prepared under subpart (iv) of this part, until the permittee has been given such notice as is required by TCA 4-5-320.

3. Causes for Modification - The following are causes for modification but not revocation and reissuance of permits. However, the following may be causes for revocation and reissuance as well as modification when the permittee requests or agrees.

(i) There are changes to the permitted facility which occurred after permit issuance which justify the application of permit conditions that are different or absent in the existing permit.

(ii) The Commissioner has received information which was not available at the time of permit issuance (other than revised regulations, guidance, or test methods) and would have justified the application of different permit conditions at the time of issuance.

(iii) The standards or regulations on which the permit was based have been substantially changed by promulgation of amended standards or regulations or by judicial decision after the permit was issued.

(iv) The Commissioner determines that good cause exists for modification of a compliance schedule, such as an act of God, strike, flood, or materials shortage or other events over which the permittee has little or no control and for which there is no reasonable available remedy.

(v) Modification of a closure plan or post-closure plan is required under Rule 1200-1-11-.06(7)(c)2 or (h)2.

(vi) After the Commissioner receives the notification of expected closure under Rule 1200-1-11-.06(7)(d), when the Commissioner determines that existing permit conditions granting extension of the 90 or 180 day periods under that rule, modification of the 30-year post-closure period under Rule 1200-1-11-.06(7)(g)1, continuation of security requirements under Rule 1200-1-11-.06(7)(g)2, or permission to disturb the integrity of the containment system under Rule 1200-1-11-.06(7)(g)3 are unwarranted.

(vii) When the corrective action program specified in the permit under Rule 1200-1-11-.06(6)(k) has not brought the regulated unit into compliance with the ground-water protection standard within a reasonable period of time.

(viii) To include a detection monitoring program meeting the requirements of Rule 1200-1-11-.06(6)(i), when the owner or operator has been conducting a compliance monitoring program under Rule 1200-1-11-.06(6)(j) or a correction action program under Rule 1200-1-11-.06(6)(k) and the compliance period ends before the end of the post-closure care period for the unit.

(ix) When a permit requires a compliance monitoring program under Rule 1200-1-11-.06(6)(j), but monitoring data collected prior to permit issuance indicate that the facility is exceeding the ground-water protection standard.

(x) To include conditions applicable to units at a facility that were not previously included in the facility's permit.

(xi) When a land treatment unit is not achieving complete treatment of hazardous constituents under its current permit conditions.

(xii) The permittee has filed a request under Rule 1200-1-11-.06(8)(n)3 for a variance to the level of financial responsibility or the Commissioner demonstrates under Rule 1200-1-11-.06(8)(n)4 that an upward adjustment of the level of financial responsibility is required.

(xiii) Notwithstanding any other provision in this subparagraph, when a permit for a land disposal facility is reviewed by the Commissioner under part (8)(c)4 of this Rule and modification of the permit is necessary to assure that the facility continues to comply with the currently applicable requirements in this Rule Chapter.

4. Causes for Modification or Revocation and Reissuance -The following are causes to modify or, alternatively, revoke and reissue a permit:

(i) Cause exists for termination under subparagraph (d) of this paragraph and the Commissioner determines that modification or revocation and reissuance is appropriate.

(ii) The Commissioner has received notification (as required in the permit, see subpart (8)(a)12(iii) of this Rule) of a proposed transfer of the permit.

5. Minor Modification of Permits - Upon the consent of the permittee, the Commissioner may modify a permit to make the corrections or allowances for changes in the permitted activity listed in this part, without following the procedures of paragraph (7) of this Rule. Minor modifications may only:

(i) Correct typographical errors;

(ii) Require more frequent monitoring or reporting by the permittee;

(iii) Change an interim compliance date in a schedule of compliance, provided the new date is not more than 120 days after the date specified in the existing permit and does not interfere with attainment of the final compliance date requirement;

(iv) Change the lists of facility emergency coordinators or equipment in the permit's contingency plan;

(v) (I) Change estimates of maximum inventory under Rule 1200-1-11-.06(7)(c)1(ii);

(II) Change estimates of expected year of closure on schedules for final closure under Rule 1200-1-11-.06(7)(c)1(iv); or

(III) Approve periods longer than 90 days or 180 days under Rule 1200-1-11-.06(7)(d)1 and 2;

(vi) Change the ranges of the operating requirements set in the permit to reflect the results of the trial burn, provided that the change is minor;

(vii) Change the operating requirements set in the permit for conducting a trial burn, provided that the change is minor;

(viii) Grant one extension of the time period for determining operational readiness following completion of construction, for up to 720 hours operating time for treatment of hazardous waste;

(ix) Change the treatment program requirements for land treatment units under Rule 1200-1-11-.06(13)(b) to improve treatment of hazardous constituents, provided that the change is minor;

(x) Change any conditions specified in the permit for land treatment units to reflect the results of field tests or laboratory analyses used in making a treatment demonstration in accordance with part (1)(f)3 of this Rule, provided that the change is minor; or

(xi) Allow a second treatment demonstration for land treatment to be conducted when the results of the first demonstration have not shown the conditions under which the waste or wastes can be treated completely as required by Rule 1200-1-11-.06(13)(c)1, provided the conditions for the second demonstration are substantially the same as the conditions for the first demonstration.

6. Facility Siting - Suitability of the facility location will not be considered at the time of permit modification or revocation and reissuance unless new information or standards indicate that a threat to human health or the environment exists which was unknown at the time of the permit issuance.

(d) Termination of Permits

1. General - Permits may be terminated only for the reasons shown in part 3 of this subparagraph and only according to the procedures set forth in part 2 of this subparagraph. This process may be initiated either by the Commissioner or at the request of the permittee. All such requests from the permittee shall be in writing and shall contain the reasons for the request.

2. Procedures

(i) When the Commissioner receives a request from the permittee or other information (e.g., complaints, inspection findings, monitoring data, reports) indicating that termination of the permit may be in order, he may determine whether or not one or more of the causes listed in part 3 of this subparagraph exist.

(ii) If the Commissioner determines cause exists, he may proceed to terminate the permit.

(iii) If the Commissioner tentatively decides to terminate a permit, he shall issue a notice of intent to terminate. A notice of intent to terminate is a type of draft permit which follows the same procedures as any draft permit prepared and processed under paragraph (7) of this Rule.

(iv) No notice of intent to terminate shall be issued under subpart (iii) of this part until the permittee has been given such notice as is required by TCA 4-5-320.

3. Causes for Termination - The following are causes for terminating a permit during its term, or for denying a permit renewal application:

(i) Noncompliance by the permittee with any condition of the permit;

(ii) The permittee's failure in the application or during the permit issuance process to disclose fully all relevant facts, or the permittee's misrepresentation of any relevant facts at any time;

(iii) A determination that the permitted activity endangers human health or the environment and can only be regulated to acceptable levels by permit modification or termination; or

(iv) The request of the permittee, providing he has complied with all closure and post-closure requirements in the permit conditions.

RULE 1200-1-11-.08 FEE SYSTEM FOR TRANSPORTERS, STORERS, TREATERS, DISPOSERS, AND CERTAIN GENERATORS OF HAZARDOUS WASTES

(1) General

(a) Purpose - The purpose of this Rule is to establish a system and schedule whereby certain fees shall be levied and collected by the Commissioner. Expenditures of such fees collected shall be restricted to operation of the hazardous waste management program established pursuant to the Act.

(b) Applicability - The requirements of this Rule apply as specified to the following persons:

1. All transporters having a transporter permit issued under the Act and all new or existing transporters subject to the transporter permit requirements of Rule 1200-1-11-.04(2);

2. Owners and operators of all hazardous waste storage, treatment, and disposal facilities who are subject to the facility permit requirements of Rule 1200-1-11-.07, except for those subject solely to the permit-by-rule requirements of Rule 1200-1-11-.07(1)(c) or the emergency permit requirements of Rule 1200-1-11-.07(1)(d); and

3. All generators of hazardous wastes who ship their hazardous wastes off-site for storage, treatment, or disposal.

(c) Annual Reassessment of the Schedule of Fees - The schedule of fees provided in this rule shall be based upon the annual financial requirement to operate the hazardous waste management program established pursuant to the Act. The fee schedule shall be promulgated in accordance with rulemaking procedures established pursuant to T.C.A. 4-5-101 et seq., and reviewed annually and revised as needed by the Board based on changes in anticipated fee collections, projected program expenditures, and any overage or deficit from the prior year's projected fee revenues. To this end, a financial assessment of the fee system shall be presented to the Board annually by the Technical Secretary, following a public meeting which shall be held to receive input concerning the fee system.

(d) Payment of Fees - Any person required to pay a fee under this Rule shall submit the fee in the specified amount, with any checks to be made payable to the Department for deposit in the State Treasury.

(2) Permit Application Fees

(a) Transporters - Any person who applies for a permit to transport hazardous wastes in Tennessee must submit as part of said application an application fee of 100 dollars.

(Rev. eff. 5-23-85)

(b) Storage, Treatment, and Disposal Facilities - Any person who applies for a permit for construction and/or operation of a hazardous waste storage, treatment, or disposal facility must submit as part of his Part B application (refer to Rule 1200-1-11-.07(2)) an application fee as set forth below:

1. For existing facilities which will receive only hazardous wastes which are generated on-site:

   1500 dollars if only storage and/or treatment operations are used; and

   2500 dollars if disposal operations are included.

2. For existing facilities which will receive hazardous waste from off-site generators:

   3000 dollars if only storage and/or treatment operations are used; and

   5000 dollars if disposal operations are included.

3. For new facilities which will receive only hazardous wastes which are generated on-site:

   10,000 dollars if disposal operations are included;

   7,500 dollars if incineration operations, but no disposal operations, are included; and

   5,000 dollars if only storage and/or non-incineration treatment operations are included.

4. For new facilities which will receive hazardous waste from off-site generators:

   15,000 dollars if disposal operations are included;

   10,000 dollars if incineration operations, but no disposal operations, are included; and

   7,500 dollars if only storage and/or non-incineration treatment operations are included.

(c) Special Case: Modification of Existing Facility Permit - Any person who applies for modification or reissuance (following revocation) of his existing storage, treatment, or disposal facility permit (refer to Rule 1200-1-11-.07(9)) must submit as part of his revised Part B application an application fee as set forth below:

1. For owners or operators who are applying for modification or reissuance of their permit to allow for significant changes in the hazardous waste storage, treatment and/or disposal operations used or to allow for additional operations to be added at their facility, the fee shall equal one-half the amount due under subparagraph (b) of this paragraph for new facilities using such operations.

2. For owners or operators who are applying for modification or reissuance of their permit for other causes which require issuance of a draft permit decision (refer to Rule 1200-1-11-.07(9)(c)3 and 4), the fee shall equal:

   500 dollars for facilities which receive only hazardous wastes which are generated on-site; and

   750 dollars for facilities which receive hazardous waste from off-site generators.

3. For owners or operators who are applying for minor modification of their permit (refer to Rule 1200-1-11-.07(9)(c)5), the fee shall equal 250 dollars.

4. In the event modification or revocation and reissuance of a permit is required as a result of changes to the Act or these Rules, there shall be no modification fee imposed on the permittee.

(3) Annual Permit Maintenance Fees

(a) Transporters - Each person having a transporter permit issued under the Act must submit to the Commissioner by 10 days after the effective date of this Rule, and by March 1 of each year thereafter, an annual permit maintenance and renewal fee of 200 dollars.

(b) Storage, Treatment, and Disposal Facilities - The owner or operator of each hazardous waste storage, treatment, or disposal facility in Tennessee having either a permit issued under the Act or interim status as provided under Rule 1200-1-11-.07(3) must submit to the Commissioner by 10 days after the effective date of this Rule, and by March 1 of each year thereafter, an annual permit maintenance fee as provided in this subparagraph.

1. General

(i) Annual fees shall be assessed based on the facility's maximum design capacities as documented in the permit application filed with the Department as of the last day of the prior calendar year, except that owners or operators subject to subparts (iii) and (iv) of this part shall be assessed annual fees based upon the maximum design capacities of their facilities at closure and permitting, respectively.

(ii) The owner or operator of each storage, treatment, or disposal facility shall be assessed an annual fee each year until the facility is closed in accordance with the appropriate standards of Rules 1200-1-11-.05 or 1200-1-11-.06, as applicable.

(iii) The owner or operator of a facility which closes during the first half of a calendar year (i.e., prior to July 1) shall be assessed only one-half the fees he would otherwise be subject to under parts 2, 3, and 4 of this subparagraph.

(iv) The owner or operator of a new facility which receives its initial permit during the second half of a calendar year (i.e., after July 1) shall be assessed only one-half the fees he would otherwise be subject to under parts 2,3, and 4 of this subparagraph.

(v) For purposes of this subparagraph, if a facility receives hazardous wastes from off-site for any purpose it is determined to be an off-site facility.

2. Storage Operations

(i) The owner or operator of each facility shall be assessed an annual fee based on the design capacity in gallons (G) of the facility's hazardous waste storage operations as set forth below:

(I) For facilities which receive only hazardous wastes which are generated on-site:

Design Capacity	Fee
0 - 5,000 G	500
5,001-10,000 G	1000
10,001 - 50,000 G	2500
50,001 - 100,000 G	3000
100,001 - 500,000 G	3500
500,001 - 1,000,000 G	4000
over 1,000,000 G	4500

(II) For facilities which receive hazardous wastes from off-site generators:

Design Capacity	Fee
0 - 5,000 G	1000
5,001-10,000 G	2000
10,001 - 50,000 G	5000
50,001 - 100,000 G	6000
100,001 - 500,000 G	7000
500,001 - 1,000,000 G	8000
over 1,000,000 G	9000

(ii) An owner/operator who is required by parts 3 or 4 of this subparagraph to pay a fee on treatment or disposal operations at his facility shall not be subject to the storage fee requirements of this part with respect to containers, tanks, surface impoundments, or waste piles used to store hazardous waste prior to their being so treated or disposed of on-site, provided such treatment or disposal occurs within 90 days.

3. Treatment Operations - The owner or operator of each facility shall be assessed an annual fee based on the design capacity in gallons per day (GPD) of the facility's hazardous waste treatment operations as set forth below:

(i) For facilities which receive only hazardous wastes which are generated on-site:

Design Capacity	Fee
0 - 5,000 GPD	1500
5,001-10,000 GPD	2000
10,001 - 50,000 GPD	2500
50,001 - 100,000 GPD	3000
100,001 - 500,000 GPD	3500
500,001 - 1,000,000 GPD	4000
over 1,000,000 GPD	4500

(ii) For facilities which receive hazardous waste from off-site generators:

Design Capacity	Fee
0 - 5,000 GPD	3000
5,001-10,000 GPD	4000
10,001 - 50,000 GPD	5000
50,001 - 100,000 GPD	6000
100,001 - 500,000 GPD	7000
500,001 - 1,000,000 GPD	8000
over 1,000,000 GPD	9000

4. Disposal Operations - The owner or operator of each facility shall be assessed an annual fee based on the design capacity of the facilty's disposal operations as set forth below:

(i) For facilities which receive only hazardous wastes which are generated on-site, a base fee of 5000 dollars plus an additional:

250 dollars per each acre-foot of remaining design capacity of landfill operations (to include waste piles and surface impoundments used for disposal and subject to closure as landfills),

250 dollars per each acre of remaining design capacity of land application operations, and

250 dollars per each million gallons of remaining design capacity of injection well operations;

(ii) For facilities which receive hazardous wastes from off-site generators, a base fee of 10,000 dollars plus an additional:

500 dollars per each acre-foot of remaining design capacity of landfill operations (to include waste piles and surface impoundments used for disposal and subject to closure as landfills),

500 dollars per each acre of remaining design capacity of land application operations, and

500 dollars per each million gallons of remaining design capacity of injection well operations;

(4) Annual Generator/Shipper Maintenance Fee - Each generator who ships hazardous waste off-site for storage, treatment, or disposal must submit by 10 days after the effective date of this Rule, and by March 1 of each year thereafter, an annual maintenance fee of 400 dollars.

DH/bec/SWM H-12

(Rev. eff. 5-23-85)

RULE 1200-1-11-.09 STANDARDS FOR THE MANAGEMENT OF SPECIFIC HAZARDOUS WASTES AND SPECIFIC TYPES OF HAZARDOUS WASTE MANAGEMENT FACILITIES •

(1) - (2) (Reserved)

(3) Recyclable Materials Used In a Manner Constituting Disposal

(a) Applicability

1. The regulations of this Paragraph apply to recyclable materials that are applied to or placed on the land:

(i) Without mixing with any other substance(s); or

(ii) After mixing with any other substance(s), unless the recyclable material undergoes a chemical reaction so as to become inseparable from the other substance(s) by physical means; or

(iii) After combination with any other substance(s) if the resulting combined material is not produced for the general public's use. These materials will be referred to throughout this paragraph as "materials used in a manner that constitutes disposal."

2. Products produced for the general public's use that are used in a manner that constitutes disposal and that contain recyclable materials are not presently subject to regulation if the recyclable materials have undergone a chemical reaction in the course of producing the product so as to become inseparable by physical means. Commercial fertilizers that are produced for the general public's use that contain recyclable materials also are not presently subject to regulation.

(b) Standards Applicable to Generators and Transporters - Generators and transporters of materials that are used in a manner that constitutes disposal are subject to the applicable requirements of Rules 1200-1-11-.03 and 1200-1-11-.04.

(c) Standards Applicable to Storers Who Are Not the Ultimate Users - Owners or operators of facilities that store recyclable materials that are to be used in a manner that constitutes disposal, but who are not the ultimate users of the materials, are regulated under all applicable provisions of Rule 1200-1-11-.05(1) through (12), Rule 1200-1-11-.06(1) through (12), and Rule 1200-1-11-.07.

• — Established Effective 2/2/86.

(d) Standards Applicable to Users

1. Owners or operators of facilities that use recyclable materials in a manner that constitutes disposal are regulated under all applicable provisions of Rule 1200-1-11-.05(1) through (14), Rule 1200-1-11-.06(1) through (14), and Rule 1200-1-11-.07.

2. The use of waste or used oil or other material, which is contaminated with dioxin or any other hazardous waste (other than a waste identified solely on the basis of ignitability), for dust suppression or road treatment is prohibited.

(4) Hazardous Waste Burned for Energy Recovery

(a) Applicability

1. The regulations of this paragraph apply to hazardous wastes that are burned for energy recovery in any boiler or industrial furnace that is not regulated under Rule 1200-1-11-.05(15) or Rule 1200-1-11-.06(15), except as provided by part 2 of this subparagraph. Such hazardous wastes burned for energy recovery are termed "hazardous waste fuel". However, hazardous waste fuels produced from hazardous waste by blending or other treatment by a person who neither generated the waste nor burns the fuel are not subject to regulation at the present time.

2. The following hazardous wastes are not regulated under this subparagraph:

(i) Used oil burned for energy recovery that is also a hazardous waste solely because it exhibits a characteristic of hazardous waste identified in Rule 1200-1-11-.02(3). Such used oil is subject to regulation under paragraph (5) of this Rule rather than this paragraph; and

(ii) Hazardous wastes that are exempt from regulation under the provisions of Rule 1200-1-11-.02(1)(d) and hazardous wastes that are subject to the special requirements for small quantity generators' under the provisions of Rule 1200-1-11-.02(1)(e).

(b) Prohibitions

1. (Reserved)

2. (i) Except as provided in subpart (ii) of this part, no fuel which contains any hazardous waste may be burned in any cement kiln which is located within the boundaries of any incorporated municipality with a population greater than 500,000 (based on

the most recent census statistics) unless such kiln fully complies with regulations under this Rule Chapter that are applicable to incinerators.

(ii) This requirement does not apply to petroleum refinery hazardous wastes containing oil which are converted into petroleum coke at the same facility at which such wastes were generated, unless the resulting coke product would exceed one or more of the characteristics of hazardous waste in Rule 1200-1-11-.02(3).

(c) Standards Applicable to Generators

1. Generators of hazardous waste fuel are subject to the requirements of Rule 1200-1-11-.03 except as subparagraph (g) of this paragraph provides otherwise.

2. Generators of hazardous waste fuel who are marketers also must comply with subparagraph (e) of this paragraph.

3. Generators of hazardous waste fuel who are burners also must comply with subparagraph (f) of this paragraph.

(d) Standards Applicable to Transporters

1. Transporters of hazardous waste fuel from generator to marketer, or from generator to burner, are subject to the requirements of Rule 1200-1-11-.04 except as subparagraph (g) of this paragraph provides otherwise.

2. Transporters of hazardous waste fuel are not presently subject to regulation when they transport hazardous waste fuel from marketers, who are not also the generators of the waste, to burners or other marketers.

(e) Standards Applicable to Marketers - Persons who market hazardous waste fuel are called "marketers". Marketers include generators who market hazardous waste fuel directly to a burner, and persons who receive hazardous waste from generators and produce, process, or blend hazardous waste fuel from these hazardous wastes. Persons who distribute but do not process or blend hazardous waste fuel are also marketers, but are not presently subject to regulation. Marketers (other than distributors) are subject to the following requirements:

1-2. (Reserved)

3. Storage

(i) Marketers who are generators are subject to the requirements of Rule 1200-1-11-.03(4)(e) or to Rule 1200-1-11-.05(1) through (12),

Rule 1200-1-11-.06(1) through (12), and Rule 1200-1-11-.07, except as subparagraph (g) of this paragraph provides otherwise.

(ii) Marketers who receive hazardous wastes from generators, and produce, process, or blend hazardous waste fuel from these hazardous wastes, are subject to regulation under all applicable provisions of Rule 1200-1-11-.05(1) through (12), Rule 1200-1-11-.06(1) through (12), and Rule 1200-1-11-.07, except as subparagraph (g) of this paragraph provides otherwise.

4. Labeling

(i) Except as provided in subpart (ii) of this part, any person who produces, distributes, or markets any fuel that contains a hazardous waste must include on the invoice or the bill of sale:

(I) The following statement: "WARNING: THIS FUEL CONTAINS HAZARDOUS WASTE"; and

(II) A statement listing the hazardous wastes contained therein. (Such statement must be located in a conspicuous place on every such invoice or bill of sale and must appear in conspicuous and legible type in contrast by typography, layout, or color with other printed matter on the invoice or bill of sale.)

(ii) The requirements of subpart (i) of this part do not apply to:

(I) Fuels produced from petroleum refining hazardous waste containing oil if

I. Such materials are generated and reinserted on-site into the refining process;

II. Contaminants are removed; and

III. Such refining waste containing oil is converted along with normal process streams into petroleum-derived fuel products at a facility at which crude oil is refined into petroleum products and which is classified as a number SIC 2911 facility under the U.S. Office of Management and Budget Standard Industrial Classification Manual.

(II) Fuels produced from oily materials resulting from normal petroleum refining production and transportation practices; if

I. Contaminants are removed; and

II. Such oily materials are converted along with normal process streams into petroleum-derived fuel products at a facility at which crude oil is refined into petroleum products and which is classified as a number SIC 2911 facility under the U.S. Office of Management and Budget Standard Industrial Classification Manual.

(III) Petroleum refinery hazardous wastes containing oil which are converted into petroleum coke at the same facility at which such wastes were generated, unless the resulting coke product would exceed one or more of the characteristics of hazardous waste in Rule 1200-1-11-.02(3).

(f) Standards Applicable to Burners

1-2. (Reserved)

3. Burners that store hazardous waste fuel prior to burning are subject to the requirements of Rule 1200-1-11-.03(4)(e), or to all applicable requirements of Rule 1200-1-11-.05(1) through (12), Rule 1200-1-11-.06(1) through (12), and Rule 1200-1-11-.07 with respect to such storage, except as subparagraph (g) of this paragraph provides otherwise.

(g) Conditional Exemption for Spent Materials and By-products Exhibiting a Characteristic of Hazardous Waste

1. Except as provided in part 2 of this subparagaph, hazardous waste fuels that are spent materials and by-products and that are hazardous only because they exhibit a characteristic of hazardous waste are not subject to the requirements of this Rule Chapter.

2. The exemption of part 1 of this subparagraph does not apply when the spent material or by-product is stored in a surface impoundment prior to burning.

(5) (Reserved)

(6) Recyclable Materials Utilized for Precious Metal Recovery

(a) Applicability and Requirements

1. The regulations of this paragraph apply to recyclable materials that are reclaimed to recover economically significant amounts of gold, silver, platinum, paladium, irridium, osmium, rhodium, rutheniun, or any combination of these.

2. Persons who generate recyclable materials that are regulated under this subpart are subject to Rule 1200-1-11-.03(1)(b), (2), (3), and (5).

3. Persons who transport recyclable materials that are regulated under this subpart are subject to Rule 1200-1-11-.04(2) and (3).

4. Persons who store recyclable materials that are regulated under this paragraph must:

   (i) Notify the Division Director of their activities within 90 days of the effective date of this regulation (Notification must be made using forms provided by the Department and completed per accompanying instructions);

   (ii) Comply with Rule 1200-1-11-.05(5)(b), (c) and applicable provisions of (e) and (f); and

   (iii) Keep the following records to document that they are not accumulating these materials speculatively (as defined in Rule 1200-1-11-.02(1)(a)3):

      (I) Records showing the volume of these materials stored at the beginning of the calendar year;

      (II) Records showing the amount of these materials generated or received during the calendar year; and

      (III) Records showing the amount of these materials remaining at the end of the calendar year.

5. Recyclable materials that are regulated under this paragraph that are accumulated speculatively (as defined in Rule 1200-1-11-.02(1)(a)3) are subject to all applicable provisions of this Rule Chapter.

(7) Spent Lead-Acid Batteries Being Reclaimed

(a) Applicability and Requirements

1. The regulations of this paragraph apply to persons who reclaim spent lead-acid batteries that are recyclable materials ("spent batteries"). Persons who generate, transport, or collect spent batteries, or who store spent batteries but do not reclaim them are not subject to regulation under this Rule Chapter.

2. Owners or operators of facilities that store spent batteries before reclaiming them are subject to the following requirements:

   (i) All applicable provisions of Rule 1200-1-11-.05(1), (2) (but not subparagraph (d) (waste analysis)), (3), (4), (5) (but not subparagraphs (b) and (c) (dealing with the use of the manifest and manifest discrepancies)), and (6) through (12);

(ii) All applicable provisions of Rule 1200-1-11-.06(1),2 (but not subparagraph (d) (waste analysis)), (3), (4), (5) (but not subparagraph (b) and (c) (dealing with the use of the manifest and maniest discrepancies)), and (6) through (12); and

(iii) All applicable provisions of Rule 1200-1-11-.07.