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Notice of Rulemaking Hearing

Hearings will be conducted in the manner prescribed by the Uniform Administrative Procedures Act, Tennessee Code Annotated, Section 4-5-204. For questions and copies of the notice, contact the person listed below.

Agency/Board/Commission:	Environment and Conservation
Division:	Solid Waste Management
Contact Person:	David Moran
Address:	5th Floor, L & C Annex 401 Church Street Nashville, TN 37243-1535
Phone:	(615) 532-0875
Email:	David.Moran@tn.gov

Any Individuals with disabilities who wish to participate in these proceedings (to review these filings) and may require aid to facilitate such participation should contact the following at least 10 days prior to the hearing:

ADA Contact:	ADA Coordinator
Address:	12th Floor, L&C Tower 401 Church Street Nashville, Tennessee 37243
Phone:	1-866-253-5827 (toll free) or (615) 532-0200 Hearing impaired callers may use the TN Relay Service 1-800-848-0298
Email:	Beverly.Evans@tn.gov

Hearing Location(s) (for additional locations, copy and paste table)

Address 1:	17th Floor, L & C Tower, Ruth Neff Conference Room – Side A		
Address 2:	401 Church Street		
City:	Nashville, Tennessee		
Zip:	37243		
Hearing Date :	08/05/11		
Hearing Time:	9:00 a.m.	X CST ___EST	

Additional Hearing Information:

The Division has prepared a redline version of this notice of the Notice of Rulemaking Hearing to aid public review and comment on this notice. Copies of these initial draft rules (and its redline version) are available for review at the Tennessee Department of Environment and Conservation's (TDEC's) Environmental Field Offices located as follows:

Memphis Environmental Field Office
8383 Wolf Lake Drive
Memphis, TN 38133
(901) 371-3000/ 1-888-891-8332

Cookeville Environmental Field Office
1221 South Willow Avenue
Cookeville, TN 38506
(931) 432-4015/ 1-888-891-8332

Jackson Environmental Field Office
1625 Hollywood Drive

Chattanooga Environmental Field Office
Suite 550 - State Office Building

Jackson, TN 38305
(731) 512-1300/ 1-888-891-8332

540 McCallie Avenue
Chattanooga, TN 37402-2013
(423) 634-5745/ 1-888-891-8332

Columbia Environmental Field Office
2484 Park Plus Drive
Columbia, TN 38401
(931) 380-3371/ 1-888-891-8332

Knoxville Environmental Field Office
3711 Middlebrook Pike
Knoxville, TN 37921-5602
(865)594-6035/ 1-888-891-8332

Nashville Environmental Field Office
711 R. S. Gass Blvd.
Nashville, TN 37243-1550
(615) 687-7000/1-888-891-8332

Johnson City Environmental Field Office
2305 Silverdale Road
Johnson City, TN 37601-2162
(423) 854-5400/1-888-891-8332

The redline version of this Notice of Rulemaking Hearing can be accessed for review using http://tn.gov/environment/swm/ppo.

Copies are available for review at the Nashville Central Office (see address below).

Tennessee Department of Environment and Conservation
Division of Solid Waste Management
5th Floor, L&C Tower
401 Church Street
Nashville, Tennessee 37243-1535
(615) 532-0780

Office hours for the Division's offices are from 8:00 AM to 4:30 PM, Monday through Friday (excluding holidays). Appointments should be made for all file reviews.

Oral or written comments are invited at the hearing. Additionally, written comments may be submitted prior to or after the public hearing to: Division of Solid Waste Management; Tennessee Department of Environment and Conservation; Attention: Mr. David Moran; 5th Floor, L & C Tower; 401 Church Street; Nashville, Tennessee 37243-1535; telephone 615-532-0875 or FAX 615-532-0886. However, such written comments must be received by the Division by 4:30 PM CST, August 10, 2011, in order to assure consideration. For further information, please contact Mr. David Moran at the above address or telephone number or by e-mail at David.Moran@tn.gov.

Revision Type (check all that apply):

___ Amendment
X New
X Repeal

Rule(s) (**ALL** chapters and rules contained in filing must be listed. If needed, copy and paste additional tables to accommodate more than one chapter. Please enter only **ONE** Rule Number/Rule Title per row.)

Chapter Number	**Chapter Title**
1200-01-11	Hazardous Waste Management Regulations
Rule Number	**Rule Title**
1200-01-11-.06	Standards for Owners and Operators of Hazardous Waste Treatment, Storage, and Disposal Facilities

Chapter Number	**Chapter Title**
0400-12-01	Hazardous Waste Management Regulations
Rule Number	**Rule Title**
0400-12-01-.06	Standards for Owners and Operators of Hazardous Waste Treatment, Storage, and Disposal Facilities

(Place substance of rules and other info here. Statutory authority must be given for each rule change. For information on formatting rules go to http://tn.gov/sos/rules/1360/1360.htm)

Repeal

Chapter 1200-01-11
Hazardous Waste Management Regulations

1200-01-11-.06 Standards for Owners and Operators of Hazardous Waste Treatment, Storage, and Disposal Facilities is repealed.

Authority: T.C.A. §§ 68-212-101 et seq. and 4-5-201 et seq.

New Rule

Chapter 0400-12-01
Hazardous Waste Management Regulations

0400-12-01-.06 Standards for Owners and Operators of Hazardous Waste Treatment, Storage, and Disposal Facilities.

(1) General [40 CFR 264 Subpart A]

(a) Purpose

1. 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 0400-12-01-.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" (T.C.A. §§68-211-101 through §68-211-111, and §68-211-301) 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 0400-12-01-.02(1)(e) as a "small quantity".

(ii) The owner or operator of a facility managing recyclable materials described in Rule 0400-12-01-.02(1)(f)1(ii),(iii) and (iv) (except to the extent they are referred to in Rule 0400-12-01-.11 or Rule 0400-12-01-.09(3),(6),(7) or (8).

(iii) A generator accumulating waste on-site in compliance with Rule 0400-12-01-.03(4)(e), unless the generator is accumulating the waste in a facility otherwise subject to this rule.

(iv) The owner or operator of a totally enclosed treatment facility, as defined in Rule 0400-12-01-.01(2).

(v) The owner or operator of one of the following units, as defined in Rule 0400-12-01-.01(2)(a), provided that if the owner or operator is diluting hazardous ignitable (D001) wastes (other than the D001 High TOC Subcategory defined in Rule 0400-12-01-.10(3)(a), Table Treatment Standards for Hazardous Wastes), or reactive (D003) waste, to remove the characteristic before land disposal, the

owner/operator must comply with the requirements set out in part (2)(h)2 of this rule:

(I) an elementary neutralization unit;

(II) an on-site wastewater treatment unit; or

(III) an off-site wastewater treatment unit located at a facility otherwise required to have a permit issued pursuant to Rule 0400-12-01-.07(7).

(vi) The addition of absorbent material to waste in a container (as defined in Rule 0400-12-01-.01(2)) or the addition of waste to absorbent material in a container, provided that these actions occur at the time waste is first placed in the container, and the owners or operators are in compliance with part (2)(h)2 of this rule and subparagraphs (9)(b) and (c) of this rule.

(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.

IV. An immediate threat to human health, public safety, property, or the environment, from the known or suspected presence of military munitions, other explosive material, or an explosive device, as determined by an explosive or munitions emergency response specialist as defined in Rule 0400-12-01-.01(2)(a).

(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 0400-12-01-.07 for those activities.

(IV) In the case of an explosives or munitions emergency response, if a Federal, State, Tribal or local official acting within the scope of his or her official responsibilities, or an explosives or munitions emergency response specialist, determines that immediate removal of the material or waste is necessary to protect human health or the environment, that official or specialist may authorize the removal of the material or waste by transporters who do not have Installation Identification Numbers and without the preparation of a manifest. In the case of emergencies involving military munitions, the responding military emergency response specialist's organizational unit must retain records for three years identifying the dates of the response, the responsible persons responding, the type and description of material addressed, and its disposition.

(viii) A transporter storing manifested shipments of hazardous waste in containers meeting applicable DOT and Tennessee Regulatory Commission regulations for packaging at a transfer facility for a period of ten days or less.

(ix) A farmer disposing of waste pesticides from his own use in compliance with Rule 0400-12-01-.02(l)(b)1(ii)(II).

(x) Universal waste handlers and universal waste transporters (as defined in Rule 0400-12-01-.01(2)(a)) handling the wastes listed in Rule 0400-12-01-.12(1)(a). These handlers are subject to regulation under Rule 0400-12-01-.12, when handling the universal wastes listed in Rule 0400-12-01-.12(1)(a).

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 (T.C.A. §§69-3-101 et seq.), through Chapter 1200-04-06 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 0400-12-01-.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 0400-12-01-.07(1)(c).

5. The requirements of this rule apply to the owner or operator of an on-site wastewater treatment unit, or to the owner or operator of an off-site wastewater treatment unit where the only wastes received from off-site are from facilities owned or operated by the same manufacturing corporation or subsidiaries of such corporation or from product distribution facilities operating under contract to that manufacturing corporation or subsidiaries only to the extent they are included in a permit-by-rule granted to such a person under Rule 0400-12-01-.07(1)(c).

6. The requirements of this rule apply to the owner or operator of a transfer facility where manifested shipments of hazardous waste in containers meeting applicable DOT and the Tennessee Regulatory Commission (TRC) packaging regulations are stored for a period of greater than 48 hours but less than ten days only to the extent they are included in a permit-by-rule granted to such a person under Rule 0400-12-01-.07(1)(c).

7. The requirements of this rule apply to owners or operators of all facilities which treat, store, or dispose of hazardous wastes referred to in Rule 0400-12-01-.10.

8. Rule 0400-12-01-.09(13)(f) identifies when the requirements of this rule apply to the storage of military munitions classified as solid waste under Rule 0400-12-01-.09(13)(c). The treatment and disposal of hazardous waste military munitions are subject to the applicable permitting, procedural, and technical standards in Rules 0400-12-01-.01 through .10.

9. The requirements of paragraphs (2), (3), and (4) of this rule and subparagraph (6)(l) of this rule do not apply to remediation waste management sites. (However, some remediation waste management sites may be a part of a facility that is subject to a traditional RCRA permit because the facility is also treating, storing or disposing of hazardous wastes that are not remediation wastes. In these cases, paragraphs (2), (3), and (4) and subparagraph (6)(l) of this rule do apply to the facility subject to the traditional RCRA permit.) Instead of the requirements of paragraphs (2), (3), and (4) of this rule, owners or operators of remediation waste management sites must:

(i) Obtain an Installation Identification Number by applying to the Director using EPA Form 8700-12;

(ii) Obtain a detailed chemical and physical analysis of a representative sample of the hazardous remediation wastes to be managed at the site. At a minimum, the analysis must contain all of the information which must be known to treat, store

or dispose of the waste according to this rule and Rule 0400-12-01-.10, and must be kept accurate and up to date;

(iii) Prevent people who are unaware of the danger from entering, and minimize the possibility for unauthorized people or livestock to enter onto the active portion of the remediation waste management site, unless the owner or operator can demonstrate to the Commissioner that:

(I) Physical contact with the waste, structures, or equipment within the active portion of the remediation waste management site will not injure people or livestock who may enter the active portion of the remediation waste management site; and

(II) Disturbance of the waste or equipment by people or livestock who enter onto the active portion of the remediation waste management site, will not cause a violation of the requirements of this rule;

(iv) Inspect the remediation waste management site for malfunctions, deterioration, operator errors, and discharges that may be causing, or may lead to, a release of hazardous waste constituents to the environment, or 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, and must remedy the problem before it leads to a human health or environmental hazard. Where a hazard is imminent or has already occurred, the owner/operator must take remedial action immediately;

(v) Provide personnel with classroom or on-the-job training on how to perform their duties in a way that ensures the remediation waste management site complies with the requirements of this rule, and on how to respond effectively to emergencies;

(vi) Take precautions to prevent accidental ignition or reaction of ignitable or reactive waste, and prevent threats to human health and the environment from ignitable, reactive and incompatible waste;

(vii) For remediation waste management sites subject to regulation under paragraphs (9) through (15) and (27) of this rule, the owner/operator must design, construct, operate, and maintain a unit within a 100-year floodplain to prevent washout of any hazardous waste by a 100-year flood, unless the owner/operator can meet the demonstration of part (2)(i)2 of this rule;

(viii) Not place any non-containerized or bulk liquid hazardous waste in any salt dome formation, salt bed formation, underground mine or cave;

(ix) Develop and maintain a construction quality assurance program for all surface impoundments, waste piles and landfill units that are required to comply with parts (11)(b)3 and 4, (12)(b)3 and 4, and (14)(b)3 and 4 of this rule at the remediation waste management site, according to the requirements of subparagraph (2)(j) of this rule;

(x) Develop and maintain procedures to prevent accidents and a contingency and emergency plan to control accidents that occur. These procedures must address proper design, construction, maintenance, and operation of remediation waste management units at the site. The goal of the plan must be to minimize the possibility of, and the hazards from a fire, explosion, or any unplanned sudden or non-sudden release of hazardous waste or hazardous waste constituents to air, soil, or surface water that could threaten human health or the environment. The plan must explain specifically how to treat, store and dispose of the hazardous remediation waste in question, and must be implemented immediately whenever a fire, explosion, or release of hazardous waste or hazardous waste constituents which could threaten human health or the environment;

(xi) Designate at least one employee, either on the facility premises or on call (that is, available to respond to an emergency by reaching the facility quickly), to coordinate 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;

(xii) Develop, maintain and implement a plan to meet the requirements in subparts 9(ii) through 9(vi) and 9(ix) through 9(x) of this subparagraph; and

(xiii) Maintain records documenting compliance with subparts 9(i) through 9(xii) of this subparagraph.

(c) Relationship to Interim Status Standards [40 CFR 264.3]

A facility owner or operator who has fully complied with the requirements for interim status - as defined in Rule 0400-12-01-.07(3) - must comply with the regulations specified in Rule 0400-12-01-.05 in lieu of the regulations of this rule, until final administrative disposition of his permit application is made, except as provided under paragraph (22) of this rule.

(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 [40 CFR 264 Subpart B]

(a) Applicability [40 CFR 264.10]

1. The regulations in this subpart apply to owners and operators of all hazardous waste facilities, except as provided in subparagraphs (1)(b) and (d) of this rule and in part 2 of this subparagraph.

2. Part (i)2 of this paragraph applies only to facilities subject to regulation under paragraphs (9) through (15) and (27) of this rule.

(b) Identification Number

Installation Identification Numbers will be assigned to facilities as part of the permit issued pursuant to Rule 0400-12-01-.07.

(c) Required Notices [40 CFR 264.12]

1. (i) 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.

(ii) The owner or operator of a recovery facility that has arranged to receive hazardous waste subject to 40 CFR Part 262, Subpart H must provide a copy of the movement document bearing all required signatures to the foreign exporter, to the Office of Enforcement and Compliance Assurance, Office of Federal Activities, International Compliance Assurance Division (2254A) , Environmental Protection Agency, 1200 Pennsylvania Avenue, NW., Washington, DC 20460; and to the competent authorities of all other countries concerned within three (3)

working days of receipt of the shipment. The original of the signed movement document must be maintained at the facility for at least three (3) years. In addition, such owner or operator shall, as soon as possible, but no later than thirty (30) days after the completion of recovery and no later than one (1) calendar year following the receipt of the hazardous waste, send a certificate of recovery to the foreign exporter and to the competent authority of the country of export and to EPA's Office of Enforcement and Compliance Assurance at the above address by mail, e-mail without a digital signature followed by mail, or fax followed by mail.

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 operator 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 0400-12-01-.07 and Rule 0400-12-01-.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 [40 CFR 264.13]

1. (i) Before an owner or operator treats, stores, or disposes of any hazardous wastes, or nonhazardous wastes if applicable under part (7)(d)4 of this rule, he must obtain a detailed chemical and physical analysis of a representative sample of the wastes. At a minimum, the analysis must contain all the information which must be known to treat, store, or dispose of the waste in accordance with this rule and Rule 0400-12-01-.10.

   (ii) The analysis may include data developed under Rule 0400-12-01-.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 of the information required by subpart (i) of this part, except as otherwise specified in Rule 0400-12-01-.10(1)(g)2 and 3. 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 wastes, or non-hazardous wastes if applicable under part (7)(d)4 of this rule, 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, or non-hazardous waste if applicable under part (7)(d)4 of this rule, 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 I of Rule 0400-12-01-.02(5); or

(II) An equivalent sampling method.

(Comment: See Rule 0400-12-01-.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.

(vi) Where applicable, the methods that will be used to meet the additional waste analysis requirements for specific waste management methods as specified in subparagraphs (2)(h), (14)(o), and (15)(b) and parts (30)(e)4 and (31)(n)4 and subparagraph (32)(d) of this rule and Rule 0400-12-01-.10(1)(g).

(vii) For surface impoundments exempted from land disposal restrictions under Rule 0400-12-01-.10(1)(d)1, the procedures and schedules for:

(I) The sampling of impoundment contents;

(II) The analysis of test data; and

(III) The annual removal of residues which are not delisted under Rule 0400-12-01-.01(3)(c) or which exhibit a characteristic of hazardous waste and either:

I. Do not meet applicable treatment standards of Rule 0400-12-01-.10(3); or

II. Where no treatment standards have been established:

A. Such residues are prohibited from land disposal under Rule 0400-12-01-.10(2)(c); or

B. Such residues are prohibited from land disposal under Rule 0400-12-01-.10(2)(d)6.

(viii) For owners and operators seeking an exemption to the air emission standards of paragraph (32) of this rule in accordance with subparagraph (32)(c) of this rule.

(I) If direct measurement is used for the waste determination, the procedures and schedules for waste sampling and analysis, and the results of the analysis of test data to verify the exemption.

(II) If knowledge of the waste is used for the waste determination, any information prepared by the facility owner or operator or by the generator of the hazardous waste, if the waste is received from off-site, that is used as the basis for knowledge of the waste.

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;

(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; and

(iii) The procedures that the owner or operator of an off-site landfill receiving containerized hazardous waste will use to determine whether a hazardous waste generator or treater has added a biodegradable sorbent to the waste in the container.

(Comment: Rule 0400-12-01-.07 requires that the waste analysis plan be submitted with part B of the permit application.)

(e) Security [40 CFR 264.14]

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 0400-12-01-.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 this part 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 (i) and (ii) of this part.)

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 written in English and in any other language predominant in the area surrounding the facility (e.g., facilities in counties bordering the Canadian province of Quebec must post signs in French; facilities in counties bordering Mexico must post signs in Spanish), 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)(h)2 of this rule for discussion of security requirements at disposal facilities during the post-closure care period.)

(f) General Inspection Requirements [40 CFR 264.15]

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:

(i) Release of hazardous waste constituents to the environment or

(ii) 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, the frequency should be based on the rate of deterioration of the equipment and the probability of an environmental or human health incident if the deterioration, malfunction, or operator error goes undetected between inspections. Areas subject to spills, such as loading and unloading areas, must be inspected daily when in use, except for Performance Track member facilities, that must inspect at least once each month, upon approval by the Regional Administrator, as described in subpart (v) of this part. At a minimum, the inspection schedule must include the items and frequencies called for in subparagraphs (9)(e), (10)(d),

(10)(f), (11)(g), (12)(e), (13)(i), (14)(d), (15)(h), (27)(c), (30)(d), (31)(c), (31)(d), (31)(i), and (32)(d) through (32)(j) of this rule, where applicable.

(Comment: Rule 0400-12-01-.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.)

(v) Performance Track member facilities that choose to reduce their inspection frequency must:

(I) Submit a request for a Class 1 permit modification with prior approval to the Regional Administrator. The modification request must identify the facility as a member of the National Environmental Performance Track Program and identify the management units for reduced inspections and the proposed frequency of inspections. The modification request must also specify, in writing, that the reduced inspection frequency will apply for as long as the facility is a Performance Track member facility, and that within seven calendar days of ceasing to be a Performance Track member, the facility will revert to the non-Performance Track inspection frequency. Inspections must be conducted at least once each month.

(II) Within 60 days, the Regional Administrator will notify the Performance Track member facility, in writing, if the request is approved, denied, or if an extension to the 60-day deadline is needed. This notice must be placed in the facility's operating record. The Performance Track member facility should consider the application approved if the Regional Administrator does not:

I. Deny the application; or

II. Notify the Performance Track member facility of an extension to the 60-day deadline. In these situations, the Performance Track member facility must adhere to the revised inspection schedule outlined in its request for a Class 1 permit modification and keep a copy of the application in the facility's operating record.

(III) Any Performance Track member facility that discontinues their membership or is terminated from the program must immediately notify the Regional Administrator of their change in status. The facility must place in its operating record a dated copy of this notification and revert back to the non-Performance Track inspection frequencies within seven calendar days.

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 [40 CFR 264.16]

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 0400-12-01-.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.

(iv) For facility employees that receive emergency response training pursuant to Occupational Safety and Health Administration (OSHA) regulations 29 CFR 1910.120(p)(8) and 1910.120(q), the facility is not required to provide separate emergency response training pursuant to this part, provided that the overall facility training meets all the requirements of this subparagraph.

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) General Requirements for Ignitable, Reactive, or Incompatible Wastes [40 CFR 264.17]

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 paragraphs 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) Location Standards [40 CFR 264.18]

(Note: Commercial Facilities must also comply with Chapter 1200-01-14.)

1. Seismic Considerations - (Reserved – See Rule 1200-01-14-.03(2))

2. Floodplain Considerations

(i) No new facility shall be located in the 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 or any hazardous waste by a 100-year flood, unless 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, landfills, and miscellaneous units, 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 0400-12-01-.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 a 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.

(j) Construction Quality Assurance Program [40 CFR 264.19]

1. CQA Program

(i) A construction quality assurance (CQA) program is required for all surface impoundment, waste pile, and landfill units that are required to comply with parts (11)(b)3 and 4, (12)(b)3 and 4, and (14)(b)3 and 4 of this rule. The program must ensure that the constructed unit meets or exceeds all design criteria and specifications in the permit. The program must be developed and implemented under the direction of a CQA officer who is a registered professional engineer.

(ii) The CQA program must address the following physical components, where applicable:

(I) Foundations;

(II) Dikes;

(III) Low-permeability soil liners;

(IV) Geomembranes (flexible membrane liners);

(V) Leachate collection and removal systems and leak detection systems; and

(VI) Final cover systems.

2. Written CQA Plan

The owner or operator of units subject to the CQA program under part 1 of this subparagraph must develop and implement a written CQA plan. The plan must identify steps that will be used to monitor and document the quality of materials and the condition and manner of their installation. The CQA plan must include:

(i) Identification of applicable units, and a description of how they will be constructed.

(ii) Identification of key personnel in the development and implementation of the CQA plan, and CQA officer qualifications.

(iii) A description of inspection and sampling activities for all unit components identified in subpart 1(ii) of this subparagraph, including observations and tests that will be used before, during, and after construction to ensure that the construction materials and the installed unit components meet the design specifications. The description must cover: Sampling size and locations; frequency of testing; data evaluation procedures; acceptance and rejection criteria for construction materials; plans for implementing corrective measures; and data or other information to be recorded and retained in the operating record under subparagraph (5)(d) of this rule.

3. Contents of Program

(i) The CQA program must include observations, inspections, tests, and measurements sufficient to ensure:

(I) Structural stability and integrity of all components of the unit identified in subpart 1(ii) of this subparagraph;

(II) Proper construction of all components of the liners, leachate collection and removal system, leak detection system, and final cover system, according to permit specifications and good engineering practices, and proper installation of all components (e.g., pipes) according to design specifications;

(III) Conformity of all materials used with design and other material specifications under subparagraphs (11)(b), (12)(b), and (14)(b) of this rule.

(ii) The CQA program shall include test fills for compacted soil liners, using the same compaction methods as in the full scale unit, to ensure that the liners are constructed to meet the hydraulic conductivity requirements of subitems (11)(b)3(i)(I)II, (12)(b)3(i)(I)II, and (14)(b)3(i)(I)II of this rule in the field. Compliance with the hydraulic conductivity requirements must be verified by using in-situ testing on the constructed test fill. The Commissioner may accept an alternative demonstration, in lieu of a test fill, where data are sufficient to show that a constructed soil liner will meet the hydraulic conductivity requirements of subitems (11)(b)3(i)(I)II, (12)(b)3(i)(I)II, and (14)(b)3(i)(I)II of this rule in the field.

4. Certification

Waste shall not be received in a unit subject to this subparagraph until the owner or operator has submitted to the Commissioner by certified mail or hand delivery a certification signed by the CQA officer that the approved CQA plan has been successfully carried out and that the unit meets the requirements of parts (11)(b)3 or 4, (12)(b)3 or 4, or (14)(b)3 or 4 of this rule; and the procedure in Rule 0400-12-01-.07(8)(a)12(ii)II has been completed. Documentation supporting the CQA officer's certification must be furnished to the Commissioner upon request.

(k) Co-management of Other Materials

The owner or operator may not treat, store, or dispose of other wastes or other materials along with hazardous wastes in hazardous waste management units subject to the requirements of this Rule unless:

1. The other waste or other material is labeled, marked, or otherwise clearly identifiable as to what it is;

2. The owner or operator is able to demonstrate that the other waste or other material is not a hazardous waste; and

3. The other waste or other material is managed in a manner that does not adversely impact compliance with the standards of this rule.

(3) Preparedness and Prevention [40 CFR 264 Subpart C]

(a) Applicability [40 CFR 264.30]

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 [40 CFR 264.31]

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 [40 CFR 264.32]

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 0400-12-01-.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 [40 CFR 264.33]

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 [40 CFR 264.34]

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 [40 CFR 264.35]

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 0400-12-01-.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) (RESERVED) [40 CFR 264.36]

(h) Arrangements with Local Authorities [40 CFR 264.37]

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 [40 CFR 264 Subpart D]

(a) Applicability [40 CFR 264.50]

The regulations in this paragraph apply to owners and operators of all hazardous waste facilities, except as otherwise provided in subparagraph (1)(b) and (1)(d) of this rule.

(b) Purpose and Implementation of Contingency Plan [40 CFR 264.51]

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 [40 CFR 264.52]

1. The contingency plan must describe the actions facility personnel must take to comply with subparagraphs (b) through (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 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. The owner or operator may develop one contingency plan which meets all regulatory requirements. The Department recommends that the plan be based on the National Response Team's Integrated Contingency Plan Guidance ("One Plan"). When modifications are made to non-RCRA provisions in an integrated contingency plan, the changes do not trigger the need for a RCRA permit modification.

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)(h) 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 [40 CFR 264.53]

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 0400-12-01-.07 and, after modification or approval, will become a condition of any permit issued.)

(e) Amendment of Contingency Plan [40 CFR 264.54]

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.

(f) Emergency Coordinator [40 CFR 264.55]

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 [40 CFR 264.56]

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 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 release 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 0400-12-01-.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 Rule 0400-12-01-.03, .04 and .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 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 [40 CFR 264 Subpart E]

(a) 1. Applicability [40 CFR 264.70]

The regulations in this paragraph apply to owners and operators of both on-site and off-site facilities, except as subparagraph (1)(b) of this rule provide otherwise. Subparagraphs (b), (c), and (g) of this paragraph do not apply to owners and operators of on-site facilities that do not receive any hazardous waste from off-site sources, nor to owners and operators of off-site facilities with respect to waste military munitions exempted from manifest requirements under Rule 0400-12-01-.09(13)(d)1. Part (d)2 of this paragraph only applies to permittees who treat, store, or dispose of hazardous wastes on-site where such wastes were generated.

2. The revised Manifest form and procedures in subparagraph (2)(a) of Rule 0400-12-01-.01, subparagraph (1)(g) of Rule 0400-12-01-.02, and subparagraphs (a), (b), (c), and (g) of this paragraph became effective September 5, 2006.

(b) Use of Manifest System [40 CFR 264.71]

1. (i) If a facility receives hazardous waste accompanied by a manifest, the owner, operator or his/her agent must sign and date the manifest as indicated in subpart (ii) of this part to certify that the hazardous waste covered by the manifest was received, that the hazardous waste was received except as noted in the Discrepancy space of the manifest, or that the hazardous waste was rejected as noted in the manifest Discrepancy space.

(ii) If a facility receives a hazardous waste shipment accompanied by a manifest, the owner, operator, or his agent, must:

(I) Sign and date by hand, each copy of the manifest;

(II) Note any discrepancies (as defined in part (c)1 of this paragraph) on each copy of the manifest;

(Comment: The Agency 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 manifest;

(IV) Within 30 days of 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.

(iii) If a facility receives hazardous waste imported from a foreign source, the receiving facility must mail a copy of the manifest and documentation confirming EPA's consent to the import of hazardous waste to the following address within thirty (30) days of delivery: Office of Enforcement and Compliance Assurance, Office of Federal Activities, International Compliance Assurance Division, OFA/OECA (2254A), U.S. Environmental Protection Agency, Ariel Rios Building, 1200 Pennsylvania Avenue, NW., Washington, DC 20460.

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 Agency 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 or a signed and dated copy of the shipping paper (if the manifest has not been received within 30 days after delivery) to the generator; and

(Comment: Rule 0400-12-01-.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 0400-12-01-.03.

(Comment: The provisions of Rule 0400-12-01-.03(4)(e) are applicable to the on-site accumulation of hazardous wastes by generators. Therefore, the provisions of Rule 0400-12-01-.03(4)(e) only apply to owners or operators who are shipping hazardous waste which they generated at that facility.)

4. Within three (3) working days of the receipt of a shipment subject to 40 CFR Part 262, Subpart H, the owner or operator of a facility must provide a copy of the movement document bearing all required signatures to the exporter, to the Office of Enforcement and Compliance Assurance, Office of Federal Activities, International Compliance Assurance Division (2254A), Environmental Protection Agency, 1200 Pennsylvania Avenue, NW., Washington, DC 20460, and to competent authorities of all other countries

concerned. The original copy of the movement document must be maintained at the facility for at least three (3) years from the date of signature.

5. A facility must determine whether the consignment state for a shipment regulates any additional wastes (beyond those regulated federally) as hazardous wastes under its state hazardous waste program. Facilities must also determine whether the consignment state or generator state requires the facility to submit any copies of the manifest to these states.

(c) Manifest Discrepancies [40 CFR 265.72]

1. Manifest discrepancies are:

   (i) Significant differences (as defined by part 2 of this subparagraph) between the quantity or type of hazardous waste designated on the manifest or shipping paper, and the quantity and type of hazardous waste a facility actually receives;

   (ii) Rejected wastes, which may be a full or partial shipment of hazardous waste that the TSDF cannot accept; or

   (iii) Container residues, which are residues that exceed the quantity limits for "empty" containers set forth in part (1)(g) 2 of Rule 0400-12-01-.02.

2. Significant differences in quantity are: For bulk waste, variations greater than 10 percent in weight; for batch waste, any variation in piece count, such as a discrepancy of one drum in a truckload. Significant differences 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.

3. Upon discovering a significant difference in quantity or type, 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.

4. (i) Upon rejecting waste or identifying a container residue that exceeds the quantity limits for "empty" containers set forth in part (1)(g)2 of Rule 0400-12-01-.02, the facility must consult with the generator prior to forwarding the waste to another facility that can manage the waste. If it is impossible to locate an alternative facility that can receive the waste, the facility may return the rejected waste or residue to the generator. The facility must send the waste to the alternative facility or to the generator within 60 days of the rejection or the container residue identification.

   (ii) While the facility is making arrangements for forwarding rejected wastes or residues to another facility under this subparagraph, it must ensure that either the delivering transporter retains custody of the waste, or the facility must provide for secure, temporary custody of the waste, pending delivery of the waste to the first transporter designated on the manifest prepared under part 5 or 6 of this subparagraph.

5. Except as provided in subpart (vii) of this part, for full or partial load rejections and residues that are to be sent off-site to an alternate facility, the facility is required to prepare a new manifest in accordance with Rule 0400-12-01-.03(3)(a) and the following instructions:

   (i) Write the generator's Installation Identification Number in Item 1 of the new manifest. Write the generator's name and mailing address in Item 5 of the new manifest. If the mailing address is different from the generator's site address, then write the generator's site address in the designated space in Item 5.

(ii) Write the name of the alternate designated facility and the facility's Installation Identification Number in the designated facility block (Item 8) of the new manifest.

(iii) Copy the Manifest Tracking Number found in Item 4 of the old manifest to the Special Handling and Additional Information Block of the new manifest, and indicate that the shipment is a residue or rejected waste from the previous shipment.

(iv) Copy the Manifest Tracking Number found in Item 4 of the new manifest to the manifest reference number line in the Discrepancy Block of the old manifest (Item 18a).

(v) Write the DOT description for the rejected load or the residue in Item 9 (U.S. DOT Description) of the new manifest and write the container types, quantity, and volume(s) of waste.

(vi) Sign the Generator's/Offeror's Certification to certify, as the offeror of the shipment, that the waste has been properly packaged, marked and labeled and is in proper condition for transportation and mail a signed copy of the manifest to the generator identified in Item 5 of the new manifest.

(vii) For full load rejections that are made while the transporter remains present at the facility, the facility may forward the rejected shipment to the alternate facility by completing Item 18b of the original manifest and supplying the information on the next destination facility in the Alternate Facility space. The facility must retain a copy of this manifest for its records, and then give the remaining copies of the manifest to the transporter to accompany the shipment. If the original manifest is not used, then the facility must use a new manifest and comply with subparts (i), (ii), (iii), (iv), (v), and (vi) of this part.

6. Except as provided in subpart (vii) of this part, for rejected wastes and residues that must be sent back to the generator, the facility is required to prepare a new manifest in accordance with subparagraph (3)(a) of Rule 0400-12-01-.03 and the following instructions:

(i) Write the facility's Installation Identification Number in Item 1 of the new manifest. Write the generator's name and mailing address in Item 5 of the new manifest. If the mailing address is different from the generator's site address, then write the generator's site address in the designated space for Item 5 of the new manifest.

(ii) Write the name of the initial generator and the generator's Installation Identification Number in the designated facility block (Item 8) of the new manifest.

(iii) Copy the Manifest Tracking Number found in Item 4 of the old manifest to the Special Handling and Additional Information Block of the new manifest, and indicate that the shipment is a residue or rejected waste from the previous shipment.

(iv) Copy the Manifest Tracking Number found in Item 4 of the new manifest to the manifest reference number line in the Discrepancy Block of the old manifest (Item 18a).

(v) Write the DOT description for the rejected load or the residue in Item 9 (U.S. DOT Description) of the new manifest and write the container types, quantity, and volume(s) of waste.

(vi) Sign the Generator's/Offeror's Certification to certify, as offeror of the shipment, that the waste has been properly packaged, marked and labeled and is in proper condition for transportation.

(vii) For full load rejections that are made while the transporter remains at the facility, the facility may return the shipment to the generator with the original manifest by completing Item 18a and 18b of the manifest and supplying the generator's information in the Alternate Facility space. The facility must retain a copy for its records and then give the remaining copies of the manifest to the transporter to accompany the shipment. If the original manifest is not used, then the facility must use a new manifest and comply with subparts (i), (ii), (iii), (iv), (v), (vi) and (viii) of this part.

(viii) For full or partial load rejections and container residues contained in non-empty containers that are returned to the generator, the facility must also comply with the exception reporting requirements in Rule 0400-12-01-.03(5)(c)1.

7. If a facility rejects a waste or identifies a container residue that exceeds the quantity limits for "empty" containers set forth in part (1)(g)2 of Rule 0400-12-01-.02 after it has signed, dated, and returned a copy of the manifest to the delivering transporter or to the generator, the facility must amend its copy of the manifest to indicate the rejected wastes or residues in the Discrepancy space of the amended manifest. The facility must also copy the Manifest Tracking Number from Item 4 of the new manifest to the Discrepancy space of the amended manifest, and must re-sign and date the manifest to certify to the information as amended. The facility must retain the amended manifest for at least three years from the date of amendment, and must within 30 days, send a copy of the amended manifest to the transporter and generator that received copies prior to their being amended.

(d) Operating Record [40 CFR 264.73]

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 for five (5) years unless noted as follows:

(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 I in paragraph (57) of this rule. This information must be maintained in the operating record until closure of the facility;

(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 that shows 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. This information must be maintained in the operating record until closure of the facility;

(Comment: See subparagraph (7)(j) of this rule for related requirements.)

(iii) Records and results of waste analyses and waste determinations performed as specified in subparagraphs (2)(d), (2)(h), (14)(o), (15)(b), (30)(e), (31)(n), (32)(d) of this rule, and part (1)(d)1 and subparagraph (1)(g) of Rule 0400-12-01-.10;

(iv) Summary reports and details of all incidents that require implementing the contingency plan as specified in part (4)(g)9 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 five (5) years);

(vi) Monitoring, testing or analytical data, and corrective action where required by paragraph (6), subparagraphs (2)(j), (10)(b), (10)(d), (10)(f), (11)(c), (11)(d), (11)(g), (12)(c) through (12)(e), (13)(g), (13)(i), (13)(k), (14)(c) through (14)(e), (14)(j), (27)(c), parts (30)(e)3 through (30)(e)6, subparagraph (30)(f), parts (31)(n)4 through (31)(n)9, subparagraph (31)(o), and subparagraph (32)(c)

through (32)(k) of this rule. Maintain in the operating record for five years, except for records and results pertaining to ground-water monitoring and cleanup which must be maintained in the operating record until closure of the facility;

(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. This information must be maintained in the operating record until closure of the facility;

(ix) 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 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;

(x) Records of the quantities and date of placement for each shipment of hazardous waste placed in land disposal units under an extension to the effective date of any land disposal restriction granted pursuant to Rule 0400-12-01-.10(1)(e), a petition pursuant to Rule 0400-12-01-.10(1)(f), or a certification under Rule 0400-12-01-.10(1)(h), and the applicable notice required by a generator under Rule 0400-12-01-.10(1)(g)1. This information must be maintained in the operating record until closure of the facility;

(xi) For an off-site treatment facility, a copy of the notice, and the certification and demonstration, if applicable, required by the generator or the owner or operator under Rule 0400-12-01-.10(1)(g) or (h);

(xii) For an on-site treatment facility, the information contained in the notice (except the manifest number), and the certification and demonstration if applicable, required by the generator or the owner or operator under Rule 0400-12-01-.10(1)(g) or (h);

(xiii) For an off-site land disposal facility, a copy of the notice, and the certification and demonstration if applicable, required by the generator or the owner or operator of a treatment facility under Rule 0400-12-01-.10(1)(g) or (h), whichever is applicable;

(xiv) For an on-site land disposal facility, the information contained in the notice required by the generator or owner or operator of a treatment facility under Rule 0400-12-01-.10(1)(g), except for the manifest number, and the certification and demonstration if applicable, required under Rule 0400-12-01-.10(1)(h), whichever is applicable;

(xv) For an off-site storage facility, a copy of the notice, and the certification and demonstration if applicable, required by the generator or the owner or operator under Rule 0400-12-01-.10(1)(g) or (h); and

(xvi) For an on-site storage facility, the information contained in the notice (except the manifest number), and the certification and demonstration if applicable, required by the generator or the owner or operator under Rule 0400-12-01-.10(1)(g) or (h).

(xvii) Any records required under subpart (1)(b)9(xiii) of this rule.

(xviii) Monitoring, testing or analytical data where required by subparagraph (15)(h) of this rule must be maintained in the operating record for five years, or as required by a permit issued after the effective date of this rulemaking, but no less than five (5) years.

(xix) Certifications as required by part (10)(g)6 of this rule must be maintained in the operating record until closure of the facility;

(e) Availability, Retention, and Disposition of Records [40 CFR 264.74]

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;

6. (RESERVED)

7. 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;

8. (Reserved)

9. (Reserved)

10. The certification signed by the owner or operator of the facility or his authorized representative.

(g) Unmanifested Waste Report [40 CFR 264.76]

1. 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 by part (3)(a)5 of Rule 0400-12-01-.04, and if the waste is not excluded from the manifest requirement by subparagraph (1)(e) of Rule 0400-12-01-.02, then the owner or operator must prepare and submit a letter to the Commissioner within fifteen days after receiving the waste. The unmanifested waste report must be submitted

on EPA form 8700-13B. Such report must be designated "Unmanifested Waste Report" and include the following information:

(i) The Installation Identification Number, name, and address of the facility;

(ii) The date the facility received the waste;

(iii) The Installation Identification Number, name, and address of the generator and the transporter, if available;

(iv) A description and the quantity of each unmanifested hazardous waste the facility received;

(v) The method of treatment, storage, or disposal for each hazardous waste;

(vi) The certification signed by the owner or operator of the facility or his authorized representative; and

(vii) 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.)

2. (RESERVED) [40 CFR 264.76(b)]

(h) Additional Reports [40 CFR 264.77]

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)9 of this rule;

2. Facility closures specified in subparagraph (7)(f) of this rule; and

3. As otherwise required by paragraphs (6), (11) through (14), (30), (31) and (32) of this rule.

(6) Releases From Solid Waste Management Units [40 CFR 264 Subpart F]

(a) Applicability [40 CFR 264.90]

1. (i) Except as provided in part 2 of this subparagraph, the regulations in this subpart apply to owners or operators of facilities that treat, store or dispose of hazardous waste. The owner or operator must satisfy the requirements identified in subpart (ii) of this part for all wastes (or constituents thereof) contained in solid waste management units at the facility, regardless of the time at which waste was placed in such units.

(ii) All solid waste management units must comply with the requirements in subparagraph (l) of this paragraph. A surface impoundment, waste pile, and land treatment unit or landfill that receives hazardous waste after July 26, 1982 (hereinafter referred to as a "regulated unit") must comply with the requirements of subparagraphs (b) through (k) of this paragraph in lieu of subparagraph (l) of this paragraph for purposes of detecting, characterizing and responding to releases to the uppermost aquifer. The financial responsibility requirements of subparagraph (l) of this paragraph apply to regulated units.

2. The owner or operator's regulated unit or units are not subject to regulation for releases into the uppermost aquifer under this subpart if:

(i) The owner or operator is exempted under subparagraph (1)(b) of this rule; or

(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,

(VI) The owner or operator will provide continuing operation and maintenance of these leak detection systems during the active life of the unit and the closure and post-closure care periods, and

(VII) To a reasonable degree of certainty, 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 subpart during the post-closure care period; or

(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 port-closure care period specified under subparagraph (7)(h) 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 paragraph on assumptions that maximize the rate of liquid migration.

(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)(h) of this rule if the owner or operator is conducting a detection monitoring program under subparagraph (i) of this paragraph; or

(iii) Apply during the compliance period under subparagraph (g) of this paragraph if the owner or operator is conducting a compliance monitoring program under subparagraph (j) of this paragraph or a corrective action program under subparagraph (k) of this paragraph.

4. Regulations in this paragraph may apply to miscellaneous units when necessary to comply with subparagraphs (27)(b) through (27)(d) of this rule.

5. The regulations of this paragraph apply to all owners and operators subject to the requirements of Rule 0400-12-01-.07(1)(b)9, when the Agency issues either a post-closure permit or an enforceable document (as defined in Rule 0400-12-01-.07(1)(b)9) at the facility. When the Agency issues an enforceable document, references in this paragraph to "in the permit" mean "in the enforceable document."

6. The Commissioner may replace all or part of the requirements of subparagraphs (6)(b) through (6)(k) of this rule applying to a regulated unit with alternative requirements for groundwater monitoring and corrective action for releases to groundwater set out in the permit (or in an enforceable document) (as defined in Rule 0400-12-01-.07(1)(b)9) where the Commissioner determines that:

(i) The regulated unit is situated among solid waste management units (or areas of concern), a release has occurred, and both the regulated unit and one or more solid waste management unit(s) (or areas of concern) are likely to have contributed to the release; and

(ii) It is not necessary to apply the groundwater monitoring and corrective action requirements of subparagraphs (6)(b) through (6)(k) of this rule because alternative requirements will protect human health and the environment.

(b) Required Programs [40 CFR 264.91]

1. Owners and operators subject to this subpart must conduct a monitoring and response program as follows:

(i) Whenever hazardous constituents under subparagraph (d) of this paragraph from a regulated unit are detected at a compliance point under subparagraph (f) of this paragraph, the owner or operator must institute a compliance monitoring program under subparagraph (j) of this paragraph. Detected is defined as statistically significant evidence of contamination as described in part (i)6 of this paragraph;

(ii) Whenever the ground-water protection standard under subparagraph (c) of this paragraph is exceeded, the owner or operator must institute a corrective action program under subparagraph (k) of this paragraph. Exceeded is defined as statistically significant evidence of increased contamination as described in part (j)4 of this paragraph;

(iii) Whenever hazardous constituents under subparagraph (d) of this paragraph from a regulated unit exceed concentration limits under subparagraph (e) of this paragraph in ground water between the compliance point under subparagraph (f) of this paragraph and the downgradient facility property boundary, the owner or operator must institute a corrective action program under subparagraph (k) of this paragraph; or

(iv) In all other cases, the owner or operator must institute a detection monitoring program under subparagraph (i) of this paragraph.

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 the owner or operator to 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 on a permit modification application to incorporate such a program could be taken.

(c) Ground-water Protection Standard [40 CFR 264.92]

The owner or operator must comply with conditions specified in the facility permit that are designed to ensure that hazardous constituents under subparagraph (d) of this paragraph detected in the ground water from a regulated unit do not exceed the concentration limits under subparagraph (e) of this paragraph in the uppermost aquifer underlying the waste management area beyond the point of compliance under subparagraph (f) of this paragraph during the compliance period under subparagraph (g) of this paragraph. The Commissioner will establish this ground-water protection standard in the facility permit when hazardous constituents have been detected in the ground water.

(d) Hazardous Constituents [40 CFR 264.93]

1. The Commissioner will specify in the facility permit the hazardous constituents to which the ground-water protection standard of subparagraph (c) of this paragraph applies. Hazardous constituents are constituents identified in Appendix VIII of Rule 0400-12-01-.02(5) that have been detected in ground water 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 VIII constituent from the list of hazardous constituents specified in the facility permit if he 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 constituents;

(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 the 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 Chapter 1200-04-06.

(e) Concentration Limits [40 CFR 264.94]

1. The Commissioner will specify in the facility permit concentration limits in the ground water for hazardous constituents established under subparagraph (d) of this paragraph. 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

Table 1 -- Maximum Concentration of Constituents for Ground-water Protection

Constituent	Maximum Concentration[1]
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,5,6,7,8,9a-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 ($C_{10}H_{10}Cl_6$, 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

FOOTNOTE: [1]Milligrams per liter.

(iii) Must not exceed an alternate limit established by the Commissioner under part 2 of this subparagraph.

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;

(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;

(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 the 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 Chapter 1200-04-06.

(f) Point of Compliance [40 CFR 264.95]

1. The Commissioner will specify in the facility permit the point of compliance at which the ground-water protection standard of subparagraph (c) of this paragraph 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 units.

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 [40 CFR 264.96]

1. The Commissioner will specify in the facility permit the compliance period during which the ground-water protection standard of subparagraph (c) of this paragraph 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) of this paragraph.

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) of this paragraph has not been exceeded for a period of three consecutive years.

(h) General Ground-water Monitoring Requirements [40 CFR 264.97]

The owner or operator must comply with the following requirements for any ground-water monitoring program developed to satisfy subparagraph (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;

      (I) A determination of background ground-water quality may include sampling of wells that are not hydraulically upgradient of the waste management area where:

         I. Hydrogeologic conditions do not allow the owner or operator to determine what wells are hydraulically upgradient; and

         II. Sampling at other wells will provide an indication of background ground-water quality that is representative or more representative than that provided by the upgradient wells; and

   (ii) Represent the quality of ground water passing the point of compliance.

   (iii) Allow for the detection of contamination when hazardous waste or hazardous constituents have migrated from the waste management area to the uppermost aquifer.

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. In detection monitoring or where appropriate in compliance monitoring, data on each hazardous constituent specified in the permit will be collected from background wells and wells at the compliance point(s). The number and kinds of samples collected to establish background shall be appropriate for the form of statistical test employed, following generally accepted statistical principles. The sample size shall be as large as necessary to ensure with reasonable confidence that a contaminant release to ground water from a facility will be detected. The owner or operator will determine an appropriate sampling procedure and interval for each hazardous constituent listed in the facility permit which shall be specified in the unit permit upon approval by the Commissioner. This sampling procedure shall be:

   (i) A sequence of at least four samples, taken at an interval that assures, to the greatest extent technically feasible, that an independent sample is obtained, by reference to the uppermost aquifer's effective porosity, hydraulic conductivity, and hydraulic gradient, and the fate and transport characteristics of the potential contaminants, or

   (ii) an alternate sampling procedure proposed by the owner or operator and approved by the Commissioner.

8. The owner or operator will specify one of the following statistical methods to be used in evaluating ground-water monitoring data for each hazardous constituent which, upon approval by the Commissioner, will be specified in the unit permit. The statistical test chosen shall be conducted separately for each hazardous constituent in each well. Where practical quantification limits (pql's) are used in any of the following statistical procedures to comply with subpart (h)9(v) of this paragraph, the pql must be proposed by the owner or operator and approved by the Commissioner. Use of any of the following statistical methods must be protective of human health and the environment and must comply with the performance standards outlined in part (h)9 of this paragraph.

   (i) A parametric analysis of variance (ANOVA) followed by multiple comparisons procedures to identify statistically significant evidence of contamination. The method must include estimation and testing of the contrasts between each compliance well's mean and the background mean levels for each constituent.

   (ii) An analysis of variance (ANOVA) based on ranks followed by multiple comparisons procedures to identify statistically significant evidence of contamination. The method must include estimation and testing of the contrasts between each compliance well's median and the background median levels for each constituent.

   (iii) A tolerance or prediction interval procedure in which an interval for each constituent is established from the distribution of the background data, and the level of each constituent in each compliance well is compared to the upper tolerance or prediction limit.

   (iv) A control chart approach that gives control limits for each constituent.

   (v) Another statistical test method submitted by the owner or operator and approved by the Commissioner.

9. Any statistical method chosen under subparagraph (h)8 of this paragraph for specification in the unit permit shall comply with the following performance standards, as appropriate:

(i) The statistical method used to evaluate ground-water monitoring data shall be appropriate for the distribution of chemical parameters or hazardous constituents. If the distribution of the chemical parameters or hazardous constituents is shown by the owner or operator to be inappropriate for a normal theory test, then the data should be transformed or a distribution-free theory test should be used. If the distributions for the constituents differ, more than one statistical method may be needed.

(ii) If an individual well comparison procedure is used to compare an individual compliance well constituent concentration with background constituent concentrations or a ground-water protection standard, the test shall be done at a Type I error level no less than 0.01 for each testing period. If a multiple comparisons procedure is used, the Type I experimentwise error rate for each testing period shall be no less than 0.05; however, the Type I error of no less than 0.01 for individual well comparisons must be maintained. This performance standard does not apply to tolerance intervals, prediction intervals or control charts.

(iii) If a control chart approach is used to evaluate ground-water monitoring data, the specific type of control chart and its associated parameter values shall be proposed by the owner or operator and approved by the Commissioner if he or she finds it to be protective of human health and the environment.

(iv) If a tolerance interval or a prediction interval is used to evaluate groundwater monitoring data, the levels of confidence and, for tolerance intervals, the percentage of the population that the interval must contain, shall be proposed by the owner or operator and approved by the Commissioner if he or she finds these parameters to be protective of human health and the environment. These parameters will be determined after considering the number of samples in the background data base, the data distribution, and the range of the concentration values for each constituent of concern.

(v) The statistical method shall account for data below the limit of detection with one or more statistical procedures that are protective of human health and the environment. Any practical quantification limit (pql) approved by the Commissioner under part (h)8 of this paragraph that is used in the statistical method shall be the lowest concentration level that can be reliably achieved within specified limits of precision and accuracy during routine laboratory operating conditions that are available to the facility.

(vi) If necessary, the statistical method shall include procedures to control or correct for seasonal and spatial variability as well as temporal correlation in the data.

10. Ground-water monitoring data collected in accordance with part 7 of this subparagraph including actual levels of constituents must be maintained in the facility operating record. The Commissioner will specify in the permit when the data must be submitted for review.

(i) Detection Monitoring Program [40 CFR 264.98]

An owner or operator required to establish a detection monitoring program under this subpart must, at 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:

(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 coefficients 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) of this paragraph. The ground-water monitoring system must comply with subpart (h)1(ii) and parts (h)2 and 3 of this paragraph.

3. The owner or operator must conduct a ground-water monitoring program for each chemical parameter and hazardous constituent specified in the permit pursuant to part 1 of this subparagraph in accordance with part (h)7 of this paragraph. The owner or operator must maintain a record of ground-water analytical data as measured and in a form necessary for the determination of statistical significance under part (h)8 of this paragraph.

4. The Commissioner will specify the frequencies for collecting samples and conducting statistical tests to determine whether there is statistically significant evidence of contamination for any parameter or hazardous constituent specified in the permit conditions under part 1 of this subparagraph in accordance with part (h)7 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 determine whether there is statistically significant evidence of contamination for any chemical parameter of hazardous constituent specified in the permit pursuant to part 1 of this subparagraph at a frequency specified under part 4 of this subparagraph.

(i) In determining whether statistically significant evidence of contamination exists, the owner or operator must use the method(s) specified in the permit under part (h)8 of this paragraph. These method(s) must compare data collected at the compliance point(s) to the background ground-water quality data.

(ii) The owner or operator must determine whether there is statistically significant evidence of contamination at each monitoring well as the compliance point within a reasonable period of time after completion of sampling. The Commissioner will specify in the facility permit what period of time is reasonable, after considering the complexity of the statistical test and the availability of laboratory facilities to perform the analysis of ground-water samples.

7. If the owner or operator determines pursuant to part 6 of this subparagraph that there is statistically significant evidence of contamination for chemical parameters or hazardous constituents specified pursuant to part 1 of this subparagraph at any monitoring well at the compliance point, he or she must:

(i) Notify the Division Director of this finding in writing within seven days. The notification must indicate what chemical parameters or hazardous constituents have shown statistically significant evidence of contamination;

(ii) Immediately sample the ground water in all monitoring wells and determine whether constituents in the list of Appendix IX in paragraph (57) of this rule are present, and if so, in what concentration. However, the Commissioner, on a discretionary basis, may allow sampling for a site-specific subset of constituents from the Appendix IX list in paragraph (57) of this rule and other representative/related waste constituents;

(iii) For any Appendix IX compounds found in the analysis pursuant to subpart (ii) of this part, the owner or operator may resample within one month or at an alternative site-specific schedule approved by the Commissioner and repeat the analysis for those compounds detected. If the results of the second analysis confirm the initial results, then these constituents will form the basis for compliance monitoring. If the owner or operator does not resample for the compounds found pursuant to subpart (ii) of this part, the hazardous constituents found during this initial Appendix IX analysis will form the basis for compliance monitoring;

(iv) Within 90 days, submit to the Division Director an application for a permit modification to establish a compliance monitoring program meeting the requirements of subparagraph (j) of this paragraph. The application must include the following information:

(I) An identification of the concentration of any Appendix IX constituent detected 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) of this paragraph;

(III) Any proposed additions or changes to the monitoring frequency, sampling and analysis procedures or methods, or statistical methods used at the facility necessary to meet the requirements of subparagraph (j) of this paragraph;

(IV) For each hazardous constituent detected at the compliance point, a proposed concentration limit under subpart (e)1(i) or (ii) of this paragraph, or a notice of intent to seek an alternate concentration limit under part (e)2 of this paragraph;

(v) Within 180 days, submit to the Division Director:

(I) All data necessary to justify an alternate concentration limit sought under part (e)2 of this paragraph; and

(II) An engineering feasibility plan for a corrective action program necessary to meet the requirement of subparagraph (k) of this paragraph, unless:

I. All hazardous constituents identified under subpart (ii) of this part are listed in Table 1 of subparagraph (e) of this paragraph and their concentrations do not exceed the respective values given in that Table; or

II. The owner or operator has sought an alternate concentration limit under part (e)2 of this paragraph for every hazardous constituent identified under subpart (ii) of this part;

(vi) If the owner or operator determines, pursuant to part 6 of this subparagraph, that there is a statistically significant difference for chemical parameters or hazardous constituents specified pursuant to part 1 of this subparagraph at any monitoring well at the compliance point, he or she may demonstrate that a source other than a regulated unit caused the contamination or that the detection is an artifact caused by an error in sampling, analysis, or statistical evaluation or natural variation in the ground water. 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 (iv) of this part; however, the owner or operator is not relieved of the requirement to submit a permit modification application within the

time specified in subpart (iv) of this part 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 Division Director in writing within seven days of determining statistically significant evidence of contamination at the compliance point that he intends to make a demonstration under this part;

(II) Within 90 days, submit a report to the Division Director which demonstrates that a source other than a regulated unit caused the contamination or that the contamination resulted from error in sampling, analysis, or evaluation;

(III) Within 90 days, submit to the Division Director an application for a permit modification to make any appropriate changes to the detection monitoring program facility; and

(IV) Continue to monitor in accordance with the detection monitoring program established under this subparagraph.

8. If the owner or operator determines that the detection monitoring program no longer satisfies the requirements of this subparagraph, he or she must, within 90 days, submit an application for a permit modification to make any appropriate changes to the program.

(j) Compliance Monitoring Program [40 CFR 264.99]

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) of this paragraph. 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) of this paragraph;

(ii) Concentration limits under subparagraph (e) of this paragraph for each of those hazardous constituents;

(iii) The compliance point under subparagraph (f) of this paragraph; and

(iv) The compliance period under subparagraph (g) of this paragraph.

2. The owner or operator must install a ground-water monitoring system at the compliance point as specified under subparagraph (f) of this paragraph. The ground-water monitoring system must comply with subpart (h)1(ii) and parts (h)2 and 3 of this paragraph.

3. The Commissioner will specify the sampling procedures and statistical methods appropriate for the constituents and the facility, consistent with parts (h)7 and 8 of this paragraph.

(i) The owner or operator must conduct a sampling program for each chemical parameter or hazardous constituent in accordance with part (h)7 of this paragraph.

(ii) The owner or operator must record ground-water analytical data as measured and in form necessary for the determination of statistical significance under part (h)8 of this paragraph for the compliance period of the facility.

4. The owner or operator must determine whether there is statistically significant evidence of increased contamination for any chemical parameter or hazardous constituent specified in the permit, pursuant to part 1 of this subparagraph, at a frequency specified under part 6 of this subparagraph.

   (i) In determining whether statistically significant evidence of increased contamination exists, the owner or operator must use the method(s) specified in the permit under part (h)8 of this paragraph. The methods(s) must compare data collected at the compliance point(s) to a concentration limit developed in accordance with subparagraph (e) of this paragraph.

   (ii) The owner or operator must determine whether there is statistically significant evidence of increased contamination 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.

5. The owner or operator must determine the ground-water flow rate and direction in the uppermost aquifer at least annually.

6. The Commissioner will specify the frequencies for collecting samples and conducting statistical tests to determine statistically significant evidence of increased contamination in accordance with part (h)7 of this paragraph.

7. Annually, the owner or operator must determine whether additional hazardous constituents from Appendix IX of paragraph (57) of this rule could possibly be present but are not on the detection monitoring list in the permit, are actually present in the uppermost aquifer and, if so, at what concentration, pursuant to procedures in part (6)(i)6 of this rule. To accomplish this, the owner or operator must consult with the Commissioner to determine on a case-by-case basis: which sample collection event during the year will involve enhanced sampling; the number of monitoring wells at the compliance point to undergo enhanced sampling; the number of samples to be collected from each of these monitoring wells; and, the specific constituents from Appendix IX of paragraph (57) of this rule for which these samples must be analyzed. If the enhanced sampling event indicates that Appendix IX constituents are present in the ground-water that are not already identified in the permit as monitoring constituents, the owner or operator may resample within one month or at an alternative site-specific schedule approved by the Commissioner, and repeat the analysis. If the second analysis confirms the presence of new constituents, the owner or operator must report the concentration of these additional constituents to the Division Director within seven days after the completion of the second analysis and add them to the monitoring list. If the owner or operator chooses not to resample, then he or she must report the concentrations of these additional constituents to the Division Director within seven days after completion of the initial analysis and add them to the monitoring list.

8. If the owner or operator determines pursuant to part 4 of this subparagraph that any concentration limits under subparagraph (e) of this paragraph are being exceeded at any monitoring well at the point of compliance he or she 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) of this paragraph within 180 days, or within 90 days if an engineering feasibility study has been previously submitted to the Commissioner under subpart (i)7(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.

9. If the owner or operator determines, pursuant to part 4 of this subparagraph, that the ground-water concentration limits under subparagraph (e) of this paragraph are being exceeded at any monitoring well at the point of compliance, he or she may demonstrate that a source other than a regulated unit caused the contamination or that the detection is an artifact caused by an error in sampling, analysis, or statistical evaluation or natural variation in the ground water. 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.

10. 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.

(k) Corrective Action Program [40 CFR 264.100]

An owner or operator required to establish a corrective action program under this subpart 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) of this paragraph. 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) of this paragraph;

(ii) Concentration limits under subparagraph (e) of this paragraph for each of those hazardous constituents;

(iii) The compliance point under subparagraph (f) of this paragraph; and

(iv) The compliance period under subparagraph (g) of this paragraph.

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 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 (j)9(ii) of this paragraph.

4. In conjunction with a corrective action program, the owner or operator must establish and implement a ground-water monitoring program to demonstrate 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) of this paragraph and must be as effective as that program in determining compliance with the ground-water protection standard under subparagraph (c) of this paragraph 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) of this paragraph that exceed concentration limits under subparagraph (e) of this paragraph in groundwater:

   (i) Between the compliance point under subparagraph (f) of this paragraph and the downgradient property boundary; and

   (ii) Beyond the facility boundary, where necessary to protect human health and the environment, unless the owner or operator demonstrates to the satisfaction of the Commissioner that, despite the owner's or operator's best efforts, the owner or operator was unable to obtain the necessary permission to undertake such action. The owner/operator is not relieved of all responsibility to clean up a release that has migrated beyond the facility boundary where off-site access is denied. On-site measures to address such releases will be determined on a case-by-case basis.

   (iii) Corrective action measures under this part must be initiated and completed within a reasonable period of time considering the extent of contamination.

   (iv) Corrective action measures under this part may be terminated once the concentration of hazardous constituents under subparagraph (d) of this paragraph is reduced to levels below their respective concentration limits under subparagraph (e) of this paragraph.

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) of this paragraph 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 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.

(l) Corrective Action For Solid Waste Management Units [40 CFR 264.101]

1. The owner or operator of a facility seeking a permit for the treatment, storage or disposal of hazardous waste must institute corrective action as necessary to protect human health and the environment for all releases of hazardous waste or constituents from any solid waste management unit at the facility, regardless of the time at which waste was placed in such unit.

2. Corrective action will be specified in the permit in accordance with this subparagraph and paragraph (22) of this rule. The permit will contain schedules of compliance for such corrective action (where such corrective action cannot be completed prior to issuance of the permit) and assurances of financial responsibility for completing such corrective action.

3. The owner or operator must implement corrective actions beyond the facility property boundary, where necessary to protect human health and the environment, unless the owner or operator demonstrates to the satisfaction of the Commissioner that, despite the owner's or operator's best efforts, the owner or operator was unable to obtain the necessary permission to undertake such actions. The owner/operator is not relieved of all responsibility to clean up a release that has migrated beyond the facility boundary where off-site access is denied. On-site measures to address such releases will be determined on a case-by-case basis. Assurances of financial responsibility for such corrective action must be provided.

4. This subparagraph does not apply to remediation waste management sites unless they are part of a facility subject to a permit for treating, storing or disposing of hazardous wastes that are not remediation wastes.

(7) Closure and Post-Closure [40 CFR 264 Subpart G]

(a) Applicability [40 CFR 264.110]

Except as subparagraphs (1)(b) and (1)(d) of this rule provide otherwise:

1. Subparagraphs (b) through (f) of this paragraph (which concern closure) apply to the owners and operators of all hazardous waste management facilities; and

2. Subparagraphs (g) through (k) of this paragraph (which concern post-closure care) apply to the owners and operators of:

(i) All hazardous waste disposal facilities;

(ii) Waste 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) or (12)(i) of this rule;

(iii) Tank systems that are required under subparagraph (10)(h) of this rule to meet the requirements for landfills; and

(iv) Containment buildings that are required under subparagraph (33)(c) of this rule to meet the requirement for landfills.

3. The Commissioner may replace all or part of the requirements of this paragraph (and the unit-specific standards referenced in part (b)3 of this paragraph applying to a regulated unit), with alternative requirements set out in a permit or in an enforceable document (as defined in Rule 0400-12-01-.07(1)(b)9), where the Commissioner determines that:

(i) The regulated unit is situated among solid waste management units (or areas of concern), a release has occurred, and both the regulated unit and one or more solid waste management unit(s) (or areas of concern) are likely to have contributed to the release, and

(ii) It is not necessary to apply the closure requirements of this paragraph (and those referenced herein) because the alternative requirements will protect human health and the environment, and will satisfy the closure performance standard of part (b)1 and 2 of this paragraph.

(b) Closure Performance Standard [40 CFR 264.111]

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 protect human health and the environment, post-closure escape of hazardous waste, hazardous constituents, leachate, contaminated run-off, or hazardous waste decomposition products to the ground or surface waters or to the atmosphere; and

3. Complies with the closure requirements of this paragraph, including, but not limited to, the requirements of subparagraphs (9)(i), (10)(h), (11)(i), (12)(i), (13)(k), (14)(k), (15)(l), paragraphs (16) and (17), and subparagraphs (27)(b) through (d) and (33)(c).

(c) Closure Plan; Amendment of Plan [40 CFR 264.112]

1. Written Plan

(i) The owner or operator of a hazardous waste management facility must have a written closure plan. In addition, certain surface impoundments and waste piles from which the owner or operator intends to remove or decontaminate the hazardous waste at partial or final closure are required by items (11)(i)3(i)(I) and (12)(i)3(i)(I) of this rule to have contingent closure plans. The plan must be submitted with the permit application, in accordance with Rule 0400-12-01-.07(5)(a)13, and approved by the Commissioner as part of the permit issuance procedures under Rule 0400-12-01-.07(7). In accordance with Rule 0400-12-01-.07(8)(b), the approved closure plan will become a condition of the permit.

(ii) The Commissioner's approval of the plan must ensure that the approved closure plan is consistent with subparagraphs (7)(b) through (f) of this paragraph and the applicable requirements of paragraph (6), subparagraphs (9)(i), (10)(h), (11)(i), (12)(i), (13)(k), (14)(k), (15)(h), paragraphs (16) and (17) and subparagraphs (27)(b) and (33)(c). Until final closure is completed and certified in accordance with subparagraph (f) of this paragraph, a copy of the approved plan and all approved revisions must be furnished to the Commissioner upon request, including requests by mail.

2. Content of Plan

The plan must identify steps necessary to perform partial and/or final closure of the facility at any point during its active life. The closure plan must include, at least:

(i) A description of how each hazardous waste management unit at the facility will be closed in accordance with subparagraph (b) of this paragraph; and

(ii) A description of how final closure of the facility will be conducted in accordance with subparagraph (b) of this paragraph. The description must identify the maximum extent of the operations which will be unclosed during the active life of the facility; and

(iii) An estimate of the maximum inventory of hazardous wastes ever on-site over the active life of the facility and a detailed description of the methods to be used during partial closures and final closure, including, but not limited to, methods for removing, transporting, treating, storing, or disposing of all hazardous wastes,

and identification of the type(s) of the off-site hazardous waste management units to be used, if applicable; and

(iv) A detailed description of the steps needed to remove or decontaminate all hazardous waste residues and contaminated containment system components, equipment, structures, and soils during partial and final closure, including, but not limited to, procedures for cleaning equipment and removing contaminated soils, methods for sampling and testing surrounding soils, and criteria for determining the extent of decontamination required to satisfy the closure performance standard; and

(v) A detailed description of other activities necessary during the closure period to ensure that all partial closures and final closure satisfy the closure performance standards, including, but not limited to, ground-water monitoring, leachate collection, and run-on and run-off control; and

(vi) A schedule for closure of each hazardous waste management unit and for final closure of the facility. The schedule must include, at a minimum, the total time required to close each hazardous waste management unit and the time required for intervening closure activities which will allow tracking of the progress of partial and final closure. (For example, in the case of a landfill unit, estimates of the time required to treat or dispose of all hazardous waste inventory and of the time required to place a final cover must be included.); and

(vii) For facilities that are expected to close prior to the expiration of the permit, an estimate of the expected year of final closure; and

(viii) Construction drawings showing details of the final cover (if any) necessary to ensure that the applicable closure requirements of this rule will be accomplished.

(ix) For facilities where the Commissioner has applied alternative requirements at a regulated unit under parts (6)(a)6, (7)(a)3, and/or (8)(a)4 of this rule, either the alternative requirements applying to the regulated unit, or a reference to the enforceable document containing those alternative requirements.

3. Amendment of Plan

The owner or operator must submit a written notification of or request for a permit modification to authorize a change in operating plans, facility design, or the approved closure plan in accordance with the applicable procedures in Rule 0400-12-01-.07(9). The written notification or request must include four (4) copies of the amended closure plan for review or approval by the Commissioner.

(i) The owner or operator may submit a written notification or request to the Commissioner for a permit modification to amend the closure plan at any time prior to the notification of partial or final closure of the facility.

(ii) The owner or operator must submit a written notification of or request for a permit modification to authorize a change in the approved closure plan whenever:

(I) Changes in operating plans or facility design affect the closure plan, or

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

(III) In conducting partial or final closure activities, unexpected events require a modification of the approved closure plan.

(IV) The owner or operator requests the Commissioner to apply alternative requirements to a regulated unit under parts (6)(a)6, (7)(a)3, and/or (8)(a)4 of this rule.

(iii) The owner or operator must submit a written request for a permit modification including at least four (4) copies of the amended closure plan for approval at least 60 days prior to the proposed change in facility design or operation, or no later than 60 days after an unexpected event has occurred which has affected the closure plan. If an unexpected event occurs during the partial or final closure period, the owner or operator must request a permit modification no later than 30 days after the unexpected event. An owner or operator of a surface impoundment or waste pile that intends to remove all hazardous waste at closure and is not otherwise required to prepare a contingent closure plan under items (11)(i)3(i)(I) or (12)(i)3(i)(I) of this rule must submit at least four (4) copies of an amended closure plan to the Commissioner no later than 60 days from the date that the owner or operator or Commissioner determines that the hazardous waste management unit must be closed as a landfill, subject to the requirements of subparagraph (14)(k) of this rule, or no later than 30 days from that date if the determination is made during partial or final closure. The Commissioner will approve, disapprove, or modify this amended plan in accordance with the procedures in Rule 0400-12-01-.07. In accordance with Rule 0400-12-01-.07(8)(b), the approved closure plan will become a condition of any permit issued.

(iv) The Commissioner may request modifications to the plan under the conditions described in subpart (ii) of this part. The owner or operator must submit the modified plan within 60 days of the Commissioner's request, or within 30 days if the change in facility conditions occurs during partial or final closure. Any modifications requested by the Commissioner will be approved in accordance with the procedures in Rule 0400-12-01-.07.

4. Notification of Partial Closure and Final Closure

(i) The owner or operator must notify the Commissioner in writing at least 60 days prior to the date on which he expects to begin closure of a surface impoundment, waste pile, land treatment or landfill unit, or final closure of a facility with such a unit. The owner or operator must notify the Commissioner in writing at least 45 days prior to the date on which he expects to begin final closure of a facility with only treatment or storage tanks, container storage, or incinerator units to be closed. The owner or operator must notify the Commissioner in writing at least 45 days prior to the date on which he expects to begin partial or final closure of a boiler or industrial furnace, whichever is earlier.

(ii) The date when he "expects to begin closure" must be either:

(I) No later than 30 days after the date on which any hazardous waste management unit receives the known final volume of hazardous wastes, or if there is a reasonable possibility that the hazardous waste management unit will receive additional hazardous wastes, no later than one year after the date on which the unit received the most recent volume of hazardous wastes. If the owner or operator of a hazardous waste management unit can demonstrate to the Commissioner that the hazardous waste management unit or facility has the capacity to receive additional hazardous wastes and he has taken all steps to prevent threats to human health and the environment, including compliance with all applicable permit requirements, the Commissioner may approve an extension to this one-year limit; or

(II) For units meeting the requirements of part (d)4 of this paragraph, no later than 30 days after the date on which the hazardous waste management unit receives the known final volume of non-hazardous wastes, or if there is a reasonable possibility that the hazardous waste management unit will receive additional non-hazardous wastes, no later than one year after the date on which the unit received the most recent volume of non-hazardous wastes. If the owner or operator can demonstrate to the

Commissioner that the hazardous waste management unit has the capacity to receive additional non-hazardous wastes and he has taken, and will continue to take, all steps to prevent threats to human health and the environment, including compliance with all applicable permit requirements, the Commissioner may approve an extension to this one-year limit.

(iii) If the facility's permit is terminated, or if the facility is otherwise ordered, by judicial decree or final order under T.C.A. §68-212-111, to cease receiving hazardous wastes or to close, then the requirements of this part do not apply. However, the owner or operator must close the facility in accordance with the deadlines established in subparagraph (d) of this paragraph.

5. Removal of wastes and decontamination or dismantling of equipment. Nothing in this subparagraph shall preclude the owner or operator from removing hazardous wastes and decontaminating or dismantling equipment in accordance with the approved partial or final closure plan at any time before or after notification of partial or final closure.

(d) Closure; Time Allowed for Closure [40 CFR 264.113]

1. Within 90 days after receiving the final volume of hazardous wastes, or the final volume of non-hazardous wastes if the owner or operator complies with all applicable requirements in parts 4 and 5 of this subparagraph, at a hazardous waste management unit or facility, the owner or operator must treat, remove from the unit or facility, 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 complies with all applicable requirements for requesting a modification to the permit and demonstrates that:

(i) (I) The activities required to comply with this part will, of necessity, take longer than 90 days to complete; or

(II) I. The hazardous waste management unit or facility has the capacity to receive additional hazardous wastes, or has the capacity to receive non-hazardous wastes if the owner or operator complies with parts 4 and 5 of this subparagraph; and

II. There is a reasonable likelihood that he or another person will recommence operation of the hazardous waste management unit or the facility within one year; and

III. Closure of the hazardous waste management unit or 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, including compliance with all applicable permit requirements.

2. The owner or operator must complete partial and final closure activities in accordance with the approved closure plan and within 180 days after receiving the final volume of hazardous wastes, or the final volume of non-hazardous wastes if the owner or operator complies with all applicable requirements in parts 4 and 5 of this subparagraph, at the hazardous waste management unit or facility. The Commissioner may approve an extension to the closure period if the owner or operator complies with all applicable requirements for requesting a modification to the permit and demonstrates that:

(i) (I) The partial or final closure activities will, of necessity, take longer than 180 days to complete; or

(II) I. The hazardous waste management unit or facility has the capacity to receive additional hazardous wastes, or has the

capacity to receive non-hazardous wastes if the owner or operator complies with parts 4 and 5 of this subparagraph; and

II. There is reasonable likelihood that he or another person will recommence operation of the hazardous waste management unit or the facility within one year; and

III. Closure of the hazardous waste management unit or 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 not operating hazardous waste management unit or facility, including compliance with all applicable permit requirements.

3. The demonstrations referred to in subparts 1(i) and 2(i) of this subparagraph must be made as follows:

(i) The demonstrations in subpart 1(i) of this subparagraph must be made at least 30 days prior to the expiration of the 90-day period in part 1 of this subparagraph; and

(ii) The demonstration in subpart 2(i) of this subparagraph must be made at least 30 days prior to the expiration of the 180-day period in part 2 of this subparagraph, unless the owner or operator is otherwise subject to the deadlines in part 4 of this subparagraph.

4. The Commissioner may allow an owner or operator to receive only non-hazardous wastes in a landfill, land treatment, or surface impoundment unit after the final receipt of hazardous wastes at that unit if:

(i) The owner or operator requests a permit modification in compliance with all applicable requirements in Rule 0400-12-01-.07 and in the permit modification request demonstrates that:

(I) The unit has the existing design capacity as indicated on the part A application to receive non-hazardous wastes; and

(II) There is a reasonable likelihood that the owner or operator or another person will receive non-hazardous wastes in the unit within one year after the final receipt of hazardous wastes; and

(III) The non-hazardous wastes will not be incompatible with any remaining wastes in the unit, or with the facility design and operating requirements of the unit or facility under this part; and

(IV) Closure of the hazardous waste management unit would be incompatible with continued operation of the unit or facility; and

(V) The owner or operator is operating and will continue to operate in compliance with all applicable permit requirements; and

(ii) The request to modify the permit includes an amended waste analysis plan, ground-water monitoring and response program, human exposure assessment required under federal RCRA section 3019, and closure and post-closure plans, and updated cost estimates and demonstrations of financial assurance for closure and post-closure care as necessary and appropriate, to reflect any changes due to the presence of hazardous constituents in the non-hazardous wastes, and changes in closure activities, including the expected year of closure if applicable under subpart (c)2(vii) of this paragraph, as a result of the receipt of non-hazardous wastes following the final receipt of hazardous wastes; and

(iii) The request to modify the permit includes revisions, as necessary and appropriate, to affected conditions of the permit to account for the receipt of non-hazardous wastes following receipt of the final volume of hazardous wastes; and

(iv) The request to modify the permit and the demonstrations referred to in subparts (i) and (ii) of this part are submitted to the Commissioner no later than 120 days prior to the date on which the owner or operator of the facility receives the known final volume of hazardous wastes at the unit, or no later than 90 days after the effective date of this rule in the state in which the unit is located, whichever is later.

5. In addition to the requirements in part 4 of this subparagraph, an owner or operator of a hazardous waste surface impoundment that is not in compliance with the liner and leachate collection system requirements in part (11)(b)3 of this rule must:

(i) Submit with the request to modify the permit:

(I) A contingent corrective measures plan, unless a corrective action plan has already been submitted under subparagraph (6)(j) of this rule; and

(II) A plan for removing hazardous wastes in compliance with subpart (ii) of this part; and

(ii) Remove all hazardous wastes from the unit by removing all hazardous liquids, and removing all hazardous sludges to the extent practicable without impairing the integrity of the liner(s), if any.

(iii) Removal of hazardous wastes must be completed no later than 90 days after the final receipt of hazardous wastes. The Commissioner may approve an extension to this deadline if the owner or operator demonstrates that the removal of hazardous wastes will, of necessity, take longer than the allotted period to complete and that an extension will not pose a threat to human health and the environment.

(iv) If a release that is a statistically significant increase (or decrease in the case of pH) over background values for detection monitoring parameters or constituents specified in the permit or that exceeds the facility's ground-water protection standard at the point of compliance, if applicable, is detected in accordance with the requirements in paragraph (6) of this rule, the owner or operator of the unit:

(I) Must implement corrective measures in accordance with the approved contingent corrective measures plan required by subpart (i) of this part no later than one year after detection of the release, or approval of the contingent corrective measures plan, whichever is later;

(II) May continue to receive wastes at the unit following detection of the release only if the approved corrective measures plan includes a demonstration that continued receipt of wastes will not impede corrective action; and

(III) May be required by the Commissioner to implement corrective measures in less than one year or to cease the receipt of wastes until corrective measures have been implemented if necessary to protect human health and the environment.

(v) During the period of corrective action, the owner or operator shall provide annual reports to the Commissioner describing the progress of the corrective action program, compile all ground-water monitoring data, and evaluate the effect of the continued receipt of non-hazardous wastes on the effectiveness of the corrective action.

(vi) The Commissioner may require the owner or operator to commence closure of the unit if the owner or operator fails to implement corrective action measures in accordance with the approved contingent corrective measures plan within one year as required in subpart (iv) of this part, or fails to make substantial progress in implementing corrective action and achieving the facility's ground-water protection standard or background levels if the facility has not yet established a ground-water protection standard.

(vii) If the owner or operator fails to implement corrective measures as required in subpart (iv) of this part, or if the Commissioner determines that substantial progress has not been made pursuant to subpart (vi) of this part he shall:

(I) Notify the owner or operator in writing that the owner or operator must begin closure in accordance with the deadlines in parts 1 and 2 of this subparagraph and provide a detailed statement of reasons for this determination, and

(II) Provide the owner or operator and the public, through a newspaper notice, the opportunity to submit written comments on the decision no later than 20 days after the date of the notice.

(III) If the Commissioner receives no written comments, the decision will become final five days after the close of the comment period. The Commissioner will notify the owner or operator that the decision is final, and that a revised closure plan, if necessary, must be submitted within 15 days of the final notice and that closure must begin in accordance with the deadlines in parts 1 and 2 of this subparagraph.

(IV) If the Commissioner receives written comments on the decision, he shall make a final decision within 30 days after the end of the comment period, and provide the owner or operator in writing and the public through a newspaper notice, a detailed statement of reasons for the final decision. If the Commissioner determines that substantial progress has not been made, closure must be initiated in accordance with the deadlines in parts 1 and 2 of this subparagraph.

(V) The final determinations made by the Commissioner under items (III) and (IV) of this subpart are not subject to administrative appeal.

(e) Disposal or Decontamination of Equipment, Structures and Soils [40 CFR 264.114]

During the partial and final closure periods, all contaminated equipment, structures and soils must be properly disposed of or decontaminated unless otherwise specified in subparagraphs (10)(h), (11)(i), (12)(i), (13)(k), (14)(k), (27)(b) or (27)(d) of this rule. By removing any hazardous wastes or hazardous constituents during partial and final closure, the owner or operator may become a generator of hazardous waste and must handle that waste in accordance with all applicable requirements of Rule 0400-12-01-.03.

(f) Certification of Closure [40 CFR 264.115]

Within 60 days of completion of closure of each hazardous waste surface impoundment, waste pile, land treatment, and landfill unit, and within 60 days of the completion of final closure, the owner or operator must submit to the Commissioner, by registered mail, a certification that the hazardous waste management unit or facility, as applicable, has been closed in accordance with the specifications in the approved closure plan. The certification must be signed by the owner or operator and by a qualified Registered Professional Engineer as defined in Rule 0400-12-01-.01(2)(a). Documentation supporting the qualified Registered Professional Engineer's certification must be furnished to the Commissioner upon request until he releases the owner or operator from the financial assurance requirements for closure under part (8)(d)4 of this rule.

(g) Survey Plat [40 CFR 264.116]

No later than the submission of the certification of closure of each hazardous waste disposal unit, the owner or operator must submit to the local zoning authority, or the authority with jurisdiction over local land use, and to the Commissioner, at least 4 copies of a survey plat indicating the location and dimensions of landfill cells or other hazardous waste disposal units 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 hazardous waste disposal unit in accordance with the applicable regulations of this paragraph.

(h) Post-closure Care and Use of Property [40 CFR 264.117]

1. (i) Post-closure care for each hazardous waste management unit subject to the requirements of subparagraphs (h) through (k) of this paragraph must begin after completion of closure of the unit and continue for 30 years after that date and must consist of at least the following:

(I) Monitoring and reporting in accordance with the requirements of paragraphs (6), (11), (12), (13), (14) and (27) of this rule; and

(II) Maintenance and monitoring of waste containment systems in accordance with the requirements of paragraphs (6), (11), (12), (13), (14) and (27) of this rule.

(ii) Any time preceding partial closure of a hazardous waste management unit subject to post-closure care requirements or final closure, or any time during the post-closure period for a particular unit, the Commissioner may, in accordance with the permit modification procedures in Rule 0400-12-01-.07:

(I) Shorten the post-closure care period applicable to the hazardous waste management unit, or facility, if all disposal units have been closed, if he finds that the reduced period is sufficient to protect human health and the environment (e.g., leachate or ground-water monitoring results, characteristics of the hazardous wastes, application of advanced technology, or alternative disposal, treatment, or re-use techniques indicate that the hazardous waste management unit or facility is secure); or

(II) Extend the post-closure care period applicable to the hazardous waste management unit or facility if he finds that the extended period is necessary to protect human health and the environment (e.g., leachate or ground-water monitoring results indicate a potential for migration of hazardous wastes at levels which may be harmful to human health and the environment).

2. The Commissioner may require, at partial and final closure, continuation of any of the security requirements of subparagraph (2)(e) of this rule during part or all of the post-closure period when:

(i) Hazardous wastes may remain exposed after completion of partial or final 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 partial or final closure must never be allowed to disturb the integrity of the final cover, liner(s), or any other components of the 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 (i) of this paragraph.

(i) Post-closure Plan; Amendment of Plan [40 CFR 264.118]

1. Written Plan

The owner or operator of a hazardous waste disposal unit must have a written post-closure plan. In addition, certain surface impoundments and waste piles from which the owner or operator intends to remove or decontaminate the hazardous wastes at partial or final closure are required by items (11)(i)3(i)(II) and (12)(i)3(i)(II) of this rule to have contingent post-closure plans. Owners or operators of surface impoundments and waste piles not otherwise required to prepare contingent post-closure plans under items (11)(i)3(i)(II) and (12)(i)3(i)(II) of this rule must submit a post-closure plan to the Commissioner within 90 days from the date that the owner or operator or Commissioner determines that the hazardous waste management unit must be closed as a landfill, subject to the requirements of subparagraphs (h) through (k) of this paragraph. The plan must be submitted with the permit application, in accordance with Rule 0400-12-01-.07(5)(a)1(xiii), and approved by the Commissioner as part of the permit issuance procedures under Rule 0400-12-01-.07(7). In accordance with Rule 0400-12-01-.07(8)(b), the approved post-closure plan will become a condition of the permit issued.

2. For each hazardous waste management unit subject to the requirements of this subparagraph, the post-closure plan must identify the activities that will be carried on after closure of each disposal unit 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), (14) and (27) of this rule during the post-closure care period; and

(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 (6), (11), (12), (13), (14) and (27) of this rule; and

(II) The function of the monitoring equipment in accordance with the requirements of paragraphs (6), (11), (12), (13), (14) and (27) of this rule; and

(iii) The name, address, and phone number of the person or office to contact about the hazardous waste disposal unit or facility during the post-closure care period.

(iv) For facilities where the Commissioner has applied alternative requirements at a regulated unit under parts (6)(a)6, (7)(a)3, and/or (8)(a)4 of this rule, either the alternative requirements that apply to the regulated unit, or a reference to the enforceable document containing those requirements.

3. Until final closure of the facility, four (4) copies of the approved post-closure plan must be furnished to the Commissioner upon request, including request by mail. After final closure has been certified, the person or office specified in subpart 2(iii) of this subparagraph must keep the approved post-closure plan during the remainder of the post-closure period.

4. Amendment of Plan

The owner or operator must submit a written notification of or request for a permit modification to authorize a change in the approved post-closure plan in accordance with the applicable requirements of Rule 0400-12-01-.07. The written notification or request must include 4 copies of the amended post-closure plan for review or approval by the Commissioner.

(i) The owner or operator may submit a written notification or request to the Commissioner for a permit modification to amend the post-closure plan at any time during the active life of the facility or during the post-closure care period.

(ii) The owner or operator must submit a written notification of or request for a permit modification to authorize a change in the approved post-closure plan whenever:

(I) Changes in operating plans or facility design affect the approved post-closure plan, or

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

(III) Events which occur during the active life of the facility, including partial and final closures, affect the approved post-closure plan.

(IV) The owner or operator requests the Commissioner to apply alternative requirements to a regulated unit under parts (6)(a)6, (7)(a)3, and/or (8)(a)4 of this rule.

(iii) The owner or operator must submit a written request for a permit modification at least 60 days prior to the proposed change in facility design or operation, or no later than 60 days after an unexpected event has occurred which has affected the post-closure plan. An owner or operator of a surface impoundment or waste pile that intends to remove all hazardous waste at closure and is not otherwise required to submit a contingent post-closure plan under items (11)(i)3(i)(II) and (12)(i)3(i)(II) of this rule must submit a post-closure plan to the Commissioner no later than 90 days after the date that the owner or operator or Commissioner determines that the hazardous waste management unit must be closed as a landfill, subject to the requirements of subparagraph (14)(k) of this paragraph. The Commissioner will approve, disapprove or modify this plan in accordance with the procedures in Rule 0400-12-01-.07. In accordance with Rule 0400-12-01-.07(8)(b), the approved post-closure plan will become a permit condition.

(iv) The Commissioner may request modifications to the plan under the conditions described in subpart (ii) of this part. The owner or operator must submit the modified plan no later than 60 days after the Commissioner's request, or no later than 90 days if the unit is a surface impoundment or waste pile not previously required to prepare a contingent post-closure plan. Any modifications requested by the Commissioner will be approved, disapproved, or modified in accordance with the procedures in Rule 0400-12-01-.07.

(j) Post-closure Notices [40 CFR 264.119]

1. No later than 60 days after certification of closure of each hazardous waste disposal unit, the owner or operator must submit to the local zoning authority, or the authority with jurisdiction over local land use, and to the Commissioner at least 4 copies of a record of the type, location, and quantity of hazardous wastes disposed of within each cell or other disposal unit of the facility. For hazardous wastes disposed of before March 2, 1981, the owner or operator must identify the type, location, and quantity of the hazardous wastes to the best of his knowledge and in accordance with any records he has kept.

2. Within 60 days of certification of closure of the first hazardous waste disposal unit and within 60 days of certification of closure of the last hazardous waste disposal unit, the owner or operator must:

(i) 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:

(I) The land has been used to manage hazardous wastes; and

(II) Its use is restricted under paragraph (7) of Rule 0400-12-01-.06; and

(III) The survey plat and record of the type, location, and quantity of hazardous wastes disposed of within each cell or other hazardous waste disposal unit of the facility required by subparagraph (g) of this paragraph and part 1 of this subparagraph have been filed with the local zoning authority or the authority with jurisdiction over local land use and with the Commissioner; and

(ii) Submit a certification, signed by the owner or operator, that he has recorded the notation specified in subpart (i) of this part, including a copy of the document in which the notation has been placed, to the Commissioner.

3. If the owner or operator or any subsequent owner or operator of the land upon which a hazardous waste disposal unit is located wishes to remove hazardous wastes and hazardous waste residues, the liner, if any, contaminated soils, he must request a modification to the post-closure permit in accordance with the applicable requirements of Rule 0400-12-01-.07. The owner or operator must demonstrate that the removal of hazardous wastes will satisfy the criteria of part (h)3 of this paragraph. By removing hazardous waste, the owner or operator may become a generator of hazardous waste and must manage it in accordance with all applicable requirements of this Chapter (0400-12-01). If he is granted a permit modification or otherwise granted approval to conduct such removal activities, the owner or operator may request that the Commissioner approve either:

(i) The removal of the notation on the deed to the facility property or other instrument normally examined during title search; or

(ii) The addition of a notation to the deed or instrument indicating the removal of the hazardous waste.

(k) Certification of Completion of Post-closure Care [40 CFR 264.120]

No later than 60 days after completion of the established post-closure care period for each hazardous waste disposal unit, the owner or operator must submit to the Commissioner, by registered mail, a certification that the post-closure care period for the hazardous waste disposal unit was performed in accordance with the specifications in the approved post-closure plan. The certification must be signed by the owner or operator and a qualified Professional Engineer. Documentation supporting the qualified Professional Engineer's certification must be furnished to the Commissioner upon request until he releases the owner or operator from the financial assurance requirements for post-closure care under part (8)(f)4 of this rule.

(8) Financial Requirements [40 CFR 264 Subpart H]

(a) Applicability [40 CFR 264.140]

1. The requirements of subparagraphs (c), (d), (g), (h), (i) and (k) through (p) 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;

   (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;

   (iii) Tank systems that are required under subparagraph (10)(h) of this rule to meet the requirements for landfills; and

   (iv) Containment buildings that are required under subparagraph (33)(c) of this rule to meet the requirements for landfills.

3. State and Federal governments are exempt from the requirements of this paragraph except for part (f)6. Part (f)6 shall be applicable to permitted facilities or any site that otherwise will eventually cease to operate while containing, storing, or otherwise treating hazardous wastes.

4. The Commissioner may replace all or part of the requirements of this paragraph applying to a regulated unit with alternative requirements for financial assurance set out in the permit or in an enforceable document (as defined in Rule 0400-12-01-.07(1)(b)9), where the Commissioner:

   (i) Prescribes alternative requirements for the regulated unit under parts (6)(a)6 and/or (7)(a)3 of this rule, and

   (ii) Determines that it is not necessary to apply the requirements of this paragraph because the alternative financial assurance requirements will protect human health and the environment.

(b) Definitions of Terms Used in This Paragraph [40 CFR 264.141]

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)(h) through (k) of this rule.

7. The following terms are used in the specifications for the financial tests for financial assurance for closure, post-closure care, and 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 existing resources properly classifiable as current assets or the creation of other current liabilities.

"Current plugging and abandonment cost estimate" means the most recent of the estimates prepared in accordance with Tennessee Rule 1200-04-06-.09(10) or 40 CFR 144.62(a), (b), and (c) (as this Federal regulation exists on the effective date of this rulemaking), whichever is greater.

"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.

9. "Substantial business relationship" means the extent of a business relationship necessary under applicable Tennessee law to make a guarantee contract issued incident to that relationship valid and enforceable. A "substantial business relationship" must arise from a pattern of recent or ongoing business transactions, in addition to the guarantee itself, such that a currently existing business relationship between the guarantor and the owner or operator is demonstrated to the satisfaction of the Commissioner.

(c) Cost Estimate for Closure [40 CFR 264.142]

1. The owner or operator must have a detailed written estimate, in current dollars, of the cost of closing the facility in accordance with the requirements in subparagraphs (7)(b)-(f) of this rule and applicable closure requirements in subparagraphs (9)(i), (10)(h), (11)(i), (12)(i), (13)(k), (14)(k), (15)(l), (27)(b) through (27)(d) and (33)(c) and paragraphs (16) and (17) of this rule.

   (i) The estimate must equal the cost of final closure at the point in the facility's active life when the extent and manner of its operation would make closure the most expensive, as indicated by its closure plan (see part (7)(c)2 of this rule); and

   (ii) The closure cost estimate must be based on the costs to the owner or operator of hiring a third party to close the facility. A third party is a party who is neither a parent nor a subsidiary of the owner or operator. (See definition of parent corporation at part (b)5 of this paragraph). The owner or operator may use costs for on-site disposal if he can demonstrate that on-site disposal capacity will exist at all times over the life of the facility.

   (iii) The closure cost estimate may not incorporate any salvage value that may be realized with the sale of hazardous wastes, or non-hazardous wastes if applicable under part (7)(d)4 of this rule, facility structures or equipment, land, or other assets associated with the facility at the time of partial or final closure.

   (iv) The owner or operator may not incorporate a zero cost for hazardous wastes, or non-hazardous wastes if applicable under part (7)(d)4 of this rule, that might have economic value.

2. During the active life of the facility, the owner or operator must adjust the closure cost estimate for inflation within 60 days prior to the anniversary date of the establishment of the financial instrument(s) used to comply with subparagraph (d) of this paragraph. For owners and operators using the financial test or corporate guarantee, the closure cost estimate must be updated for inflation within 30 days after the close of the firm's fiscal year and before submission of updated information to the Division Director as specified in subpart (g)8(v) of this paragraph. The adjustment may be made by recalculating the maximum costs of closure in current dollars, or by using an inflation factor derived from the most recent Implicit Price Deflator for Gross National Product published by the U.S. Department of Commerce in its Survey of Current Business, as specified in subparts (i) and (ii) of this part. 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. During the active life of the facility, the owner or operator must revise the closure cost estimate no later than 30 days after the Commissioner has approved the request to modify the closure plan, if the 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 or she 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 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 5 of this subparagraph.

   (i) Release of the owner or operator from the requirements of this subparagraph

   Within 60 days after receiving certifications from the owner or operator and a qualified Professional Engineer that final closure has been accomplished in accordance with the approved 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 final closure of the facility, unless the Commissioner or Board has reason to believe that final closure has not been in accordance with the approved closure plan. The Commissioner shall provide the owner or operator a detailed written statement of any such reason to believe that closure has not been in accordance with the approved closure plan.

   (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 or Board 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 approved closure plan when required to do so. Any such forfeiture action shall follow the procedures provided in subparagraphs (l) and (m) of this paragraph.

(Note: The original effective date of these regulations was October 31, 1980.)

(e) Cost Estimate for Post-closure Care [40 CFR 264.144]

1. The owner or operator of a disposal surface impoundment, disposal miscellaneous unit, land treatment unit, or landfill unit, or of a surface impoundment or waste pile required under parts (11)(i) and (12)(i) of this rule to prepare a contingent closure and post-closure plan, must have a detailed 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)(h)-(k), (11)(i), (12)(i), (13)(k), (14)(k) and (27)(d) of this rule.

   (i) The post-closure cost estimate must be based on the costs to the owner or operator of hiring a third party to conduct post-closure care activities. A third party is a party who is neither a parent nor a subsidiary of the owner or operator. (See definition of "parent corporation" at part (b)5 of this paragraph.)

   (ii) 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 subparagraph (7)(h) of this rule.

2. During the active life of the facility, the owner or operator must adjust the post-closure cost estimate for inflation within 60 days prior to the anniversary date of the establishment of the financial instrument(s) used to comply with subparagraph (f) of this paragraph. For owners or operators using the financial test or corporate guarantee, the post-closure cost estimate must be updated for inflation within 30 days after the close of the firm's fiscal year and before the submission of updated information to the Division Director as specified in subpart (g)8(v) of this paragraph. The adjustment may be made by recalculating the post-closure cost estimate in current dollars or by using an inflation factor derived from the most recent Implicit Price Deflator for Gross National Product published by the U.S. Department of Commerce in its Survey of Current Business as specified in subparts (i) and (ii) of this part. 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. During the active life of the facility, the owner or operator must revise the post-closure cost estimate within 30 days after the Commissioner has approved the request to modify the post-closure plan, if the 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.

(f) Financial Assurance for Post-closure Care

The owner or operator of a hazardous waste management unit subject to the requirements of subparagraph (c) of this paragraph must establish 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 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) Release of the owner or operator from the requirement of this subparagraph

   Within 60 days after receiving certifications from the owner or operator and a qualified Professional Engineer that post-closure care period has been completed for a hazardous waste disposal unit in accordance with the approved post-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 post-closure care of that unit, unless the Commissioner or Board has reason to believe that post-closure care has not been in accordance with the approved post-closure plan. The Commissioner shall provide the owner or operator a detailed written statement of any such reason to believe that closure has not been in accordance with the approved post-closure plan.

   (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 approved post-closure plan. Any such forfeiture action shall follow the procedures provided in subparagraphs (l) and (m) of this paragraph.

6. If the Commissioner determines that there is a reasonable probability that a facility or site will cease to operate while hazardous waste constituents remain on or in the facility or site, the Commissioner may require the posting of financial assurance or the payment of a disposal fee for the perpetual care of the facility or site. This financial assurance or fee shall be in addition to any other financial assurance or fee. The amount of the financial assurance or fee shall be based upon the estimated cost of maintaining the facility or site in perpetuity. The Commissioner may institute the requirement to pay this financial assurance or fee through a permit modification or through the issuance of an order. Such permit modification or order shall specify the manner of payment and the terms for use of the funds paid.

(Note: The original effective date of these regulations was October 31, 1980.)

(g) Mechanisms of Financial Assurance [40 CFR 264.143 and 264.145]

1. Closure and/or Post-closure Trust Fund

An owner or operator may satisfy the requirements of subparagraphs (d) and/or (f) of this paragraph by establishing a closure and/or post-closure trust fund which conforms to the requirements of this part and submitting an originally signed duplicate of the trust agreement to the Division Director. An owner or operator of a new facility must submit the originally signed duplicate of the trust agreement to the Division Director.

(i) The trustee of the trust fund must be licensed to do business as a trustee in Tennessee.

(ii) The wording of the trust agreement must be identical to the wording specified in subpart (p)1(i) of this paragraph, and the trust agreement must be accompanied by a formal certification of acknowledgment (for example, see subpart (p)1(ii) of this paragraph). Schedule A of the trust agreement must be updated within 60 days after a change in the amount of the current closure and/or post-closure care cost estimate covered by the agreement.

(iii) Payments into the trust fund must be made annually by the owner or operator over the term of the initial permit or over the remaining operating life of the facility as estimated in the closure plan, whichever period is shorter; this period is hereafter referred to as the "pay-in period." The payments into the closure and/or post-closure care trust fund must be made as follows:

(I) For a new facility, the first payment must be made before the initial receipt of hazardous waste for treatment, storage, or disposal. A receipt from the trustee for this payment must be submitted by the owner or operator to the Division Director before this initial receipt of hazardous waste. The first payment must be at least equal to the current closure cost estimate, except as provided in subparagraph (h) of this paragraph, divided by the number of years in the pay-in period. Subsequent payments must be made no later than 30 days after each anniversary date of the first payment. The amount of each subsequent payment must be determined by this formula:

$$Next\ payment = \frac{CE - CV}{Y}$$

where CE is the current closure cost estimate, CV is the current value of the trust fund, and Y is the number of years remaining in the pay-in period.

(II) If an owner or operator establishes a trust fund as specified in Rule 0400-12-01-.05(8)(g)1, and the value of that trust fund is less than the current closure and/or post-closure care cost estimate when a permit is awarded for the facility, the amount of the current closure and/or post-closure care cost estimate still to be paid into the trust fund must be paid in over the pay-in period as defined in subpart (iii) of this part. Payments must continue to be made no later than 30 days after each anniversary date of the first payment made pursuant to Rule 0400-12-01-.05. The amount of each payment must be determined by this formula:

$$Next\ payment = \frac{CE - CV}{Y}$$

where CE is the current closure cost estimate, CV is the current value of the trust fund, and Y is the number of years remaining in the pay-in period.

(iv) The owner or operator may accelerate payments into the trust fund or he may deposit the full amount of the current closure and/or post-closure care cost estimate at the time the fund is established. However, he must maintain the value of the fund at no less than the value that the fund would have if annual payments were made as specified in subpart (iii) of this part.

(v) If the owner or operator establishes a closure trust fund after having used one or more alternate mechanisms specified in this paragraph or in Rule 0400-12-01-.05(8)(g), his first payment must be in at least the amount that the fund would contain if the trust fund were established initially and annual payments made according to specifications of this part and Rule 0400-12-01-.05(8)(g)1, as applicable.

(vi) After the pay-in period is completed, whenever the current closure and/or post-closure care cost estimate changes, the owner or operator must compare the new estimate with the trustee's most recent annual valuation of the trust fund. If the value of the fund is less than the amount of the new estimate, the owner or operator, within 60 days after the change in the cost estimate, must either deposit an amount into the fund so that its value after this deposit at least equals the amount of the current closure and/or post-closure care cost estimate, or obtain other financial assurance as specified in this paragraph to cover the difference.

(vii) If the value of the trust fund is greater than the total amount of the current closure and/or post-closure care cost estimate, the owner or operator may submit a written request to the Division Director for release of the amount in excess of the current closure and/or post-closure care cost estimate.

(viii) If an owner or operator substitutes other financial assurance as specified in this paragraph for all or part of the trust fund, he may submit a written request to the Division Director for release of the amount in excess of the current closure and/or post-closure care cost estimate covered by the trust fund.

(ix) Within 60 days after receiving a request from the owner or operator for release of funds as specified in subparts (vii) or (viii) of this part, the Commissioner will instruct the trustee to release to the owner or operator such funds as the Commissioner specifies in writing.

(x) After beginning partial or final closure and/or post-closure care, an owner or operator or another person authorized to conduct partial or final closure and/or post-closure care may request reimbursements for partial or final closure and/or post-closure care expenditures by submitting itemized bills to the Division Director. The owner or operator may request reimbursements for partial closure and/or post-closure care only if sufficient funds are remaining in the trust fund to cover the maximum costs of closing the facility over its remaining operating life and/or remaining costs of post-closure care of the facility. Within 60 days after receiving bills for partial or final closure and/or post-closure care activities, the Commissioner will instruct the trustee to make reimbursements in those amounts as the Commissioner specifies in writing, if the Division Director determines that the partial or final closure and/or post-closure care expenditures are in accordance with the approved closure and/or post-closure care plan, or otherwise justified. If the Commissioner has reason to believe that the maximum cost of closure and/or post-closure care over the remaining life of the facility and/or post-closure care period will be significantly greater than the value of the trust fund, he may withhold reimbursements of such amounts as he deems prudent until he determines, in accordance with part (d)4 and/or part (f)4 of this paragraph that the owner or operator is no longer required to maintain financial assurance for final closure and/or post-closure care of the facility. If the Commissioner does not instruct the trustee to make such reimbursements, he will provide the owner or operator with a detailed written statement of reasons.

(xi) The Commissioner will agree to termination of the trust when:

(I) An owner or operator substitutes alternate financial assurance as specified in this paragraph; or

(II) The Commissioner releases the owner or operator from the requirements of subparagraphs (d) and/or (f) of this paragraph in accordance with parts (d)4 and/or (f)4 of this paragraph.

2. Surety Bond Guaranteeing Payment Into a Closure and/or Post-closure Trust Fund

An owner or operator may satisfy the requirements of subparagraphs (d) and/or (f) of this paragraph by obtaining a surety bond which conforms to the requirements of this part and submitting the bond to the Division Director. An owner or operator of a new facility must submit the bond to the Division Director.

(i) The surety company issuing the bond must be licensed to do business as a surety in Tennessee and must be among those listed as acceptable sureties by the Commissioner.

(ii) The wording of the surety bond must be identical to the wording specified in part (p)2 of this paragraph.

(iii) The owner or operator who uses a surety bond to satisfy the requirements of subparagraphs (d) and/or (f) of this paragraph must also establish a standby trust fund. Under the terms of the bond, all payments made thereunder will be deposited by the surety directly into the standby trust fund in accordance with instructions from the Commissioner. This standby trust fund must meet the requirements specified in part 1 of this subparagraph, except that:

(I) An originally signed duplicate of the trust agreement must be submitted to the Division Director with the surety bond; and

(II) Until the standby trust fund is funded pursuant to the requirements of this paragraph, the following are not required by these regulations:

I. Payments into the trust fund as specified in part 1 of this subparagraph;

II. Updating of Schedule A of the trust agreement (see part (p)1 of this paragraph) to show current closure and/or post-closure care cost estimates;

III. Annual valuations as required by the trust agreement; and

IV. Notices of nonpayment as required by the trust agreement.

(iv) The bond must guarantee that the owner or operator will:

(I) Fund the standby trust fund in an amount equal to the penal sum of the bond before the beginning of final closure and/or post-closure care of the facility; or

(II) Fund the standby trust fund in an amount equal to the penal sum within 15 days after an administrative order to begin final closure and/or post-closure care issued by the Commissioner becomes final, or within 15 days after an order to begin final closure and/or post-closure care is issued by the Commissioner, the Board, or a court of competent jurisdiction; or

(III) Provide alternate financial assurance as specified in this paragraph, and obtain the Division Director's written approval of the assurance provided, within 90 days after receipt by both the owner or operator and the Division Director of a notice of cancellation of the bond from the surety.

(v) 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.

(vi) The penal sum of the bond must be in an amount at least equal to the current closure and/or post-closure care cost estimate, except as provided in subparagraph (h) of this paragraph.

(vii) 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.

(viii) The owner or operator may cancel the bond if the Commissioner has given prior written consent based on his receipt of evidence of alternate financial assurance as specified in this paragraph.

3. Surety Bond Guaranteeing Performance of Closure and/or Post-closure

An owner or operator may satisfy the requirements of subparagraphs (d) and/or (f) of this paragraph by obtaining a surety bond which conforms to the requirements of this part and submitting the bond to the Division Director. An owner or operator of a new facility must submit the bond to the Division Director.

(i) The surety company issuing the bond must be licensed to do business as a surety in Tennessee and must be among those listed as acceptable sureties by the Commissioner.

(ii) The wording of the surety bond must be identical to the wording specified in part (p)3 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 after 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 final 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 as directed by the Commissioner.

(v) The penal sum of the bond must be in an amount at least equal to the current closure cost estimate.

(vi) Whenever the current closure cost estimate increases to an amount greater than the penal sum, the owner or operator, within 60 days after the increase, must either cause the penal sum to be increased to an amount at least equal to the current closure cost estimate and submit evidence of such increase to the Division Director, or obtain other financial assurance as specified in this paragraph. Whenever the current closure cost estimate decreases, the penal sum may be reduced to the amount of the current closure cost estimate following written approval by the Division Director.

(vii) 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.

(viii) The owner or operator may cancel the bond if the Commissioner has given prior written consent. The Commissioner will provide such written consent when:

(I) An owner or operator substitutes alternate financial assurance as specified in this paragraph; or

(II) The Commissioner releases the owner or operator from the requirements of this paragraph in accordance with parts (d)4 and/or (f) of this paragraph.

(ix) The surety will not be liable for deficiencies in the performance of closure by the owner or operator after the Commissioner releases the owner or operator from the requirements of this paragraph in accordance with parts (d)4 and/or (f)4 of this paragraph.

4. Closure and/or Post-closure Letter of Credit

An owner or operator may satisfy the requirements of subparagraphs (d) and/or (f) of this paragraph by obtaining an irrevocable standby letter of credit which conforms to the

requirements of this part and submitting the letter to the Division Director. An owner or operator of a new facility must submit the letter of credit to the Division Director.

(i) The issuing institution 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 (p)4 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.

(iv) The letter of credit must be irrevocable and issued for a period of at least 1 year. The letter of credit must provide that the expiration date will be automatically extended for a period of at least 1 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 Division Director may draw on the Letter of Credit upon forfeiture as provided in parts (d)5 and (f)5 of this paragraph. If the owner or operator does not establish alternate financial assurance as specified 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 issuing institution that it has decided not to extend the letter of credit beyond the current expiration date, the Division Director will also draw on the letter of credit. 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.

(vi) The Commissioner will return the letter of credit to the issuing institution for termination when:

(I) An owner or operator substitutes alternate financial assurance as specified in this paragraph; or

(II) The Commissioner releases the owner or operator from the requirements of this paragraph in accordance with parts (d)4 and/or (f)4 of this paragraph.

5. Closure and/or Post-closure Insurance

An owner or operator may satisfy the requirements of subparagraphs (d) and/or (f) of this paragraph by obtaining closure and/or post-closure care insurance which conforms to the requirements of this part and submitting a certificate of such insurance to the Division Director. An owner or operator of a new facility must submit the certificate of insurance to the Division Director.

(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 and have an A.M. best rating at least A or A- or have special approval from the Commissioner. An insurer that is a "captive insurance

company", as that term is used in T.C.A. Sections 56-13-106 through 56-13-133, may not be utilized unless the Commissioner determines that such captive insurance company offers coverage that is equivalent in protection to other insurance companies or other allowable financial assurance mechanisms.

(ii) The insurance policy must be accompanied by a certificate of insurance whose wording is identical to the wording specified in part (p)5 of this paragraph. The wording of the policy itself is subject to the review and approval of the Commissioner prior to acceptance as a financial assurance mechanism.

(iii) The insurance policy must be issued for a face amount at least equal to the current closure and/or post-closure care cost estimate, except as provided in subparagraph (h) of this paragraph. 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 and/or post-closure care, after beginning partial or final closure, an owner or operator or any other person authorized to perform closure and/or post-closure care may request reimbursement for closure and/or post-closure care expenditures by submitting itemized bills to the Division Director. The owner or operator may request reimbursements for partial closure only if the remaining value of the policy is sufficient to cover the maximum costs of closing the facility over its remaining operating life. Within 60 days after receiving bills for closure and/or post-closure activities, the Division Director will instruct the insurer to make reimbursements in such amounts as the Division Director specifies in writing, if the Division Director determines that the partial or final closure and/or post-closure expenditures are in accordance with the approved closure and/or post-closure plan or otherwise justified. If the Division Director has reason to believe that the maximum cost of closure and/or post-closure over the remaining life of the facility 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 he financial assurance requirement as provided in part (d)4 and/or (f)4 of this paragraph. If the Division Director does not instruct the insurer to make such reimbursements, he will provide the owner or operator with a detailed written statement of reasons.

(vi) 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.

(vii) 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.

(viii) 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.

(ix) 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.

(x) The Commissioner will give written consent to the owner or operator that he may terminate the insurance policy when:

(I) An owner or operator substitutes alternate financial assurance as specified in this paragraph; or

(II) The Commissioner releases the owner or operator from the requirements of this paragraph in accordance with parts (d)4 and/or (f)4 of this paragraph.

6. 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 wording of the personal bond supported by securities must be identical to the wording specified in part (p)15 of this paragraph. 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.

7. 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.

8. Financial Test and Corporate Guarantee for Closure and/or Post-closure Care

(i) An owner or operator may satisfy the requirements of subparagraph (d) and/or (f) of this paragraph by demonstrating that he passes a financial test as specified in this part. The same document (with appropriate wording modifications) may be used by a company, with prior approval by the Commissioner, to demonstrate Financial Assurance for a solid waste unit and a hazardous waste unit, both of which are owned/operated by the company. 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 the current plugging and abandonment 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 total assets or at least six times the sum of the current closure and post-closure cost estimates and the current plugging and abandonment 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 the current plugging and abandonment 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 total assets or at least six times the sum of the current closure and post-closure cost estimates and the current plugging and abandonment 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 through 4 of the letter from the owner's or operator's chief financial officer (part (p)6 of this paragraph). The phrase "current plugging and abandonment cost estimates" as used in subpart (i) of this part refers to the cost estimates required to be shown in paragraphs 1 through 4 of the letter from the owner's or operator's chief financial officer (See 40 CFR 144.70(f), as that Federal regulation exists on the effective date of this rulemaking, or equivalent State requirement under Chapter 1200-04-06).

(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 (p)6 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) The owner or operator is no longer required to submit the items specified in subpart (iii) of this part when:

(I) An owner or operator substitutes alternate financial assurance as specified in this paragraph; or

(II) The Commissioner releases the owner or operator from the requirements of this paragraph in accordance with parts (d)4 and/or (f)4 of this paragraph.

(x) An owner or operator may meet the requirements of subparagraph (d) and/or (f) of this paragraph by obtaining a written guarantee, hereafter referred to as "corporate guarantee". The guarantor must be the direct or higher-tier parent corporation of the owner or operator, a firm whose parent corporation is also the parent corporation of the owner or operator, or a firm with a "substantial business relationship" with 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 (p)8 of this paragraph. The certified copy of the corporate guarantee must accompany the items sent to the Division Director as specified in subpart (iii) of this part. One of these items must be the letter from the guarantor's chief financial officer. If the guarantor's parent corporation is also the parent corporation of the owner or operator, the letter must describe the value received in consideration of the corporate guarantee. If the guarantor is a firm with a "substantial business relationship" with the owner or operator, this letter must describe this "substantial business relationship" and the value received in consideration of the corporate guarantee. The terms of the corporate guarantee must provide that:

(I) If the owner or operator fails to perform final closure and/or post-closure of a facility covered by the corporate guarantee in accordance with the closure plan and other permit requirements whenever required to do so, the guarantor will do so or establish a trust fund as specified in part 1 of this subparagraph in the name of the owner or operator or forfeit to the State monies in an amount equal to the current closure and/or post-closure cost estimate for the facility as provided in part (d)5 and/or (f)5 of this paragraph as directed by the Commissioner.

(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

An owner or operator may satisfy the requirements of subparagraphs (d) and/or (f) of this paragraph by establishing more than one financial mechanism per facility. These mechanisms are limited to trust funds, surety bonds guaranteeing payment into a trust fund, letters of credit, insurance, and personal bonds supported by securities or cash. The mechanisms must be as specified in parts 1,2,4,5,6 and 7, respectively, of subparagraph (g) of this paragraph, except that it is the combination of mechanisms, rather than the single mechanism, which must provide financial assurance for an amount at least equal to the current closure and/or post-closure cost estimate. If an owner or operator uses a trust fund in combination with a surety bond or a letter of credit, he may use the trust fund as the standby trust fund for the other mechanisms. A single standby trust fund may be established for two or more mechanisms. The Commissioner may use any or all of the mechanisms to provide for closure and/or post-closure care of the facility.

(i) Use of a Financial Mechanism for Multiple Facilities

An owner or operator may use a financial assurance mechanism specified in this subparagraph (g) of this paragraph to meet the requirements of subparagraphs (d) and/or (f) of this paragraph for more than one facility he owns and operates in Tennessee. Evidence of financial assurance submitted to the Division Director must include a list showing, for each facility, the Installation Identification Number, name, address, and the 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 established and maintained for each facility. In a financial assurance forfeiture action taken under parts (d)5 and/or (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 of Both Closure and Post-closure Care [40 CFR 264.146]

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. However, the existing financial assurance shall not be released by the Commissioner until the substitute financial assurance has been received and approved by him or her.

(l) Procedures for Forfeiture of Financial Assurance

1. Upon his or her determination that the owner or operator has failed to perform final closure in accordance with the approved closure plan when required to do so, or has failed to perform post-closure care in accordance with the approved post-closure plan, 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 to order forfeiture of the financial assurance filed to guarantee such performance.

4. The Commissioner shall order forfeiture of the financial assurance upon his or her validation of the Division Director's determinations and upon his or her determination that the procedures of this subparagraph have been followed. The Commissioner may however, at his or her discretion, provide opportunity for the owner or operator to be heard 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 T.C.A. Section 68-212-113 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 a special account within the Tennessee Environmental Protection Fund for use by the Commissioner as set forth in T.C.A. Sections 68-212-108(c)(6) of the Act and 68-203-101 et seq.

(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 [40 CFR 264.147]

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 at least $1 million per occurrence with an annual aggregate of at least $2 million, exclusive of legal defense costs. This liability coverage may be demonstrated as specified in subparts (i), (ii), (iii), (iv), (v) or (vi) 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)9 of this paragraph. The wording of the certificate of insurance must be identical to the wording specified in part (p)10 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. An insurer that is a "captive insurance company", as that term is used in T.C.A. Sections 56-13-106 through 56-13-133, may not be utilized unless the Commissioner determines that such captive insurance company offers coverage that is equivalent in protection to other insurance companies or other allowable financial assurance mechanisms.

(ii) An owner or operator may meet the requirements of this subparagraph by passing a financial test or using the guarantee for liability coverage as specified in parts 6 and 7 of this subparagraph. The same document (with appropriate wording modifications) may be used by a company, with prior approval by the Commissioner, to demonstrate liability coverage and closure/post-closure financial assurance for a solid waste unit (as appropriate) and a hazardous waste unit, both of which are owned/operated by the company.

(iii) An owner or operator may meet the requirements of this subparagraph by obtaining a letter of credit for liability coverage as specified in part 8 of this subparagraph.

(iv) An owner or operator may meet the requirements of this subparagraph by obtaining a surety bond for liability coverage as specified in part 9 of this subparagraph.

(v) An owner or operator may meet the requirements of this subparagraph by obtaining a trust fund for liability coverage as specified in part 10 of this subparagraph.

(vi) An owner or operator may demonstrate the required liability coverage through the use of combinations of insurance, financial test, guarantee, letter of credit, surety bond, and trust fund, except that the owner or operator may not combine a financial test covering part of the liability coverage requirement with a guarantee unless the financial statement of the owner or operator is not consolidated with the financial statement of the guarantor. The amounts of coverage demonstrated must total at least the minimum amounts required by this subparagraph. If the owner or operator demonstrates the required coverage through the use of a combination of financial assurances under this paragraph, the owner or operator shall specify at least one such assurance as "primary" coverage and shall specify other assurance as "excess" coverage.

(vii) An owner or operator shall notify the Division Director in writing within 30 days whenever:

(I) A claim results in a reduction in the amount of financial assurance for liability coverage provided by a financial instrument authorized in subparts (i) through (vi) of this part; or

(II) A Certification of Valid Claim for bodily injury or property damages caused by a sudden or non-sudden accidental occurrence arising from the operation of a hazardous waste treatment, storage, or disposal facility is entered between the owner or operator and third-party claimant for liability coverage under subparts (i) through (vi) of this part; or

(III) A final court order establishing a judgment for bodily injury or property damage caused by a sudden or non-sudden accidental occurrence arising from the operation of a hazardous waste treatment, storage, or disposal facility is issued against the owner or operator or an instrument that is providing financial assurance for liability coverage under subparts (i) through (vi) of this part.

2. Coverage for Nonsudden Accidental Occurrences

An owner or operator of a surface impoundment, landfill, land treatment facility, or disposal miscellaneous unit that 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 with an annual aggregate of at least $6 million, exclusive of legal defense costs. An owner or operator who must meet the requirements of this subparagraph may combine the required per-occurrence coverage levels for sudden and nonsudden accidental occurrences into a single per-occurrence level, and combine the required annual aggregate coverage levels for sudden and nonsudden accidental occurrences into a single annual aggregate level. Owners or operators who combine coverage levels for sudden and nonsudden accidental occurrences must maintain liability coverage in the amount of at least $4 million per occurrence and $8 million annual aggregate. This liability coverage may be demonstrated as specified in subparts (i),(ii),(iii),(iv),(v) or (vi) 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)9 of this paragraph. The wording of the certificate of insurance must be identical to the wording specified in part (p)10 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. An insurer that is a "captive insurance company", as that term is used in T.C.A. Sections 56-13-106 through 56-13-133, may not be utilized unless the Commissioner determines that such captive insurance company offers coverage that is equivalent in protection to other insurance companies or other allowable financial assurance mechanisms.

(ii) An owner or operator may meet the requirements of this subparagraph by passing a financial test or using the guarantee for liability coverage as specified in parts 6 and 7 of this subparagraph. The same document (with appropriate wording modifications) may be used by a company, with prior approval by the Commissioner, to demonstrate liability coverage and closure/post-closure financial assurance for a solid waste unit (as appropriate) and a hazardous waste unit, both of which are owned/operated by the company.

(iii) An owner or operator may meet the requirements of this subparagraph by obtaining a letter of credit for liability coverage as specified in part 8 of this subparagraph.

(iv) An owner or operator may meet the requirements of this subparagraph by obtaining a surety bond for liability coverage as specified in part 9 of this subparagraph.

(v) An owner or operator may meet the requirements of this subparagraph by obtaining a trust fund for liability coverage as specified in part 10 of this subparagraph.

(vi) An owner or operator may demonstrate the required liability coverage through the use of combinations of insurance, financial test, guarantee, letter of credit, surety bond, and trust fund, except that the owner or operator may not combine a financial test covering part of the liability coverage requirement with a guarantee unless the financial statement of the owner or operator is not consolidated with the financial statement of the guarantor. The amounts of coverage demonstrated must total at least the minimum amount required by this subparagraph. If the owner or operator demonstrates the required coverage through the use of a combination of financial assurances under this part, the owner or operator shall specify at least one such assurance as "primary" coverage and shall specify other assurance as "excess" coverage.

(vii) An owner or operator shall notify the Division Director in writing within 30 days whenever:

(I) A Claim results in a reduction in the amount of financial assurance for liability coverage provided by a financial instrument authorized in subparts (i) through (vi) of this part; or

(II) A Certification of Valid Claim for bodily injury or property damages caused by a sudden or non-sudden accidental occurrence arising from the operation of a hazardous waste treatment, storage, or disposal facility is entered between the owner or operator and third-party claimant for liability coverage under subparts (i) through (vi) of this part; or

(III) A final court order establishing a judgment for bodily injury or property damage caused by a sudden or non-sudden accidental occurrence arising from the operation of a hazardous waste treatment, storage, or disposal facility is issued against the owner or operator or an instrument that is providing financial assurance for liability coverage under subparts (i) through (vi) of this part.

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 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 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 0400-12-01-.07(5) for a facility that does not have a permit, or pursuant to the procedures for permit modification under Rule

0400-12-01-.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 0400-12-01-.07(9)(c)2 and 3(xiii).

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 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 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 the level or type of coverage for a facility that has a permit will be treated as a permit modification under Rule 0400-12-01-.07(9)(c)2 and 3(xiii).

5. Period of Coverage

Within 60 days after receiving certifications from the owner or operator and a qualified Professional Engineer that final closure has been completed in accordance with the approved closure plan, the Division Director will notify the owner or operator in writing that he is no longer required by this subparagraph to maintain liability coverage for that facility, unless the Commissioner or Board has reason to believe that closure has not been in accordance with the approved closure plan. The Division Director shall provide the owner or operator a detailed written statement of any such reason to believe that closure has not been in accordance with the approved closure plan.

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 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 part (p)7 of this paragraph. If an owner or operator is using the financial test to demonstrate both assurance for closure or post-closure care, as specified by subparagraphs (d) and (f) and part (g)8 of this paragraph and Rule 0400-12-01-.05(8)(d) and (f) and (g)7, and liability coverage, he must submit the letter specified in part (p)7 of this paragraph to cover both forms of financial responsibility; a separate letter as specified in part (p)6 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, a letter of credit, a surety bond, a trust fund, or a guarantee for the entire amount of required liability coverage as specified in this subparagraph. Evidence of liability coverage 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.

7. Guarantee for Liability Coverage

(i) Subject to subpart (ii) of this part, an owner or operator may meet the requirements of this subparagraph by obtaining a written guarantee, hereinafter referred to as "guarantee." The guarantor must be the direct or higher-tier parent corporation of the owner or operator, a firm whose parent corporation is also the parent corporation of the owner or operator, or a firm with a "substantial business relationship" with the owner or operator. The guarantor must meet the requirements for owners or operators in subparts 6(i) through 6(vi) of this subparagraph. The wording of the guarantee must be identical to the wording specified in subparts (p)8(ii) of this paragraph. A certified copy of the guarantee must accompany the items sent to the Division Director as specified in subpart 6(iii) of this subparagraph. One of these items must be the letter from the guarantor's chief financial officer. If the guarantor's parent corporation is also the parent corporation of the owner or operator, this letter must describe the value received in consideration of the guarantee. If the guarantor is a firm with a "substantial business relationship" with the owner or operator, this letter must describe this "substantial business relationship" and the value received in consideration of the guarantee.

(I) If the owner or operator fails to satisfy a judgment based on a determination of liability for bodily injury or property damage to third parties caused by sudden or nonsudden accidental occurrences (or both as the case may be), arising from the operation of facilities covered by this corporate guarantee, or fails to pay an amount agreed to in settlement of claims arising from or alleged to arise from such injury or damage, the guarantor will do so up to the limits of coverage.

(II) (Reserved)

(ii) (I) In the case of corporations, other than a Tennessee Corporation, incorporated in the United States, a guarantee may be used to satisfy the requirements of this subparagraph only if the Attorneys General or Insurance Commissioners of I. the State in which the guarantor is incorporated, and II. each State in which a facility covered by the guarantee is located have submitted a written statement to the Division Director that a guarantee executed as described in this part and subpart (p)8(ii) of this paragraph is a legally valid and enforceable obligation in that State.

(II) In the case of corporations incorporated outside the United States, a guarantee may be used to satisfy the requirements of this subparagraph only if:

I. The non-U.S. corporation has identified a registered agent for service of process in each State in which a facility covered by the guarantee is located and in the State in which it has its principal place of business, and

II. The Attorney General or Insurance Commissioner of each State in which a facility covered by the guarantee is located and the State in which the guarantor corporation has its principal place of business, has submitted a written statement to Division Director that a guarantee executed as described in this part and subpart (p)8(ii) of this paragraph is a legally valid and enforceable obligation in that State.

8. Letter of Credit for Liability Coverage

(i) An owner or operator may satisfy the requirements of this subparagraph by obtaining an irrevocable standby letter of credit that conforms to the requirements of this subparagraph and submitting a copy of the letter of credit to the Division Director.

(ii) The financial institution issuing the letter of credit must be an entity that has the authority to issue letters of credit and whose letter of credit operations are regulated and examined by a Federal or State agency.

(iii) The wording of the letter of credit must be identical to the wording specified part (p)11 of this paragraph.

9. Surety Bond for Liability Coverage

(i) An owner or operator may satisfy the requirements of this subparagraph by obtaining a surety bond that conforms to the requirements of this part and submitting a copy of the bond to the Division Director.

(ii) The surety company issuing the bond must be licensed to do business as a surety in Tennessee.

(iii) The wording of the surety bond must be identical to the wording specified in part (p)12 of this paragraph.

(iv) A surety bond may be used to satisfy the requirements of this subparagraph only if the Attorneys General or Insurance Commissioners of

(I) the State in which the surety is incorporated, and

(II) each State in which a facility covered by the surety bond is located have submitted a written statement to the Division Director that a surety bond executed as described in this subparagraph and part (p)12 of this paragraph is a legally valid and enforceable obligation in that State.

10. Trust Fund for Liability Coverage

(i) An owner or operator may satisfy the requirements of this subparagraph by establishing a trust fund that conforms to the requirements of this part and submitting an originally signed duplicate of the trust agreement to the Division Director.

(ii) The trustee must be an entity which has the authority to act as a trustee and whose trust operations are regulated and examined by a Federal or State agency.

(iii) The trust fund for liability coverage must be funded for the full amount of the liability coverage to be provided by the trust fund before it may be relied upon to satisfy the requirements of this subparagraph. If at any time after the trust fund is created the amount of funds in the trust fund is reduced below the full amount of the liability coverage to be provided, the owner or operator, by the anniversary date of the establishment of the fund, must either add sufficient funds to the trust fund to cause its value to equal the full amount of liability coverage to be provided, or obtain other financial assurance as specified in this subparagraph to cover the difference. For purposes of this part, "the full amount of the liability coverage to be provided" means the amount of coverage for sudden and/or nonsudden occurrences required to be provided by the owner or operator by this subparagraph, less the amount of financial assurance for liability coverage that is being provided by other financial assurance mechanisms being used to demonstrate financial assurance by the owner or operator.

(iv) The wording of the trust fund must be identical to the wording specified in part (p)13 of this paragraph.

11. (Reserved) [40 CFR 264.147(k)]

(o) Incapacity of Owners or Operators, Guarantors, or Financial Institutions [40 CFR 264.148]

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)8 of this paragraph must make such a notification if he is named as debtor, as required under the terms of the corporate guarantee (part (p)8 of this paragraph).

2. An owner or operator who fulfills the requirements of subparagraphs (d),(f) or (n) of this paragraph by obtaining a trust fund, 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 trustee or issuing institution, or a suspension or revocation of the authority of the trustee institution to act as trustee or 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

The wording of the financial instruments listed below must be as follows or otherwise approved for use by the Commissioner:

(Note: See Table of Contents for Page Numbers.)

1. Trust Agreement for a Trust Fund
2. Surety Bond Guaranteeing Payment into a Trust Fund
3. Surety Bond Guaranteeing Performance of Closure and/or Post-closure Care
4. Irrevocable Standby Letter of Credit (For Closure and/or Post-closure Requirements)
5. Certificate of Insurance for Closure and/or Post-closure
6. Letter from Chief Financial Officer (For Closure and/or Post-closure Costs Only)
7. Letter from Chief Financial Officer (For Closure and/or Post-closure Care and Liability Coverage)
8. (i) Corporate Guarantee for Closure or Post-closure
   (ii) Guarantee for Liability Coverage
9. Hazardous Waste Facility Liability Endorsement
10. Hazardous Waste Facility Certificate of Liability Insurance
11. Irrevocable Standby Letter of Credit (For Liability Requirements)
12. Payment Bond (Surety Bond)
13. (i) Trust Agreement
    (ii) Certification of Acknowledgement

14. (i) Standby Trust Agreement
    (ii) Certification of Acknowledgement
15. Personal Bond Supported by Securities
16. *Combined Hazardous and Solid Waste Financial Test
    (i) Letter From Chief Financial Officer (Closure and/or Post-closure)
    (ii) Letter From Chief Financial officer (Liability Coverage or Liability Coverage and Closure/Post-closure)
    (iii) Corporate Guarantee for Closure or Post-closure Care

* Note: Copies of the three financial instrument forms listed above may be obtained by calling the Financial Assurance Office of the Division of Solid Waste Management at 615-532-0780 or writing to:

Attn: Financial Assurance Office
Tennessee Department of Environment & Conservation
Division of Solid Waste Management
L & C Tower, 5th Floor
401 Church Street
Nashville, TN 37243-1535

INSTRUMENT WORDING

1. TRUST AGREEMENT

(i) A trust agreement for a trust fund, as specified in part (g)1 of this paragraph or Rule 0400-12-01-.05(8)(g)1, must be worded as follows, except that instructions in brackets are to be replaced with the relevant information and the brackets deleted:

TRUST AGREEMENT

Trust Agreement, the "Agreement," entered into as of [date] by and between [name of the owner or operator], a [name of State] [insert "corporation," "partnership," "association," or "proprietorship"], the "Grantor," and [name of corporate trustee], [insert "incorporated in the State of _____" or "a national bank"], the "Trustee."

Whereas, the Tennessee Department of Environment and Conservation (TDEC), an agency of the State of Tennessee, has established certain regulations applicable to the Grantor, requiring that an owner or operator of a hazardous waste management facility shall provide assurance that funds will be available when needed for closure and/or post-closure care of the facility,

Whereas, the Grantor has elected to establish a trust to provide all or part of such financial assurance for the facilities identified herein,

Whereas, the Grantor, acting through its duly authorized officers, has selected the Trustee to be the trustee under this agreement, and the Trustee is willing to act as trustee,

Now, Therefore, the Grantor and the Trustee agree as follows:

SECTION 1
DEFINITIONS

As used in this Agreement:

(I) The term "Grantor" means the owner or operator who enters into this Agreement and any successors or assigns of the Grantor.

(II) The term "Trustee" means the Trustee who enters into this Agreement and any successor Trustee.

SECTION 2
IDENTIFICATION OF FACILITIES AND COST ESTIMATES

This Agreement pertains to the facilities and cost estimates identified on attached Schedule A [on Schedule A, for each facility list the EPA Identification Number, name, address, and the current closure and/or post-closure cost estimates, or portions thereof, for which financial assurance is demonstrated by this Agreement].

SECTION 3
ESTABLISHMENT OF FUND

The Grantor and the Trustee hereby establish a trust fund, the "Fund," for the benefit of TDEC. The Grantor and the Trustee intend that no third party have access to the Fund except as herein provided. The Fund is established initially as consisting of the property, which is acceptable to the Trustee, described in Schedule B attached hereto. Such property and any other property subsequently transferred to the Trustee is referred to as the Fund, together with all earnings and profits thereon, less any payments or distributions made by the Trustee pursuant to this Agreement. The Fund shall be held by the Trustee, IN TRUST, as hereinafter provided. The Trustee shall not be responsible nor shall it undertake any responsibility for the amount or adequacy of, nor any duty to collect from the Grantor, any payments necessary to discharge any liabilities of the Grantor established by TDEC.

SECTION 4
PAYMENT FOR CLOSURE AND POST-CLOSURE CARE

The Trustee shall make payments from the Fund as the Commissioner of TDEC shall direct, in writing, to provide for the payment of the costs of closure and/or post-closure care of the facilities covered by this Agreement. The Trustee shall reimburse the Grantor or other persons as specified by the Commissioner of TDEC from the Fund for closure and post-closure expenditures in such amounts as the Commissioner of TDEC shall direct in writing. In addition, the Trustee shall refund to the Grantor such amounts as the Commissioner of TDEC specifies in writing. Upon refund, such funds shall no longer constitute part of the Fund as defined herein.

SECTION 5
PAYMENTS COMPRISING THE FUND

Payments made to the Trustee for the Fund shall consist of cash or securities acceptable to the Trustee.

SECTION 6
TRUSTEE MANAGEMENT

The Trustee shall invest and reinvest the principal and income of the Fund and keep the Fund invested as a single fund, without distinction between principal and income, in accordance with general investment policies and guidelines which the Grantor may communicate in writing to the Trustee from time to time, subject, however, to the provisions of this section. In investing, reinvesting, exchanging, selling, and managing the Fund, the Trustee shall discharge his duties with respect to the trust fund solely in the interest of the beneficiary and with the care, skill, prudence, and diligence under the circumstances then prevailing which persons of prudence, acting in a like capacity and familiar with such matters, would use in the conduct of an enterprise of a like character and with like aims; except that:

(I) Securities or other obligations of the Grantor, or any other owner or operator of the facilities, or any of their affiliates as defined in the Investment Company Act of 1940, as amended, 15 U.S.C. 80a-2.(a), shall not be acquired or held, unless they are securities or other obligations of the Federal or a State government;

(II) The Trustee is authorized to invest the Fund in time or demand deposits of the Trustee, to the extent insured by an agency of the Federal or State government; and

(III) The Trustee is authorized to hold cash awaiting investment or distribution uninvested for a reasonable time and without liability for the payment of interest thereon.

SECTION 7
COMMINGLING AND INVESTMENT

The Trustee is expressly authorized in its discretion:

(I) To transfer from time to time any or all of the assets of the Fund to any common, commingled, or collective trust fund created by the Trustee in which the Fund is eligible to participate, subject to all of the provisions thereof, to be commingled with the assets of other trusts participating therein; and

(II) To purchase shares in any investment company registered under the Investment Company Act of 1940, 15 U.S.C. 80a-1 et seq., including one which may be created, managed, underwritten, or to which investment advice is rendered or the shares of which are sold by the Trustee. The Trustee may vote such shares in its discretion.

SECTION 8
EXPRESS POWERS OF TRUSTEE

Without in any way limiting the powers and discretions conferred upon the Trustee by the other provisions of this Agreement or by law, the Trustee is expressly authorized and empowered:

(I) To sell, exchange, convey, transfer, or otherwise dispose of any property held by it, by public or private sale. No person dealing with the Trustee shall be bound to see to the application of the purchase money or to inquire into the validity or expediency of any such sale or other disposition;

(II) To make, execute, acknowledge, and deliver any and all documents of transfer and conveyance and any and all other instruments that may be necessary or appropriate to carry out the powers herein granted;

(III) To register any securities held in the Fund in its own name or in the name of a nominee and to hold any security in bearer form or in book entry, or to combine certificates representing such securities with certificates of the same issue held by the Trustee in other fiduciary capacities, or to deposit or arrange for the deposit of such securities in a qualified central depositary even though, when so deposited, such securities may be merged and held in bulk in the name of the nominee of such depositary with other securities deposited therein by another person, or to deposit or arrange for the deposit of any securities issued by the United States Government, or any agency or instrumentality thereof, with a Federal Reserve bank, but the books and records of the Trustee shall at all times show that all such securities are part of the Fund;

(IV) To deposit any cash in the Fund in interest-bearing accounts maintained or savings certificates issued by the Trustee, in its separate corporate capacity, or in any other banking institution affiliated with the Trustee, to the extent insured by an agency of the Federal or State government; and

(V) To compromise or otherwise adjust all claims in favor of or against the Fund.

SECTION 9
TAXES AND EXPENSES

All taxes of any kind that may be assessed or levied against or in respect of the Fund and all brokerage commissions incurred by the Fund shall be paid from the Fund. All other expenses incurred by the Trustee in connection with the administration of this Trust, including fees for legal services rendered to the Trustee, the compensation of the Trustee to the extent not paid directly by the Grantor, and all other proper charges and disbursements of the Trustee shall be paid from the Fund.

SECTION 10
ANNUAL VALUATION

The Trustee shall annually, at least 30 days prior to the anniversary date of establishment of the Fund, furnish to the Grantor and to the Commissioner of TDEC a statement confirming the value of the Trust. Any securities in the Fund shall be valued at market value as of no more than 60 days prior to the anniversary date of establishment of the Fund. The failure of the Grantor to object in writing to the Trustee within 90 days after the statement has been furnished to the Grantor and the Commissioner of TDEC shall constitute a conclusively binding assent by the Grantor, barring the Grantor from asserting any claim or liability against the Trustee with respect to matters disclosed in the statement.

SECTION 11
ADVICE OF COUNSEL

The Trustee may from time to time consult with counsel, who may be counsel to the Grantor, with respect to any question arising as to the construction of this Agreement or any action to be taken hereunder. The Trustee shall be fully protected, to the extent permitted by law, in acting upon the advice of counsel.

SECTION 12
TRUSTEE COMPENSATION

The Trustee shall be entitled to reasonable compensation for its services as agreed upon in writing from time to time with the Grantor.

SECTION 13
SUCCESSOR TRUSTEE

The Trustee may resign or the Grantor may replace the Trustee, but such resignation or replacement shall not be effective until the Grantor has appointed a successor trustee and this successor accepts the appointment. The successor trustee shall have the same powers and duties as those conferred upon the Trustee hereunder. Upon the successor trustee's acceptance of the appointment, the Trustee shall assign, transfer, and pay over to the successor trustee the funds and properties then constituting the Fund. If for any reason the Grantor cannot or does not act in the event of the resignation of the Trustee, the Trustee may apply to a court of competent jurisdiction for the appointment of a successor trustee or for instructions. The successor trustee shall specify the date on which it assumes administration of the trust in a writing sent to the Grantor, the Commissioner of TDEC, and the present Trustee by certified mail 10 days before such change becomes effective. Any expenses incurred by the Trustee as a result of any of the acts contemplated by this SECTION shall be paid as provided in SECTION 9.

SECTION 14
INSTRUCTIONS TO THE TRUSTEE

All orders, requests, and instructions by the Grantor to the Trustee shall be in writing, signed by such persons as are designated in the attached Exhibit A or such other designees as the Grantor may designate by amendment to Exhibit A. The Trustee shall be fully protected in acting without inquiry in accordance with the Grantor's orders, requests, and instructions. All orders, requests, and instructions by the Commissioner of TDEC to the Trustee shall be in writing, signed by the Commissioner of TDEC, and the Trustee shall act and shall be fully protected in acting in accordance with such orders, requests, and instructions. The Trustee shall have the right to assume, in the absence of written notice to the contrary, that no event constituting a change or a termination of the authority of any person to act on behalf of the Grantor or TDEC hereunder has occurred. The Trustee shall have no duty to act in the absence of such orders, requests, and instructions from the Grantor and/or TDEC, except as provided for herein.

SECTION 15
NOTICE OF NONPAYMENT

The Trustee shall notify the Grantor and the Commissioner, by certified mail within 10 days following the expiration of the 30-day period after the anniversary of the establishment of the Trust, if no payment is received from the Grantor during that period. After the pay-in period is completed, the Trustee shall not be required to send a notice of nonpayment.

SECTION 16
AMENDMENT OF AGREEMENT

This Agreement may be amended by an instrument in writing executed by the Grantor, the Trustee, and the Commissioner of TDEC, or by the Trustee and the Commissioner of TDEC if the Grantor ceases to exist.

SECTION 17
IRREVOCABILITY AND TERMINATION

Subject to the right of the parties to amend this Agreement as provided in Section 16, this Trust shall be irrevocable and shall continue until terminated at the written agreement of the Grantor, the Trustee, and the Commissioner of TDEC, or by the Trustee and the Commissioner of TDEC, if the Grantor ceases to exist. Upon termination of the Trust, all remaining trust property, less final trust administration expenses, shall be delivered to the Grantor.

SECTION 18
IMMUNITY AND INDEMNIFICATION

The Trustee shall not incur personal liability of any nature in connection with any act or omission, made in good faith, in the administration of this Trust, or in carrying out any directions by the Grantor or the Commissioner of TDEC issued in accordance with this Agreement. The Trustee shall be indemnified and saved harmless by the Grantor or from the Trust Fund, or both, from and against any personal liability to which the Trustee may be subjected by reason of any act or conduct in its official capacity, including all expenses reasonably incurred in its defense in the event the Grantor fails to provide such defense.

SECTION 19
CHOICE OF LAW

This Agreement shall be administered, construed, and enforced according to the laws of the State of [insert name of State].

SECTION 20
INTERPRETATION

As used in this Agreement, words in the singular include the plural and words in the plural include the singular. The descriptive headings for each Section of this Agreement shall not affect the interpretation or the legal efficacy of this Agreement.

In Witness Whereof the parties have caused this Agreement to be executed by their respective officers duly authorized and their corporate seals to be hereunto affixed and attested as of the date first above written: The parties below certify that the wording of this Agreement is identical to the wording specified in Tennessee Rule 0400-12-01-.06(8)(p)1 as such regulations were constituted on the date first above written.

[Signature of Grantor] _____

[Title]_____

Attest:_____

[Title]_____

[Seal]

[Signature of Trustee]_____

Attest:_____

[Title]_____

[Seal]

(ii) The following is an example of the certification of acknowledgment which must accompany the trust agreement for a trust fund as specified in part (g)1 of this paragraph or Rule 0400-12-01-.05(8)(g)1.

State of _____

County of _____

On this [date], before me personally came [owner or operator] to me known, who, being by me duly sworn, did depose and say that she/he resides at [address], that she/he is [title] of [corporation], the corporation described in and which executed the above instrument; that she/he knows the seal of said corporation; that the seal affixed to such instrument is such corporate seal; that it was so affixed by order of the Board of Directors of said corporation, and that she/he signed her/his name thereto by like order.

Subscribed and sworn to before me this _____day of _____, _____

_____
Notary Public

My commission expires on the _____day of _____, _____

* * * * * * * * * * * *

2. SURETY BOND – FINANCIAL GUARANTEE BOND

A surety bond guaranteeing payment into a trust fund, as specified in Rule 0400-12-01-.05(8)(g)2 or part (g)2 of this paragraph, must be worded as follows, except that instructions in brackets are to be replaced with the relevant information and the brackets deleted:

FINANCIAL GUARANTEE 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)]_____

_____

EPA 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 Environment and Conservation (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 or interim status 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 or interim status, and

Whereas said Principal shall establish a standby trust fund as is required when a surety bond is used to provide such financial assurance;

Now, Therefore, the conditions of the obligation are such that if the Principal shall faithfully, before the beginning of final closure of each facility identified above, fund the standby trust fund in the amount(s) identified above for the facility,

Or, if the Principal shall fund the standby trust fund in such amount(s) within 15 days after a final order to begin closure is issued by the Commissioner of the Tennessee Department of Environment and Conservation, the Tennessee Solid Waste Disposal Control Board; or a court of competent jurisdiction,

Or, if the Principal shall provide alternate financial assurance, as specified in Tennessee Rule 0400-12-01-.05(8) or Rule 0400-12-01-.06(8), as applicable, and obtain the Director of the Department's Division of Solid Waste Management (hereinafter called Division Director) written approval of such assurance, 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 failed to perform as guaranteed by this bond, the Surety(ies) shall place funds in the amount guaranteed for the facility(ies) into the standby trust fund as directed by the Division Director.

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 operator 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 Financial Guarantee 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 Tennessee Rule 0400-12-01-.06(8)(p)2 as such regulations were 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: $ _____

* * * * * * * * * * * *

3. PERFORMANCE BOND

A surety bond guaranteeing performance of closure and/or post-closure care, as specified in part (g)3 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)) _____
_____

Facilities Covered (EPA 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 Environment and Conservation (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 0400-12-01-.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 0400-12-01-.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 by 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 0400-12-01-.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 0400-12-01-.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 this 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 this 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 principal (owner or operator) 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 this 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 agrees 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 (s) set forth below.

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 0400-12-01-.06(8)(p)3 as such regulation was constituted on the date (s) 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: $_____

* * * * * * * * * * * *

4. IRREVOCABLE STANDBY LETTER OF CREDIT

A letter of credit, as specified in part (g)4 of this paragraph or Rule 0400-12-01-.05(8)(g)3, 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 Environment and Conservation

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

(i) your sight draft, bearing reference to this letter of credit No. _____, and

(ii) 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 Management 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 Tennessee Rule 0400-12-01-.06(8)(p)4 as such regulations were constituted on the date shown immediately below.

(Signature(s))_____

(Name(s))_____

(Title(s))_____

(Corporate seal)

(Date)_____

This credit is subject to (insert "the most recent edition of the Uniform Customs and Practice for Documentary Credits, published and copyrighted by the International Chamber of Commerce," or "the Uniform Commercial Code").

* * * * * * * * * * * * *

5. CERTIFICATE OF INSURANCE FOR CLOSURE OR POST-CLOSURE CARE

A certificate of insurance, as specified in part (g)5 of this paragraph or Rule 0400-12-01-.05(8)(g)4, 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 EPA 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 facilities identified above. The Insurer further warrants that such policy conforms in all respects with the requirements of State Rules 0400-12-01-.05(8)(g)4 and 0400-12-01-.06(8)(g)5, 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 Environment and Conservation, 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 0400-12-01-.06(8)(p)5 as such regulations were constituted on the date shown immediately below.

(Authorized signature for Insurer) _____

(Name of person signing) _____

(Title of person signing) _____

Subscribed and sworn to before me this _____day of _____, ____

_____
Notary Public

My commission expires on the _____day of _____, _____

* * * * * * * * * * * *

6. LETTER FROM CHIEF FINANCIAL OFFICER

A letter from the chief financial officer, as specified in Rule 0400-12-01-.05(8)(g)7 or Rule 0400-12-01-.06(8)(g)8 must be worded as follows, except that instructions in brackets are to be replaced with the relevant information and the brackets 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 for closure and/or post-closure costs, as specified in paragraph (8) of Rules 0400-12-01-.05 and .06.

(Fill out the following five 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.)

(i) This firm is the owner or operator of the following facilities for which financial assurance for which financial assurance for closure or post-closure care is demonstrated through the financial test specified in paragraph (8) of Rules 0400-12-01-.05 and .06. The current closure and/or post-closure cost estimates covered by the test are shown for each facility: _____.

(ii) This firm guarantees, through the guarantee specified in paragraph (8) of Rules 0400-12-01-.05 and .06, the closure or post-closure care of the following facilities owned or operated by the guaranteed party. The current cost estimates for the closure or post-closure care so guaranteed are shown for each facility:_____. The firm identified above is [insert one or more: (1) The direct or higher-tier parent corporation of the owner or operator; (2) owned by the same parent corporation as the parent corporation of the owner or operator, and receiving the following value in consideration of this guarantee _____; or (3) engaged in the following substantial relationship with the owner or operator _____, and receiving the following value in consideration of this guarantee _____]. (Attach a written description of the business relationship or a copy of the contract establishing such relationship to this letter.)

(iii) In States other than Tennessee, 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 paragraph (8) of Rules 0400-12-01-.05 and .06. The current closure and/or post-closure cost estimates covered by such a test are shown for each facility:_____.

(iv) 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 (EPA) through the financial test or any other financial assurance mechanism specified in paragraph (8) of Rules 0400-12-01-.05 and .06 or equivalent or substantially equivalent State mechanisms. The current closure and/or post-closure cost estimates not covered by such financial assurance are shown for each facility:_____

_____

(v) This firm is the owner or operator of the following UIC facilities for which financial assurance for plugging and abandonment is required under 40 CFR part 144. The current closure cost estimates as required by 40 CFR 144.62 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 statements for the latest completed fiscal year, ended [date].

(Fill in Alternative I if the criteria of Rule 0400-12-01-.05(8)(g)7(i)(I) or Rule 0400-12-01-.06(g)8(i)(I) are used. Fill in Alternative II if the criteria of Rule 0400-12-01-.05(8)(g)7(i)(II) or Rule 0400-12-01-.06(8)(g)8(i)(II) are used.)

Alternative I

1.	Sum of current closure and post-closure cost estimate (total of all cost estimates shown in the five paragraphs above)	$_____
*2.	Total liabilities (if any portion of your closure or post-closure cost estimates is included in your 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.)	$_____
10.	Is line 3 at least $10 million? (Yes/No)	_____
11.	Is line 3 at least 6 times line 1? (Yes/No)	_____
12.	Is line 7 at least 6 times line 1? (Yes/No)	_____
*13.	Are at least 90% of firm's assets located in the U.S.? If not, complete line 14 (Yes/No)	_____
14.	Is line 9 at least 6 times line 1? (Yes/No)	_____
15.	Is line 2 divided by line 4 less than 2.0? (Yes/No)	_____
16.	Is line 8 divided by line 2 greater than 0.1? (Yes/No)	_____
17.	Is line 5 divided by line 6 greater than 1.5? (Yes/No)	_____

Alternative II

1.	Sum of current closure and post-closure cost estimates (total of all cost estimates shown in the five 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 (if any portion of the closure and post-closure cost estimates is included in "total liabilities" on your firm's financial statements, you may add that portion to this line)	$_____
*6.	Total assets in U.S. (required only if less than 90% of firm's assets are located in the U.S.)	$_____
7.	Is line 5 at least $10 million? (Yes/No)	$_____
8.	Is line 5 at least 6 times line 1? (Yes/No)	_____
*9.	Are at least 90% of firm's assets located in the U.S.? If not, complete line 10 (Yes/No)	_____
10.	Is line 6 at least 6 times line 1? (Yes/No)	_____

I hereby certify that the wording of this letter is identical to the wording specified in Tennessee Rule 0400-12-01-.06(8)(p)6 as such regulations were constituted on the date shown immediately below.

[Signature]_____

[Name]_____

[Title]_____

[Date]_____

* * * * * * * * * * * *

7. LETTER FROM CHIEF FINANCIAL OFFICER

A letter from the chief financial officer, as specified in Rule 0400-12-01-.05(8)(n)6 or Rule 0400-12-01-.06(8)(n)6, must be worded as follows, except that instructions in brackets 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 [firm's name and address]. This letter is in support of the use of the financial test to demonstrate financial responsibility for liability coverage [insert "and closure and/or post-closure care" if applicable] as specified in Rules 0400-12-01-.05(8) and 0400-12-01-.06(8).

(Fill out the following paragraphs regarding facilities and liability coverage. If there are no facilities that belong in a particular paragraph, write "None" in the space indicated. For each facility, include its Installation Identification Number, name, and address.)

The firm identified above is the owner or operator of the following facilities for which liability coverage for [insert "sudden" or "nonsudden" or "both sudden and nonsudden"] accidental occurrences is being demonstrated through the financial test specified in Rules 0400-12-01-.05(8) and 0400-12-01-.06(8):_____.

The firm identified above guarantees, through the guarantee specified in Rules 0400-12-01-.05(8) and 0400-12-01-.06(8), liability coverage for [insert "sudden" or "nonsudden" or "both sudden and nonsudden"] accidental occurrences at the following facilities owned or operated by the following: _____. The firm identified above is (insert one or more: (1) The direct or higher-tier parent corporation of the owner or operator; (2) owned by the same parent corporation as the parent corporation of the owner or operator, and receiving the following value in consideration of this guarantee _____; or (3) engaged in the following substantial business relationship with the owner or operator _____, and receiving the following value in consideration of this guarantee _____.) (Attach a written description of the business relationship or a copy of the contract establishing such relationship to this letter.)

(If you are using the financial test to demonstrate coverage of both liability and closure and post-closure care, fill in the following five 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 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.)

(i) The firm identified above owns or operates the following facilities for which financial assurance for closure or post-closure care or liability coverage is demonstrated through the financial test specified in Rules 0400-12-01-.05(8) and 0400-12-01-.06(8). The current closure and/or post-closure cost estimate covered by the test are shown for each facility: _____.

(ii) The firm identified above guarantees, through the guarantee specified in Rules 0400-12-01-.05(8) and 0400-12-01-.06(8), the closure and post-closure care or liability coverage of the following facilities owned or operated by the guaranteed party. The current cost estimates for the closure or post-closure care so guaranteed are shown for each facility:_____.

(iii) In States other than Tennessee, this firm 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 0400-12-01-.05(8) and 0400-12-01-.06(8). The current closure or post-closure cost estimates covered by such a test are shown for each facility: _____.

(iv) The firm 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 not demonstrated either to the Department, another State, or the U.S. Environmental Protection Agency through the financial test or any other financial assurance mechanisms specified in Rules 0400-12-01-.05(8) and 0400-12-01-.06(8) or equivalent or substantially equivalent State mechanisms. The current closure or post-closure cost estimates not covered by such financial assurance are shown for each facility: _____.

(v) This firm is the owner or operator or guarantor of the following UIC facilities for which financial assurance for plugging and abandonment is required under 40 CFR Part 144 and is assured through a financial test. The current closure cost estimates as required by 40 CFR 144.62 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 statements for the latest completed fiscal year, ended [date].

(Fill in part A if you are using the financial 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 0400-12-01-.05(8)(n)6(i)(I) or Rule 0400-12-01-.06(8)(n)6(i)(I) are used. Fill in Alternative II if the criteria of Rule 0400-12-01-.05(8)(n)6(i)(II) or Rule 0400-12-01-.06(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 minusline 3).	$_____
*5.	Tangible net worth	$_____
*6.	If less than 90% or assets are located in the U.S., give total U.S. assets.	$_____
		Yes or 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 assets are located in the U.S.).	$_____
		Yes or 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 0400-12-01-.06(8)(g)8(i)(I) and Rule 0400-12-01-.06(8)(n)6(i)(I) are used or if the criteria of Rule 0400-12-01-.05(8)(g)7(i)(I) and Rule 0400-12-01-.05(8)(n)6(i)(I) are used. Fill in Alternative II if the criteria of Rule 0400-12-01-.06(8)(g)8(i)(II) and Rule 0400-12-01-.06(8)(n)6(i)(II) are used or if the criteria of Rule 0400-12-01-.05(8)(g)7(i)(II) and Rule 0400-12-01-.05(8)(n)6(i)(II) are used.)

ALTERNATIVE I

1.	Sum of 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.	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 or 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 of 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 U.S. (required only if less than 90% of assets are located in the U.S.).	$_____

		Yes or 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 Rule 0400-12-01-.06(8)(p)7 as such regulations were constituted on the date shown immediately below.

(Signature) _____

(Name) _____

(Title) _____

(Date) _____

* * * * * * * * * * * *

8. CORPORATE GUARANTEE FOR CLOSURE OR POST-CLOSURE CARE

(i) A corporate guarantee, as specified in Rule 0400-12-01-.05(8)(g)7 or Rule 0400-12-01-.06(8)(g)8, must be worded as follows, except that instructions in brackets are to be replaced with the relevant information and the brackets 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. This guarantee is made [to the Tennessee Department of Environment and Conservation] on behalf of the [owner or operator] of [business address], which is [one of the following: "our subsidiary", "a subsidiary of [name and address of common parent corporation], of which guarantor is a "subsidiary"; or "an entity with which guarantor has a substantial business relationship, as defined in either Rule 0400-12-01-.05(8)(b) or Rule 0400-12-01-.06(8)(b)".

Recitals

1. Guarantor meets or exceeds the financial test criteria and agrees to comply with the reporting requirements for guarantors as specified in Rule 0400-12-01-.05(8)(n)7 and Rule 0400-12-01-.06(8)(n)7.

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 0400-12-01-.05(7) and 0400-12-01-.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 0400-12-01-.05(8) or 0400-12-01-.06(8), as applicable, monies in an amount equal to the current closure or post-closure cost estimates as specified in Tennessee Rules 0400-12-01-.05(8) and 0400-12-01-.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 0400-12-01-.05(8) or 0400-12-01-.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 0400-12-01-.05(8) or 0400-12-01-.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 0400-12-01-.05 or 0400-12-01-.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 0400-12-01-.05(8) and 0400-12-01-.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. (Insert the following language if the guarantor is (a) a direct or higher-tier corporate parent, or (b) a firm whose parent corporation is also the parent corporation of the owner or operator.)

    Guarantor may terminate this guarantee by sending notice by certified mail to the Division Director and to [owner or operator], provided that this guarantee may not be terminated unless and until [owner or operator] obtains, and the Commissioner approve(s), alternate closure and/or post-closure care coverage complying with Rule 0400-12-01-.05(8)(n) and/or Rule 0400-12-01-.06(8)(n).

    (Insert the following language if the guarantor is a firm qualifying as a guarantor due to its "substantial business relationship" with its owner or operator.)

    Guarantor may terminate this guarantee 120 days following the receipt of notification, through certified mail, by the Division Director and by [the owner or operator].

11. Guarantor agrees that if [owner or operator] fails to provide alternate financial assurance as specified in Tennessee Rules 0400-12-01-.05(8) or 0400-12-01-.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].

12. 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 0400-12-01-.06(8)(p)8(i) 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) _____

Subscribed and sworn to before me this _____day of _____, ___

_____
Notary Public

My commission expires on the _____day of _____, _____

(ii) A guarantee, as specified in Rule 0400-12-01-.05(8)(n)7 or Rule 0400-12-01-.06(8)(n)7 of this paragraph, must be worded as follows, except that instructions in parentheses are to be replaced with the relevant information and the brackets deleted:

GUARANTEE FOR LIABILITY COVERAGE

Guarantee made this [date] by [name of guaranteeing entity], a business corporation organized under the laws of [if incorporated within the United States], insert "the State of _____" and insert name of State; if incorporated outside the United States, insert the name of the country in which incorporated, the principal place of business within the United States, and the name and address of the registered agent in the State of the principal place of business], herein referred to as guarantor. This guarantee is made on behalf of [owner or operator] of [business address], which is one of the following: "our subsidiary;" "a subsidiary of [name and address of common parent corporation], of which guarantor is a subsidiary;" or "an entity with which guarantor has a substantial business relationship, as defined in [either Rule 0400-12-01-.05(8)(b) or Rule 0400-12-01-.06(8)(b)]" to any and all third parties who have sustained or may sustain bodily injury or property damage caused by [sudden and/or nonsudden] accidental occurrences arising from operation of the facility(ies) covered by this guarantee.

Recitals

1. Guarantor meets or exceeds the financial test criteria and agrees to comply with the reporting requirements for guarantors as specified in Rule 0400-12-01-.05(8)(n)7 or Rule 0400-12-01-.06(8)(n)7.

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; and if guarantor is incorporated outside the United States, list the name and address of the guarantor's registered agent in each State.) This corporate guarantee satisfies third-party liability requirements for [insert "sudden" or "nonsudden" or "both sudden and nonsudden"] accidental occurrences in above-named owner or operator facilities for coverage in the amount of [insert dollar amount] for each occurrence and [insert dollar amount] annual aggregate.

3. For value received from [owner or operator], guarantor guarantees to any and all third parties who have sustained or may sustain bodily injury or property damage caused by [sudden and/or nonsudden] accidental occurrences arising from operations of the facility(ies) covered by this guarantee that in the event that [owner or operator] fails to satisfy a judgement or award based on a determination of liability for bodily injury or property damage to third parties caused by [sudden and/or nonsudden] accidental occurrences, arising from the operation of the above-named facilities, or fails to pay an amount agreed to in settlement of a claim arising from or alleged to arise from such injury or damage, the guarantor will satisfy such judgment(s), award(s), or settlement agreement(s) up to the limits of coverage identified above.

4. Such obligation does not apply to any of the following:

   (i) Bodily injury or property damage for which [insert "owner" or "operator"] is obligated to pay damages by reason of the assumption of liability in a contract or agreement. This exclusion does not apply to liability for damages that [insert "owner" or "operator"] would be obligated to pay in the absence of the contract or agreement.

   (ii) Any obligation of [insert "owner" or "operator"] under a workers' compensation, disability benefits, or unemployment compensation law or any similar law.

   (iii) Bodily injury to:

      (I) An employee of [insert "owner" or "operator"] arising from, and in the course of, employment by [insert "owner" or "operator"]; or

      (II) The spouse, child, parent, brother or sister of that employee as a consequence of, or arising from, and in the course of employment by [insert "owner" or "operator"]. This exclusion applies:

         I. Whether [insert "owner" or "operator"] may be liable as an employer or in any other capacity; and

         II. To any obligation to share damages with or repay another person who must pay damages because of the injury to persons identified in items (I) and (II).

(iv) Bodily injury or property damage arising out of the ownership, maintenance, use, or entrustment to others of any aircraft, motor vehicle or watercraft.

(v) Property damage to:

(I) Any property owned, rented, or occupied by [insert "owner" or "operator"];

(II) Premises that are sold, given away or abandoned by [insert "owner" or "operator"] if the property damage arises out of any part of those premises;

(III) Property loaned to [insert "owner" or "operator"];

(IV) Personal property in the care, custody or control of [insert "owner" or "operator"];

(V) That particular part of real property on which [insert "owner" or "operator"] or any contractors or subcontractors working directly or indirectly on behalf of [insert "owner" or "operator"] are performing operations, if the property damage arises out of these operations.

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 Division Director and to [owner or operator] that he intends to provide alternate liability coverage as specified in Rules 0400-12-01-.05(8)(n) and 0400-12-01-.06(8)(n), as applicable, in the name of [owner or operator]. Within 120 days after the end of such fiscal year, the guarantor shall establish such liability coverage 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 the 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, he shall establish alternate liability coverage as specified in Rules 0400-12-01-.05(8)(n) and 0400-12-01-.06(8)(n) in the name of [owner or operator], unless [owner or operator] has done so.

8. Guarantor reserves the right to modify this agreement to take into account amendment or modification of the liability requirements set by Rules 0400-12-01-.05(8)(n) and 0400-12-01-.06(8)(n), provided that such modification shall become effective only if the Division Director does not disapprove the modification within 30 days of receipt of notification of the modification.

9. Guarantor agrees to remain bound under this guarantee for so long as [owner or operator] must comply with the applicable requirements of Rules 0400-12-01-.05(8)(n) and 0400-12-01-.06(8)(n) for the above-listed facility(ies), except as provided in paragraph 10 of this agreement.

10. (Insert the following language if the guarantor is (a) a direct or higher-tier corporate parent, or (b) a firm whose parent corporation is also the parent corporation of the owner or operator.)

Guarantor may terminate this guarantee by sending notice by certified mail to the Division Director and to [owner or operator], provided that this guarantee may not be terminated unless and until [the owner or operator] obtains, and the Division Director approve(s), alternate liability coverage complying with Rules 0400-12-01-.05(8)(n) and 0400-12-01-.06(8)(n).

(Insert the following language if the guarantor is a firm qualifying as a guarantor due to its "substantial business relationship" with the owner or operator.)

Guarantor may terminate this guarantee 120 days following receipt of notification, through certified mail, by the Division Director and by [the owner or operator].

11. Guarantor hereby expressly waives notice of acceptance of this guarantee by any party.

12. Guarantor agrees that this guarantee is in addition to and does not affect any other responsibility or liability of the guarantor with respect to the covered facilities.

13. The Guarantor shall satisfy a third-party liability claim only on receipt of one of the following documents:

(i) Certification from the Principal and the third-party claimant(s) that the liability claim should be paid. The certification must be worded as follows, except that instructions in parentheses are to be replaced with the relevant information and the parentheses deleted:

CERTIFICATION OF VALID CLAIM

The undersigned, as parties [insert Principal] and [insert name and address of third-party claimant(s)], hereby certify that the claim of bodily injury and/or property damage caused by a [sudden or nonsudden] accidental occurrence arising from operating (Principal's) hazardous waste treatment, storage, or disposal facility should be paid in the amount of $(_____).

(Signatures)_____
Principal

Subscribed and sworn to before me this _____day of _____, ___

_____
Notary Public

My commission expires on the _____day of _____, _____

(Signatures) _____
Claimant(s)

Subscribed and sworn to before me this _____day of _____, ___

_____
Notary Public

My commission expires on the _____day of _____, _____

(ii) A valid final court order establishing a judgment against the Principal for bodily injury or property damage caused by sudden or nonsudden accidental occurrences arising from the operation of the Principal's facility or group of facilities.

14. In the event of combination of this guarantee with another mechanism to meet liability requirements, this guarantee will be considered [insert "primary" or "excess"] coverage.

I hereby certify that the wording of the guarantee is identical to the wording specified in Tennessee Rule 0400-12-01-.06(8)(p)8(ii) as such regulations were constituted on the date shown immediately below.

Effective date: _____

(Name of guarantor) _____

(Authorized signature for guarantor) _____

(Name of person signing) _____

(Title of person signing) _____

Subscribed and sworn to before me this _____day of _____, _____

_____
Notary Public

My commission expires on the _____day of _____, _____

* * * * * * * * * * * *

9. HAZARDOUS WASTE FACILITY LIABILITY ENDORSEMENT

A hazardous waste facility liability endorsement, as required in Rule 0400-12-01-.05(8)(n) and Rule 0400-12-01-.06(8)(n) must be worded as follows, except that instructions in brackets are to be replaced with the relevant information and the brackets deleted:

HAZARDOUS WASTE FACILITY LIABILITY ENDORSEMENT

(i) 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 Environment and Conservation Rules 0400-12-01-.05(8)(n) or 0400-12-01-.06(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.]

(ii) 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 subitems I through V of this item are hereby amended to conform with subitems I through V:

I. Bankruptcy or insolvency of the insured shall not relieve the Insurer of its obligations under the policy to which this endorsement is attached.

II. 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 0400-12-01-.05(8)(n)6 or 0400-12-01-.06(8)(n)6.

III. Whenever requested by the Commissioner of the Tennessee Department of Environment and Conservation or his designee, the Insurer agrees to furnish to the Commissioner or designee a signed duplicate original of the policy and all endorsements.

IV. Cancellation of this endorsement, whether by the Insurer, the insured, a parent corporation providing insurance coverage for its subsidiary, or by a firm having an insurable interest in and obtaining liability insurance on behalf of the owner or operator of the hazardous waste management facility, will be effective only upon written notice and only after the expiration of 60 days after a copy of such written notice is received by the Division Director.

V. 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 Division Director.

Attached to and forming part of policy no. _____ issued by (name of Insurer), herein called the Insurer, (addressof Insurer) to (name of Insured) of (address) this _____day of _____, ____. The effective date of said policy is _____ day of _____, ____.

I hereby certify that the wording of this endorsement is identical to the wording specified in Tennessee Department of Environment and Conservation Rule 0400-12-01-.06(8)(p)9 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) _____

* * * * * * * * * * * *

10. HAZARDOUS WASTE FACILITY CERTIFICATE OF LIABILITY INSURANCE

A certificate of liability insurance as required in Rule 0400-12-01-.05(8)(n) or subparagraph (n) 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:

HAZARDOUS WASTE FACILITY CERTIFICATE OF LIABILITY INSURANCE

(i) (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 Environment and Conservation Rules 0400-12-01-.05(8)(n) or 0400-12-01-.06(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 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).

(ii) The Insurer further certifies the following with respect to the insurance described in item (I):

(I) Bankruptcy or insolvency of the insured shall not relieve the Insurer of its obligations under the policy.

(II) 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 Rule 0400-12-01-.05(8)(n)6 or Rule 0400-12-01-.06(8)(n)6.

(III) Whenever requested by the Commissioner of the Tennessee Department of Environment and Conservation or his designee, the Insurer agrees to furnish to the Commissioner or his designee a signed duplicate original of the policy and all endorsements.

(IV) Cancellation of the insurance, whether by the insurer, the insured, a parent corporation providing insurance coverage for its subsidiary, or by a firm having an insurable interest in and obtaining liability insurance on behalf of the owner or operator of the hazardous waste management facility, will be effective only upon written notice and only after the expiration of 60 days after a copy of such written notice is received by the Division Director.

(V) 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 Division Director.

I hereby certify that the wording of this instrument is identical to the wording specified in Tennessee Department of Environment and Conservation Rule 0400-12-01-.06(8)(p)10 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 the state of Tennessee.

(Signature of Authorized Representative of Insurer) _____

(Type Name) _____

(Title) Authorized Representative of (Name of Insurer) _____

(Address of Representative) _____

* * * * * * * * * * * *

11. IRREVOCABLE STANDBY LETTER OF CREDIT

A letter of credit, as specified in Rule 0400-12-01-.05(8)(n)8 or part (n)8 of this paragraph, 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

Name and Address of Issuing Institution _____

_____

(Address to Division Director)

Dear Sir or Madam: We hereby establish our Irrevocable Standby Letter of Credit No. _____ in the favor of any and all third-party liability claimants, at the request and for the account of (owner's or operator's name and address) for third-party liability awards or settlements up to (in words) U.S. dollars $____per occurrence and the annual aggregate amount of (in words) U.S. dollars $_____, for sudden accidental occurrences and/or for third-party liability awards or settlements up to the amount of (in words) U.S. dollars $_____ per occurrence, and the annual aggregate amount of (in words) U.S. dollars $_____, for nonsudden accidental occurrences available upon presentation of a sight draft, bearing reference to this letter of credit No. ___, and

(1) a signed certificate reading as follows:

CERTIFICATION OF VALID CLAIM

The undersigned, as parties (insert principal) and (insert name and address of third-party claimants), hereby certify that the claim of bodily injury (and/or) property damage caused by a (sudden or nonsudden) accidental occurrence arising from operations of (principal's) hazardous waste treatment, storage, or disposal facility should be paid in the amount of $_____. We hereby certify that the claim does not apply to any of the following:

(i) Bodily injury or property damage for which (insert principal) is obligated to pay damages by reason of the assumption of liability in a contract or agreement. This exclusion does not apply to liability for damages that (insert principal) would be obligated to pay in the absence of the contract or agreement.

(ii) Any obligation of (insert principal) under a workers' compensation, disability benefits, or unemployment compensation law or any similar law.

(iii) Bodily injury to:

(I) An employee of (insert principal) arising from, and in the course of, employment by (insert principal); or

(II) The spouse, child, parent, brother or sister of that employee as a consequence of, or arising from, and in the course of employment by (insert principal). This exclusion applies:

I. Whether (insert principal) may be liable as an employer or in any other capacity; and

II. To any obligation to share damages with or repay another person who must pay damages because of the injury to persons identified in subitems I and II of this item.

(iv) Bodily injury or property damage arising out of the ownership, maintenance, use, or entrustment to others of any aircraft, motor vehicle or watercraft.

(v) Property damage to:

(I) Any property owned, rented, or occupied by (insert principal);

(II) Premises that are sold, given away or abandoned by (insert principal) if the property damage arises out of any part of those premises;

(III) Property loaned to (insert principal);

(IV) Personal property in the care, custody or control of (insert principal);

(V) That particular part of real property on which (insert principal) or any contractors or subcontractors working directly or indirectly on behalf of (insert principal) are performing operations, if the property damage arises out of these operations.

(Signatures)
Grantor _____

(Signatures)
Claimant(s) _____

or

(2) a valid final court order establishing a judgment against the Grantor for bodily injury or property damage caused by a sudden or nonsudden accidental occurrence arising from operation of the Grantor's facility or group of facilities.

This letter of credit is effective as of (date) and shall expire on (date at least one year later), but such expiration date shall be automatically extended for a period of (at least one year) on (date) and on each successive expiration date, unless, at least 120 days before the current expiration date, we notify you, the Division Director, 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.

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.

In the event that this letter of credit is used in combination with another mechanism for liability coverage, this letter of credit shall be considered (insert "primary" or "excess") coverage.

We certify that the wording of this letter of credit is identical to the wording specified in Tennessee Rule 0400-12-01-.06(8)(p)11 as such regulations were constituted on the date shown immediately below.

(Signatures(s))_____

(Name(s)) _____

(Title(s))_____

(Date) _____

This credit is subject to (insert "the most recent edition of the Uniform Customs and Practice for Documentary Credits, published and copyrighted by the International Chamber of Commerce" or "the Uniform Commercial Code").

****

12. PAYMENT BOND

A surety bond, as specified in Rule 0400-12-01-.05(8)(n)9 or part (n)9 of this paragraph, must be worded as follows except that instructions in parentheses are to be replaced with the relevant information and the parentheses deleted:

PAYMENT BOND

Surety Bond No. (Insert Number)

Parties (insert name and address of owner or operator), Principal, incorporated in (Insert State of incorporation) of (Insert city and State of principal place of business) and (Insert name and address of surety company(ies)), Surety Company(ies), of (Insert surety(ies) place of business).

Installation Identification Number, name, and address for each facility guaranteed by this bond: _____

_____

	Sudden Accidental Occurences	Nonsudden Accidental Occurences
Penal Sum Per Occurence	(insert amount)	(insert amount)
Annual Aggregate	(insert amount)	(insert amount)

Purpose:

This is an agreement between the Surety(ies) and the Principal under which the Surety(ies), its (their) successors and assignees, agree to be responsible for the payment of claims against the Principal for bodily injury and/or property damage to third parties caused by ("sudden" and/or "nonsudden") accidental occurrences arising from operations of the facility or group of facilities in the sums prescribed herein; subject to the governing provisions and the following conditions:

Governing Provisions:

(i) Sections 68-212-107 and 68-212-108 of the Hazardous Waste Management Act of l977, as amended (Tennessee Code Annotated, Title 68, Chapter 212, Part 1).

(ii) Rules and regulations of the Tennessee Division of Solid Waste Management, particularly ("Rule 0400-12-01-.05(8)(n)" or "Rule 0400-12-01-.06(8)(n)") (if applicable).

(iii) Applicable rules and regulations of the Tennessee Department of Commerce and Insurance and any other applicable laws or regulations.

Conditions:

(i) The Principal is subject to the applicable governing provisions that require the Principal to have and maintain liability coverage for bodily injury and property damage to third parties caused by ("sudden" and/or "nonsudden") accidental occurrences arising from operations of the facility or group of facilities. Such obligation does not apply to any of the following:

(I) Bodily injury or property damage for which (insert principal) is obligated to pay damages by reason of the assumption of liability in a contract or agreement. This exclusion does not apply to liability for damages that (insert principal) would be obligated to pay in the absence of the contract or agreement.

(II) Any obligation of (insert principal) under a workers' compensation, disability benefits, or unemployment compensation law or similar law.

(III) Bodily injury to:

I. An employee of (insert principal) arising from, and in the course of, employment by (insert principal); or

II. The spouse, child, parent, brother or sister of that employee as a consequence of, or arising from, and in the course of employment by (insert principal). This exclusion applies:

A. Whether (insert principal) may be liable as an employer or in any other capacity; and

B. To any obligation to share damages with or repay another person who must pay damages because of the injury to persons identified in sections A and B.

(IV) Bodily injury or property damage arising out of the ownership, maintenance, use, or entrustment to others of any aircraft, motor vehicle or watercraft.

(V) Property damage to:

I. Any property owned, rented, or occupied by (insert principal);

II. Premises that are sold, given away or abandoned by (insert principal) if the property damage arises out of any part of those premises;

III. Property loaned to (insert principal);

IV. Personal property in the care, custody or control of (insert principal);

V. That particular part of real property on which (insert principal) or any contractors or subcontractors working directly or indirectly on behalf of (insert principal) are performing operations, if the property damage arises out of these operations.

(ii) This bond assures that the Principal will satisfy valid third party liability claims, as described in condition (I).

(iii) If the Principal fails to satisfy a valid third party liability claim, as described above, the Surety(ies) becomes liable on this bond obligation.

(iv) The Surety(ies) shall satisfy a third party liability claim only upon the receipt of one of the following documents:

(I) Certification from the Principal and the third party claimant(s) that the liability claim should be paid. The certification must be worded as follows, except that instructions in parentheses are to be replaced with the relevant information and the parentheses deleted:

Certification of Valid Claim

The undersigned, as parties (insert name of Principal) and (insert name and address of third party claimant(s)), hereby certify that the claim of bodily injury and/or property damage caused by a (sudden or nonsudden) accidental occurrence arising from operating (Principal's) hazardous waste treatment, storage, or disposal facility should be paid in the amount of $(_____).

(Signature) _____
Principal)

Subscribed and sworn to before me this _____ day of _____, _____

_____
Notary Public

My commission expires on the _____ day of _____, _____

(Signature(s))_____
Claimant(s)

Subscribed and sworn to before me this _____ day of _____, _____

_____
Notary Public

My commission expires on the _____ day of _____, _____

or

(II) A valid final court order establishing a judgment against the Principal for bodily injury or property damage caused by sudden or nonsudden accidental occurrences arising from the operation of the Principal's facility or group of facilities.

(v) In the event of combination of this bond with another mechanism for liability coverage, this bond will be considered (insert "primary" or "excess") coverage.

(vi) 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. In no event shall the obligation of the Surety(ies) hereunder exceed the amount of said annual aggregate penal sum, provided that the Surety(ies) furnish(es) notice to the Division Director forthwith of all claims filed and payments made by the Surety(ies) under this bond.

(vii) The Surety(ies) may cancel the bond by sending notice of cancellation by certified mail to the Principal and 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 the Principal and the Division Director, as evidenced by the return receipt.

(viii) The Principal may terminate this bond by sending written notice to the Surety(ies) and to the Division Director.

(ix) The Surety(ies) hereby waive(s) notification of amendments to applicable laws, statutes, rules and regulations and agree(s) that no such amendment shall in any way alleviate its (their) obligation on this bond.

(x) This bond is effective from (insert date) (12:01 a.m., standard time, at the address of the Principal as stated herein) and shall continue in force until terminated as described above.

In Witness Whereof, the Principal and Surety(ies) have executed this 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 Tennessee Rule 0400-12-01-.06(8)(p)12, as such regulations were 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: $_____

* * * * * * * * * * * *

13. TRUST AGREEMENT

(i) A trust agreement, as specified in Rule 0400-12-01-.05(8)(n)10 or part (n)10 of this paragraph, must be worded as follows, except that instructions in parentheses are to be replaced with the relevant information and the parentheses deleted:

TRUST AGREEMENT

Trust Agreement, the "Agreement," entered into as of (date) by and between (name of the owner or operator) a (name of State) (insert "corporation," "partnership," "association," or "proprietorship"), the "Grantor," and (name of corporate trustee), (insert "incorporated in the State of _____" or "a national bank"), the "Trustee."

Whereas the Tennessee Solid Waste Disposal Control Board has established certain regulations applicable to the Grantor, requiring that an owner or operator of a hazardous waste management facility or group of facilities must demonstrate financial responsibility for bodily injury and property damage to third parties caused by sudden accidental and/or nonsudden accidental occurrences arising from operations of the facility or group of facilities.

Whereas, the Grantor has elected to establish a trust to assure all or part of such financial responsibility for the facilities identified herein.

Whereas, the Grantor, acting through its duly authorized officers, has selected the Trustee to be the trustee under this agreement, and the Trustee is willing to act as trustee.

Now, therefore, the Grantor and the Trustee agree as follows:

SECTION 1
DEFINITIONS

As used in this Agreement:

(I) The term "Grantor" means the owner or operator who enters into this Agreement and any successors or assigns of the Grantor.

(II) The term "Trustee" means the Trustee who enters into this Agreement and any successor Trustee.

SECTION 2
IDENTIFICATION OF FACILITIES

This agreement pertains to the facilities identified on attached schedule A (on schedule A, for each facility list the EPA Identification Number, name, and address of the facility(ies) and the amount of liability coverage, or portions thereof, if more than one instrument affords combined coverage as demonstrated by this Agreement).

SECTION 3
ESTABLISHMENT OF FUND

The Grantor and the Trustee hereby establish a trust fund, hereinafter the "Fund," for the benefit of any and all third parties injured or damaged by (sudden and/or nonsudden) accidental occurrences arising from operation of the facility(ies) covered by this guarantee, in the amounts of ___(up to $1 million) per occurrence and _____(up to $2 million) annual aggregate for sudden accidental occurrences and _____(up to $3 million) per occurrence and _____(up to $6 million) annual aggregate for nonsudden occurrences, except that the Fund is not established for the benefit of third parties for the following:

(I) Bodily injury or property damage for which (insert Grantor) is obligated to pay damages by reason of the assumption of liability in a contract or agreement. This exclusion does not apply to liability for damages that (insert Grantor) would be obligated to pay in the absence of the contract or agreement.

(II) Any obligation of (insert Grantor) under a workers' compensation, disability benefits, or unemployment compensation law or any similar law.

(III) Bodily injury to:

I. An employee of (insert Grantor) arising from, and in the course of, employment by (insert Grantor); or

II. The spouse, child, parent, brother or sister of that employee as a consequence of, or arising from, and in the course of employment by (insert Grantor). This exclusion applies:

A. Whether (insert Grantor) may be liable as an employer or in any other capacity; and

B. To any obligation to share damages with or repay another person who must pay damages because of the injury to persons identified in subitems I and II.

(IV) Bodily injury or property damage arising out of the ownership, maintenance, use, or entrustment to others of any aircraft, motor vehicle or watercraft.

(V) Property damage to:

I. Any property owned, rented, or occupied by (insert Grantor);

II. Premises that are sold, given away or abandoned by (insert Grantor) if the property damage arises out of any part of those premises;

III. Property loaned to (insert Grantor);

IV. Personal property in the care, custody or control of (insert Grantor);

V. That particular part of real property on which (insert Grantor) or any contractors or subcontractors working directly or indirectly on behalf of (insert Grantor) are performing operations, if the property damage arises out of these operations.

In the event of combination with another mechanism for liability coverage, the fund shall be considered (insert "primary" or "excess") coverage.

The Fund is established initially as consisting of the property, which is acceptable to the Trustee, described in Schedule B attached hereto. Such property and any other property subsequently transferred to the Trustee is referred to as the Fund, together with all earnings and profits thereon, less any payments or distributions made by the Trustee pursuant to this Agreement. The Fund shall be held by the Trustee, IN TRUST, as hereinafter provided. The Trustee shall not be responsible nor shall it undertake any responsibility for the amount or adequacy of, nor any duty to collect from the Grantor, any payments necessary to discharge any liabilities of the Grantor established by the Department.

SECTION 4
PAYMENT FOR BODILY INJURY OR PROPERTY DAMAGE

The Trustee shall satisfy a third party liability claim by making payments from the Fund only upon receipt of one of the following documents:

(I) Certification from the Grantor and the third party claimant(s) that the liability claim should be paid. The certification must be worded as follows, except that instructions in parentheses are to be replaced with the relevant information and the parentheses deleted.

CERTIFICATION OF VALID CLAIM

The undersigned, as parties (insert Grantor) and (insert name and address of third party claimant(s)), hereby certify that the claim of bodily injury and/or property damage caused by a (sudden or nonsudden) accidental occurrence arising from operating (Grantor's) hazardous waste treatment, storage, or disposal facility should be paid in the amount of $(_____).

(Signatures)_____
Grantor

(Signatures)_____
Claimant(s)

(II) A valid final court order establishing a judgment against the Grantor for bodily injury or property damage caused by sudden or nonsudden accidental occurrences arising from the operation of the Grantor's facility or group of facilities.

SECTION 5
PAYMENTS COMPRISING THE FUND

Payments made to the Trustee for the Fund shall consist of cash or securities acceptable to the Trustee.

SECTION 6
TRUSTEE MANAGEMENT

The Trustee shall invest and reinvest the principal and income, in accordance with general investment policies and guidelines which the Grantor may communicate in writing to the Trustee from time to time, subject, however, to the provisions of this section. In investing, reinvesting, exchanging, selling, and managing the Fund, the Trustee shall discharge his duties with respect to the trust fund solely in the interest of the beneficiary and with the care, skill, prudence, and diligence under the circumstance then prevailing which persons of prudence, acting in a like capacity and familiar with such matters, would use in the conduct of an enterprise of a like character and with like aims; except that:

(I) Securities or other obligations of the Grantor, or any other owner or operator of the facilities, or any of their affiliates as defined in the Investment Company Act of 1940, as amended, 15 U.S.C. 80a-2.(a), shall not be acquired or held unless they are securities or other obligations of the Federal or a State government;

(II) The Trustee is authorized to invest the Fund in time or demand deposits of the Trustee, to the extent insured by an agency of the Federal or State government; and

(III) The Trustee is authorized to hold cash awaiting investment or distribution uninvested for a reasonable time and without liability for the payment of interest thereon.

SECTION 7
COMMINGLING AND INVESTMENT

The Trustee is expressly authorized in its discretion:

(I) To transfer from time to time any or all of the assets of the Fund to any common commingled or collective trust fund created by the Trustee in which the fund is eligible to participate, subject to all of the provisions thereof, to be commingled with the assets of other trusts participating therein; and

(II) To purchase shares in any investment company registered under the Investment Company Act of I940, 15 U.S.C. 81a-1 et seq., including one which may be created, managed, underwritten, or to which investment advice is rendered or the shares of which are sold by the Trustee. The Trustee may vote such shares in its discretion.

SECTION 8
EXPRESS POWERS OF TRUSTEE

Without in any way limiting the powers and discretions conferred upon the Trustee by the other provisions of this Agreement or by law, the Trustee is expressly authorized and empowered:

(I) To sell, exchange, convey, transfer, or otherwise dispose of any property held by it, by public or private sale. No person dealing with the Trustee shall be bound to see to the application of the purchase money or to inquire into the validity or expediency of any such sale or other disposition;

(II) To make, execute, acknowledge, and deliver any and all documents of transfer and conveyance and any and all other instruments that may be necessary or appropriate to carry out the powers herein granted;

(III) To register any securities held in the Fund in its own name or in the name of a nominee and to hold any security in bearer form or in book entry, or to combine certificates representing such securities with certificates of the same issue held by the Trustee in other fiduciary capacities, or to deposit or arrange for the deposit of such securities in a qualified central depository even though, when so deposited, such securities may be merged and held in bulk in the name of the nominee of such depository with other securities deposited therein by another person, or to deposit or arrange for the deposit of any securities issued by the United States Government, or any agency or instrumentality thereof, with a Federal Reserve bank, but the books and records of the Trustee shall at all times show that all such securities are part of the Fund;

(IV) To deposit any cash in the Fund in interest-bearing accounts maintained or savings certificates issued by the Trustee, in its separate corporate capacity, or in any other banking institution affiliated with the Trustee, to the extent insured by an agency of the Federal or State government; and

(V) To compromise or otherwise adjust all claims in favor of or against the Fund.

SECTION 9
TAXES AND EXPENSES

All taxes of any kind that may be assessed or levied against or in respect of the Fund and all brokerage commissions incurred by the Fund shall be paid from the Fund. All other expenses incurred by the Trustee in connection with the administration of this Trust, including fees for legal services rendered to the Trustee, the compensation of the Trustee to the extent not paid directly by the Grantor, and all other proper charges and disbursements of the Trustee shall be paid from the Fund.

SECTION 10
ANNUAL VALUATIONS

The Trustee shall annually, at least 30 days prior to the anniversary date of establishment of the Fund, furnish to the Grantor and to the Division Director a statement confirming the value of the Trust. Any securities in the Fund shall be valued at market value as of no more than 60 days prior to the anniversary date of establishment of the Fund. The failure of the Grantor to object in writing to the Trustee within 90 days after the statement has been furnished to the Grantor and the Division Director shall constitute a conclusively binding assent by the Grantor barring the Grantor from asserting any claim or liability against the Trustee with respect to matters disclosed in the statement.

SECTION 11
ADVICE OF COUNSEL

The Trustee may from time to time consult with counsel, who may be counsel to the Grantor, with respect to any question arising as to the construction of this Agreement or any action to be taken hereunder. The Trustee shall be fully protected, to the extent permitted by law, in acting upon the advice of counsel.

SECTION 12
TRUSTEE COMPENSATION

The Trustee shall be entitled to reasonable compensation for its services as agreed upon in writing from time to time with the Grantor.

SECTION 13
SUCCESSOR TRUSTEE

The Trustee may resign or the Grantor may replace the Trustee, but such resignation or replacement shall not be effective until the Grantor has appointed a successor trustee and this successor accepts the appointment. The successor trustee shall have the same powers and duties as those conferred upon the Trustee hereunder. Upon the successor trustee's acceptance of the appointment, the Trustee shall assign, transfer, and pay over to the successor trustee the funds and properties then constituting the Fund. If for any reason the Grantor cannot or does not act in the event of the resignation of the Trustee, the Trustee may apply to a court of competent jurisdiction for the appointment of a successor trustee or for instructions. The successor trustee shall specify the date on which it assumes administration of the trust in a writing sent to the Grantor, the Division Director, and the present Trustee by certified mail 10 days before such change becomes effective. Any expenses incurred by the Trustee as a result of any of the acts contemplated by this SECTION shall be paid as provided in SECTION 9.

SECTION 14
INSTRUCTIONS TO THE TRUSTEE

All orders, requests, and instructions by the Grantor to the Trustee shall be in writing, signed by such persons as are designated in the attached Exhibit A or such other designees as the Grantor may designate by amendments to Exhibit A. The Trustee shall be fully protected in acting without inquiry in accordance with the Grantor's orders, requests, and instructions. All orders, requests, and instructions by the Division Director to the Trustee shall be in writing, signed by the Commissioner of the Tennessee Department of Environment and Conservation or his designee, and the Trustee shall act and shall be fully protected in acting in accordance with such orders, requests, and instructions. The Trustee shall have the right to assume, in the absence of written notice to the contrary, that no event constituting a change or a termination of the authority of any person to act on behalf of the Grantor or the Department hereunder has occurred. The Trustee shall have no duty to act in the absence of such orders, requests, and instructions from the Grantor and/or the Department, except as provided for herein.

SECTION 15
NOTICE OF NONPAYMENT

If a payment for bodily injury or property damage is made under SECTION 4 of this trust, the Trustee shall notify the Grantor of such payment and the amount(s) thereof within five (5) working days. The Grantor shall, on or before the anniversary date of the establishment of the Fund following such notice, either make payments to the Trustee in amounts sufficient to cause the trust to return to its value immediately prior to the payment of claims under SECTION 4, or shall provide written proof to the Trustee that other financial assurance for liability coverage has been obtained equaling the amount necessary to return the trust to its value prior to the payment of claims. If the Grantor does not either make payments to the Trustee or provide the Trustee with such proof, the Trustee shall within 10 working days after the anniversary date of the establishment of the Fund provide a written notice of nonpayment to the Division Director.

SECTION 16
AMENDMENT OF AGREEMENT

This Agreement may be amended by an instrument in writing executed by the Grantor, the Trustee, and the Commissioner of the Tennessee Department of Environment and Conservation or his designee, or by the Trustee and the Commissioner of the Tennessee Department of Environment and Conservation or his designee if the Grantor ceases to exist.

SECTION 17
IRREVOCABILITY AND TERMINATION

Subject to the right of the parties to amend this Agreement as provided in SECTION 16, this Trust shall be irrevocable and shall continue until terminated at the written agreement of the Grantor, the Trustee, and the Commissioner of the Tennessee Department of Environment and Conservation or his designee, or by the Trustee

and the Commissioner of the Tennessee Department of Environment and Conservation or his designee, if the Grantor ceases to exist. Upon termination of the Trust, all remaining trust property, less final trust administration expenses, shall be delivered to the Grantor.

The Commissioner of the Tennessee Department of Environment and Conservation or his designee will agree to termination of the Trust when the owner or operator substitutes alternate financial assurance as specified in this SECTION.

SECTION 18
IMMUNITY AND INDEMNIFICATION

The Trustee shall not incur personal liability of any nature in connection with any act or omission, made in good faith, in the administration of this Trust, or in carrying out any directions by the Grantor or the Commissioner of the Tennessee Department of Environment and Conservation or his designee issued in accordance with this Agreement. The Trustee shall be indemnified and saved harmless by the Grantor or from the Trust Fund, or both, from and against any personal liability to which the Trustee may be subjected by reason of any act or conduct in its official capacity, including all expenses reasonably incurred in its defense in the event the Grantor fails to provide such defense.

SECTION 19
CHOICE OF LAW

This Agreement shall be administrated, construed, and enforced according to the laws of the State of (enter name of State).

SECTION 20
INTERPRETATION

As used in this Agreement, words in the singular include the plural and words in the plural include the singular. The descriptive headings for each SECTION of this Agreement shall not affect the interpretation or the legal efficacy of this Agreement.

In Witness Whereof the parties have caused this Agreement to be executed by their respective officers duly authorized and their corporate seals to be hereunto affixed and attested as of the date first above written. The parties below certify that the wording of this Agreement is identical to the wording specified in Tennessee Rule 0400-12-01-.06(8)(p)13 as such regulations were constituted on the date first above written.

(Signature of Grantor) _____
(Title) _____

Attest: _____
(Title) _____
(Seal)

(Signature of Trustee) _____

Attest: _____
(Title) _____
(Seal)

(ii) Certification of Acknowledgement

The following is an example of the certification of acknowledgement which must accompany the trust agreement for a trust fund as specified in Rule 0400-12-01-.05(8)(n)10 or part (n)10 of this paragraph. State requirements may differ on the proper content of this acknowledgement.

CERTIFICATION OF ACKNOWLEDGEMENT

State of_____
County of_____

On this (date), before me personally came (owner or operator) to me known, who, being by me duly sworn, did depose and say that she/he resides at (address), that she/he is (title) of (corporation), the corporation described in and which executed the above instrument; that she/he knows the seal of said corporation; that the seal affixed to such instrument is such corporate seal; that it was so affixed by order of the Board of Directors of said corporation, and that she/he signed her/his name thereto by like order.

Subscribed and sworn to before me this _____day of _____, ____

_____
Notary Public

My commission expires on the _____day of _____, _____

* * * * * * * * * * * *

14. STANDBY TRUST AGREEMENT

(i) A standby trust agreement, as specified in Rule 0400-12-01-.05(8)(n)8 or part (n)8 of this paragraph, must be worded as follows, except that instructions in brackets are to be replaced with the relevant information and the brackets deleted:

STANDBY TRUST AGREEMENT

Trust Agreement, the "Agreement," entered into as of [date] by and between [name of the owner or operator] a [name of a State] [insert "corporation," "partnership," "association," or "proprietorship"], the "Grantor," and [name of corporate trustee], [insert, "incorporated in the State of _____" or "a national bank"], the "trustee."

Whereas the Tennessee Solid Waste Disposal Control Board (hereinafter Board) has established certain regulations applicable to the Grantor, requiring that an owner or operator of a hazardous waste management facility or group of facilities must demonstrate financial responsibility for bodily and property damage to third parties caused by sudden accidental and/or nonsudden accidental occurrences arising from operations of the facility or group of facilities.

Whereas, the Grantor has elected to establish a standby trust into which the proceeds from a letter of credit may be deposited to assure all or part of such financial responsibility for the facilities identified herein.

Whereas, the Grantor, acting through its duly authorized officers, has selected the Trustee to be the trustee under this agreement, and the Trustee is willing to act as trustee.

Now, therefore, the Grantor and the Trustee agree as follows:

SECTION 1
DEFINITIONS

As used in this Agreement:

(I) The term Grantor means the owner or operator who enters into this Agreement and any successors or assigns of the Grantor.

(II) The term Trustee means the Trustee who enters into this Agreement and any successor Trustee.

SECTION 2
IDENTIFICATION OF FACILITIES

This agreement pertains to the facilities identified on attached schedule A [on schedule A, for each facility list the EPA Identification Number, name, and address of the facility(ies) and the amount of liability coverage, or portions thereof, if more than one instrument affords combined coverage as demonstrated by this Agreement].

SECTION 3

ESTABLISHMENT OF FUND

The Grantor and the Trustee hereby establish a standby trust fund, hereafter the "Fund," for the benefit of any and all third parties injured or damaged by [sudden and/or nonsudden] accidental occurrences arising from operation of the facility(ies) covered by this guarantee, in the amounts of ___[up to $1 million] per occurrence and [up to $2 million] annual aggregate for sudden accidental occurrences and _____ [up to $3 million] per occurrence and _____ [up to $6 million] annual aggregate for nonsudden occurrences, except that the Fund is not established for the benefit of third parties for the following:

(I) Bodily injury or property damage for which [insert Grantor] is obligated to pay damages by reason of the assumption of liability in a contract or agreement. This exclusion does not apply to liability for damages that [insert Grantor] would be obligated to pay in the absence of the contract or agreement.

(II) Any obligation of [insert Grantor] under a workers' compensation, disability benefits, or unemployment compensation law or any similar law.

(III) Bodily injury to:

I. An employee of [insert Grantor] arising from, and in the course of, employment by [insert Grantor]; or

II. The spouse, child, parent, brother or sister of that employee as a consequence of, or arising from, and in the course of employment by [insert Grantor].

This exclusion applies:

A. Whether [insert Grantor] may be liable as an employer or in any other capacity; and

B. To any obligation to share damages with or repay another person who must pay damages because of the injury to persons identified in subitems I and II.

(IV) Bodily injury or property damage arising out of the ownership, maintenance, use, or entrustment to others of any aircraft, motor vehicle or watercraft.

(V) Property damage to:

I. Any property owned, rented, or occupied by [insert Grantor];

II. Premises that are sold, given away or abandoned by [insert Grantor] if the property damage arises out of any part of those premises;

III. Property loaned by [insert Grantor];

IV. Personal property in the care, custody or control of [insert Grantor];

V. That particular part or real property on which [insert Grantor] or any contractors or subcontractors working directly or indirectly on behalf of [insert Grantor] are performing operations, if the property damage arises out of these operations.

In the event of combination with another mechanism for liability coverage, the fund shall be considered [insert "primary" or "excess"] coverage.

The Fund is established initially as consisting of the proceeds of the letter of credit deposited into the Fund. Such proceeds and any other property subsequently transferred to the Trustee is referred to as the Fund, together with all earnings and profits thereon, less any payments or distributions made by the Trustee pursuant to this Agreement. The Fund shall be held by the Trustee, IN TRUST, as hereinafter provided. The Trustee shall not be responsible nor shall it undertake any responsibility for the amount or adequacy of, nor any duty to collect from the Grantor, any payments necessary to discharge any liabilities of the Grantor established the Board.

SECTION 4
PAYMENT FOR BODILY INJURY OR PROPERTY DAMAGE

The Trustee shall satisfy a third party liability claim by drawing on the letter of credit described in Schedule B and by making payments from the Fund only upon receipt of one of the following documents:

(I) Certification from the Grantor and the third party claimant(s) that the liability claim should be paid. The certification must be worded as follows, except that instructions in brackets are to be replaced with the relevant information and the brackets deleted:

Certification of Valid Claim

The undersigned, as parties [insert Grantor] and [insert name and address of third party claimant(s)], hereby certify that the claim of bodily injury and/or property damage caused by a [sudden or nonsudden] accidental occurrence arising from operating [Grantor's] hazardous waste treatment, storage, or disposal facility should be paid in the amount of $[ ].

[Signature]_____
Grantor

[Signatures]_____
Claimant(s)

(II) A valid final court order establishing a judgment against the Grantor for bodily injury or property damage caused by sudden or nonsudden accidental occurrences arising from the operation of the Grantor's facility or group of facilities.

SECTION 5
PAYMENTS COMPRISING THE FUND

Payments made to the Trustee for the Fund shall consist of the proceeds from the letter of credit drawn upon by the Trustee in accordance with the requirements of Tennessee Rule 0400-12-01-.06(8)(p)14 and Section 4 of this Agreement.

SECTION 6
TRUSTEE MANAGEMENT

The Trustee shall invest and reinvest the principal and income, in accordance with general investment policies and guidelines which the Grantor may communicate in writing to the Trustee from time to time, subject, however, to the provisions of this Section. In investing, reinvesting, exchanging, selling, and managing the Fund, the Trustee shall discharge his duties with respect to the trust fund in the interest of the beneficiary and with the care, skill, prudence, and diligence under the circumstances then prevailing which persons of prudence, acting in a like capacity and familiar with such matters, would use in the conduct of an enterprise of a like character and with like aims; except that:

(I) Securities or other obligations of the Grantor, or any other owner or operator of the facilities, or any of their affiliates as defined in the Investment Company Act of 1940, as amended, 15 U.S.C. 80a-2(a), shall not be acquired or held, unless they are securities or other obligations of the Federal or a State government;

(II) The Trustee is authorized to invest the Fund in time or demand deposits of the Trustee, to the extent insured by an agency of the Federal or a State government; and

(III) The Trustee is authorized to hold cash awaiting investment or distribution uninvested for a reasonable time and without liability for the payment of interest thereon.

SECTION 7
COMMINGLING AND INVESTMENT

The Trustee is expressly authorized in its discretion:

(I) To transfer from time to time any or all of the assets of the Fund to any common, commingled, or collective trust fund created by the Trustee in which the Fund is eligible to participate, subject to all of the provisions thereof, to be commingled with the assets of other trusts participating therein; and

(II) To purchase shares in any investment company registered under the Investment Company Act of 1940, 15 U.S.C. 80a-1 et seq., including one which may be created, managed, underwritten, or to which investment advice is rendered or the shares of which are sold by the Trustee. The Trustee may vote such shares in its discretion.

SECTION 8
EXPRESS POWERS OF TRUSTEE

Without in any way limiting the powers and discretions conferred upon the Trustee by the other provisions of this Agreement or by law, the Trustee is expressly authorized and empowered:

(I) To sell, exchange, convey, transfer, or otherwise dispose of any property held by it, by public or private sale. No person dealing with the Trustee shall be bound to see to the application of the purchase money or to inquire into the validity or expediency of any such sale or other disposition;

(II) To make, execute, acknowledge, and deliver any and all documents of transfer and conveyance and any all other instruments that may be necessary or appropriate to carry out the powers herein granted;

(III) To register any securities held in the Fund in its own name or in the name of a nominee and to hold any security in bearer form or in book entry, or to combine certificates representing such securities with certificates of the same issue held by the Trustee in other fiduciary capacities, or to deposit or arrange for the deposit of such securities in a qualified central depositary even though, when so deposited, such securities may be merged and held in bulk in the name of the nominee of such depositary with other securities deposited therein by another person, or to deposit or arrange for the deposit of any securities issued by the United States Government, or any agency or instrumentality thereof, with a Federal Reserve Bank, but the books and records of the Trustee shall at all times show that all such securities are part of the Fund;

(IV) To deposit any cash in the Fund in interest-bearing accounts maintained or savings certificates issued by the Trustee, in its separate corporate capacity, or in any other banking institution affiliated with the Trustee, to the extent insured by an agency of the Federal or State government; and

(V) To compromise or otherwise adjust all claims in favor of or against the Fund.

SECTION 9
TAXES AND EXPENSES

All taxes of any kind that may be assessed or levied against or in respect to the Fund and all brokerage commissions incurred by the Fund shall be paid from the Fund. All other expenses incurred by the Trustee in connection with the administration of this Trust, including fees for legal services rendered to the Trustee, the compensation of the Trustee to the extent not paid directly by the Grantor, and all other proper charges and disbursements to the Trustee shall be paid from the Fund.

SECTION 10
ADVICE OF COUNSEL

The Trustee may from time to time consult with counsel, who may be counsel to the Grantor, with respect to any question arising as to the construction of this Agreement or any action to be taken hereunder. The Trustee shall be fully protected, to the extent permitted by law, in acting upon the advice of counsel.

SECTION 11
TRUSTEE COMPENSATION

The Trustee shall be entitled to reasonable compensation for its services as agreed upon in writing from time to time with the Grantor.

SECTION 12

SUCCESSOR TRUSTEE

The Trustee may resign or the Grantor may replace the Trustee, but such resignation or replacement shall not be effective until the Grantor has appointed a successor trustee and this successor accepts the appointment. The successor trustee shall have the same powers and duties as those conferred upon the Trustee hereunder. Upon the successor trustee's acceptance of the appointment, the Trustee shall assign, transfer, and pay over to the successor trustee the funds and properties then constituting the Fund. If for any reason the Grantor cannot or does not act in the event of the resignation of the Trustee, the Trustee may apply to a court of competent jurisdiction for the appointment of a successor trustee or for instructions. The successor trustee shall specify the date on which it assumes administration of the trust in a writing sent to the Grantor, the Director of the Solid Waste Management Division of the Tennessee Department of Environment and Conservation (TDEC) and the present Trustee by certified mail 10 days before such change becomes effective. Any expenses incurred by the Trustee as a result of any of the acts contemplated by this Section shall be paid as provided in Section 9.

SECTION 13
INSTRUCTIONS TO THE TRUSTEE

All orders, requests, certifications of valid claims, and instructions to the Trustee shall be in writing, signed by such persons as are designated in the attached Exhibit A or such other designees as the Grantor may designate by amendments to Exhibit A. The Trustee shall be fully protected in acting without inquiry in accordance with the Grantor's orders, requests, and instructions. The Trustee shall have the right to assume, in the absence of written notice to the contrary, that no event constituting a change or a termination of the authority of any person to act on behalf of the Grantor or the TDEC hereunder has occurred. The Trustee shall have no duty to act in the absence of such orders, requests, and instructions from the Grantor and/or TDEC, except as provided for herein.

SECTION 14
AMENDMENT OF AGREEMENT

This Agreement may be amended by an instrument in writing executed by the Grantor, the Trustee, and TDEC, or by the Trustee and TDEC if the Grantor ceases to exist.

SECTION 15
IRREVOCABILITY AND TERMINATION

Subject to the right of the parties to amend this Agreement as provided in Section 14, this Trust shall be irrevocable and shall continue until terminated at the written agreement of the Grantor, the Trustee, and TDEC, or by the Trustee and TDEC, if the Grantor ceases to exist. Upon termination of the Trust, all remaining trust property, less final trust administration expenses, shall be paid to the Grantor.

The Regional Administrator will agree to termination of the Trust when the owner or operator substitutes alternative financial assurance as specified in this SECTION.

SECTION 16
IMMUNITY AND INDEMNIFICATION

The Trustee shall not incur personal liability of any nature in connection with any act or omission, made in good faith, in the administration of this Trust, or in carrying out any directions by the Grantor and TDEC issued in accordance with this Agreement. The Trustee shall be indemnified and saved harmless by the Grantor or from the Trust Fund, or both, from and against any personal liability to which the Trustee may be subjected by reason of any act or conduct in its official capacity, including all expenses reasonably incurred in its defense in the event the Grantor fails to provide such defense.

SECTION 17
CHOICE OF LAW

This Agreement shall be administered, construed, and enforced according to the laws of the State of Tennessee.

SECTION 18
INTERPRETATION

As used in this Agreement, words in the singular include the plural and words in the plural include the singular. The description headings for each Section of this Agreement shall not affect the interpretation of the legal efficacy of this Agreement.

In Witness Whereof the parties have caused this Agreement to be executed by their respective officers duly authorized and their corporate seals to be hereunto affixed and attested as of the date first above written. The parties below certify that the wording of this Agreement is identical to the wording specified in Tennessee Rule 0400-12-01-.06(8)(p)14 as such regulations were constituted on the date first above written.

[Signature of Grantor] _____
[Title] _____

Attest: _____
[Title] _____

[Seal]

[Signature of Trustee] _____

Attest: _____
[Title] _____

[Seal]

(ii) Certification of Acknowledgement

The following is an example of the certification of acknowledgement which must accompany the trust agreement for a standby trust fund as specified in Rule 0400-12-01-.05(8)(n)8 or part (n)8 of this paragraph. State requirements may differ on the proper content of this acknowledgement.

CERTIFICATION OF ACKNOWLEDGEMENT

State of _____
County of _____

On this [date], before me personally came [owner or operator] to me known, who, being by me duly sworn, did depose and say that she/he resides at [address], that she/he is [title] of [corporation], the corporation described in and which executed the above instrument; that she/he knows the seal of said corporation; that the seal affixed to such instrument is such corporate seal; that it was so affixed by order of the Board of Directors of said corporation, and that she/he signed her/his name thereto by like order.

Subscribed and sworn to before me this _____day of _____, ____

_____
Notary Public

My commission expires on the _____day of _____, _____

* * * * * * * * * * * *

15. PERSONAL BOND SUPPORTED BY SECURITIES

Date bond executed: _____
Effective date: _____
Principal: (legal name and address of operator) _____
_____
Type of organization: (insert "individual," "joint venture," "partnership" or "corporation") _____
_____
State of incorporation: _____

E.P.A. I.D. number, name, address, and closure and post-closure amount(s) for each facility guaranteed by this bond (indicate closure and post-closure amounts separately):_____

_____

Total penal sum of bond: _____
Type(s) of Securities: _____, _____, _____, _____
Serial Number(s) of Security(ies): _____

KNOW ALL PERSONS BY THESE PRESENTS, The Principal, hereto are firmly bound to the Tennessee Department of Environment and Conservation (hereinafter called the Department), in the above penal sum for the payment of which we bind ourselves, our heirs, executors, administrators, successors, and assigns jointly and severally for the payment of 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 operate each solid waste disposal facility identified above, and

WHEREAS said principal is required to provide financial assurance for proper operation, 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 properly operate the solid waste disposal facility and perform closure, whenever required to do so, of each facility for which this bond guarantees proper operation and closure, in accordance with the closure/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.

AND, if the Principal shall faithfully operate the solid waste disposal facility and perform post-closure care of each facility for which this bond guarantees proper operation, closure and post-closure, in accordance with the closure/post-closure care plan and other requirements of the permit, as such plan and permit may be amended, and pursuant to all applicable laws, statutes, rules, and regulation, as such laws, statutes, rules, and regulations may be amended, the liability of the Principal assumed in the provisioning of this bond shall be discharged. The securities supporting the same and any interest from the securities shall be returned to the Principal upon demand.

Upon notification by the Commissioner that the Principal has been found in violation of his permit, the Act, or rules promulgated pursuant thereto, the Principal shall, as directed by the Commissioner, operate the facility, perform closure/post-closure in accordance with the closure/post-closure care plan and other permit requirements, or forfeit all or a portion of the penal sum of this bond to the Department.

The Principal hereby waive(s) notification of amendments to closure/post-closure care 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 Principal 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.

Initial amount of Security(ies) being assigned to the certification of which is being deposited with the Department
$ _____.

The Principal has this day assigned in blank, and deposited with the Department, (list the type of security) _____

_____

The Department is hereby authorized to sell, at public or private sale, said security(ies) if the Principal fails to perform any condition of this bond. The proceeds of any such sale are hereby forfeited to the Department.

The Principal hereto attaches the appropriate demonstration of investment analysis proving that the initial amount of the Security(ies) (as listed in the previous paragraph) $ _____ will with accrued interest equal or exceed the total penal sum of this bond at the predetermined time of closure of the facility and will provide annual amounts, as accrued, equivalent to the cost of post-closure care annually and summarily for the duration of the post-closure care. The Principal further agrees that at such time as the rate of inflation as published by the United States Department of Commerce exceeds the index on which the investment analysis is herein calculated, that the Principal shall review, along with the Department, whether the amount of the Security(ies) herewith along deposited with the Department along with accrued interest, will at least equal the total amount of the penal sum of

the bond, as calculated with the increased rate of inflation. At such time, if it occurs, that the initial amount of the Security(ies) must be increased due to an increased rate of inflation, as published by the U.S. Department of Commerce, the Principal shall so adjust, shall be performed within 60 days of the said publishing of such increase in the national rate of inflation.

IN WITNESS WHEREOF, the Principal has executed this PERFORMANCE BOND and has affixed their seals on the date set forth above.

The persons whose signatures appear below hereby certify that they are authorized to execute this personal bond on behalf of the Principal and that the wording of this personal bond is consistent with Department Rule 1200-01-07-.03(3) as such regulation was constituted on the date this bond was executed.

(Signature(s))_____
Principal (Name(s)) _____
(Title(s))_____
(Corporate seal)

* * * * * * * * * * * *

16. *COMBINED HAZARDOUS AND SOLID WASTE FINANCIAL TEST

(i) Letter From Chief Financial Officer (Closure and/or Post-Closure)

(ii) Letter From Chief Financial officer (Liability Coverage or Liability Coverage and Closure/Post Closure)

(iii) Corporate Guarantee for Closure or Post-Closure Care

* Note: Copies of the three financial instrument forms listed above may be obtained by calling the Financial Assurance Office of the Division of Solid Waste Management at 615-532-0780 or writing to:

Attn: Financial Assurance Office
Tennessee Department of Environment & Conservation
Division of Solid Waste Management
L & C Tower, 5th Floor
401 Church Street
Nashville, TN 37243-1535

* * * * * * * * * * * *

(9) Use and Management of Containers [40 CFR 264 Subpart I]

(a) Applicability [40 CFR 264.170]

The regulations in this paragraph apply to owners and operators of all hazardous waste facilities that store containers of hazardous waste, except as paragraph (1) of this rule provides otherwise.

(Comment: Under Rules 0400-12-01-.02(1)(g) and .02(4)(d)3, 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 0400-12-01-.02(1)(g). In that event, management of the container is exempt from the requirements of this paragraph.)

(b) Condition of Containers [40 CFR 264.171]

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 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 [40 CFR 264.172]

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 [40 CFR 264.173]

A container holding hazardous waste must always be closed during storage, except when it is necessary to add or remove waste.

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 [40 CFR 264.174]

At least weekly, the owner or operator must inspect areas where containers are stored, except for Performance Track member facilities that may conduct inspections at least once each month, upon approval by the Regional Administrator. To apply for reduced inspection frequencies, the Performance Track member facility must follow the procedures identified in subpart (2)(f)2(v) of this rule. The owner or operator must look 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 [40 CFR 264.175]

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 underlie 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 0400-12-01-.02, it must be managed as a hazardous waste in accordance with all applicable requirements of Rules 0400-12-01-.03 through .07 and .09. If the

collected material is discharged through a point source to waters of the United States, it is subject to the requirements of section 402 of the Clean Water Act, as amended.)

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

   (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 [40 CFR 264.176]

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 [40 CFR 264.177]

1. Incompatible wastes, or incompatible wastes and materials (see Appendix V in paragraph (57) of this rule 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 wastes 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 part is to prevent fires, explosions, gaseous emission, 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 [40 CFR 264.178]

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: At closure, as throughout the operating period, unless the owner or operator can demonstrate in accordance with Rule 0400-12-01-.02(1)(c)4 that the solid 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 all applicable requirements of Rule 0400-12-01-.03 through .07 and .09.)

(j) Air Emission Standards [40 CFR 264.179]

The owner or operator shall manage all hazardous waste placed in a container in accordance with the applicable requirements of paragraphs (30), (31), and (32) of this rule.

(10) Tank Systems [40 CFR 264 Subpart J]

(a) Applicability [40 CFR 264.190]

The requirements of this paragraph apply to owners and operators of facilities that use tank systems for storing or treating hazardous waste except as otherwise provided in parts 1,2 and 3 of this subparagraph or in paragraph (1) of this rule.

1. Tank systems that are used to store or treat hazardous waste which contains no free liquids and are situated inside a building with an impermeable floor are exempted from the requirements in subparagraph (d) of this paragraph. To demonstrate the absence or presence of free liquids in the stored/treated waste, the following test must be used: Method 9095B (Paint Filter Liquids Test) as described in "Test Methods for Evaluating Solid Waste, Physical/Chemical Methods," EPA Publication SW-846. (See 40 CFR 260.11; Rule 0400-12-01-.01(2)(b)1.)

2. Tank systems, including sumps, as defined in Rule 0400-12-01-.01(2)(a), that serve as part of a secondary containment system to collect or contain releases of hazardous wastes are exempted from the requirements in part (d)1 of this paragraph.

3. Tanks, sumps, and other such collection devices or systems used in conjunction with drip pads, as defined in Rule 0400-12-01-.01(2)(a) and regulated under paragraph (26) of this rule, must meet the requirements of this paragraph.

(b) Assessment of Existing Tank System's Integrity [40 CFR 264.191]

1. For each existing tank system that does not have secondary containment meeting the requirements of subparagraph (10)(d) of this rule, the owner or operator must determine that the tank system is not leaking or is unfit for use. Except as provided in part 3 of this subparagraph, the owner or operator must obtain and keep on file at the facility a written assessment reviewed and certified by a qualified Professional Engineer, in accordance with Rule 0400-12-01-.07(2)(a)10, that attests to the tank system's integrity by January 12, 1988.

2. This assessment must determine that the tank system is adequately designed and has sufficient structural strength and compatibility with the waste(s) to be stored or treated, to ensure that it will not collapse, rupture, or fail. At a minimum, this assessment must consider the following:

(i) Design standard(s), if available, according to which the tank and ancillary equipment were constructed;

(ii) Hazardous characteristics of the waste(s) that have been and will be handled;

(iii) Existing corrosion protection measures;

(iv) Documented age of the tank system, if available (otherwise, an estimate of the age); and

(v) Results of a leak test, internal inspection, or other tank integrity examination such that:

(I) For non-enterable underground tanks, the assessment must include a leak test that is capable of taking into account the effects of temperature variations, tank end deflection, vapor pockets, and high water table effects, and

(II) For other than non-enterable underground tanks and for ancillary equipment, this assessment must include either a leak test, as described above, or other integrity examination, that is certified by a qualified Professional Engineer in accordance with Rule 0400-12-01-.07(2)(a)10 that addresses cracks, leaks, corrosion, and erosion.

(Note: The practices described in the American Petroleum Institute (API) Publication, Guide for Inspection of Refinery Equipment, Chapter XIII, "Atmospheric and Low-Pressure Storage Tanks," 4th edition, 1981, may be used, where applicable, as guidelines in conducting other than a leak test.)

3. Tank systems that store or treat materials that become hazardous wastes subsequent to July 14, 1986, must conduct this assessment within 12 months after the date that the waste becomes a hazardous waste.

4. If, as a result of the assessment conducted in accordance with part 1 of this subparagraph, a tank system is found to be leaking or unfit for use, the owner or operator must comply with the requirements of subparagraph (g) of this paragraph.

(c) Design and Installation of New Tank Systems or Components [40 CFR 264.192]

1. Owners or operators of new tank systems or components must obtain and submit to the Commissioner, at time of submittal of Part B information, a written assessment, reviewed and certified by a qualified Professional Engineer, in accordance with Rule 0400-12-01-.07(2)(a)10, attesting that the tank system has sufficient structural integrity and is acceptable for the storing and treating of hazardous waste. The assessment must show that the foundation, structural support, seams, connections, and pressure controls (if applicable) are adequately designed and that the tank system has sufficient structural strength, compatibility with the waste(s) to be stored or treated, and corrosion protection to ensure that it will not collapse, rupture, or fail. This assessment, which will be used by the Commissioner to review and approve or disapprove the acceptability of the tank system design, must include, at a minimum, the following information:

(i) Design standard(s) according to which tank(s) and/or the ancillary equipment are constructed;

(ii) Hazardous characteristics of the waste(s) to be handled;

(iii) For new tank systems or components in which the external shell of a metal tank or any external metal component of the tank system will be in contact with the soil or with water, a determination by a corrosion expert of:

(I) Factors affecting the potential for corrosion, including but not limited to:

I. Soil moisture content;

II. Soil pH;

III. Soil sulfides level;

IV. Soil resistivity;

V. Structure to soil potential;

VI. Influence of nearby underground metal structures (e.g., piping);

VII. Existence of stray electric current;

VIII. Existing corrosion-protection measures (e.g., coating, cathodic protection), and

(II) The type and degree of external corrosion protection that are needed to ensure the integrity of the tank system during the use of the tank system or component, consisting of one or more of the following:

I. Corrosion-resistant materials of construction such as special alloys, fiberglass reinforced plastic, etc.;

II. Corrosion-resistant coating (such as epoxy, fiberglass, etc.) with cathodic protection (e.g., impressed current or sacrificial anodes); and

III. Electrical isolation devices such as insulating joints, flanges, etc.

(Note: The practices described in the National Association of Corrosion Engineers (NACE) standard, "Recommended Practice (RP-02-85) -- Control of External Corrosion on Metallic Buried, Partially Buried, or Submerged Liquid Storage Systems," and the American Petroleum Institute (API) Publication 1632, "Cathodic Protection of Underground Petroleum Storage Tanks and Piping Systems," may be used, where applicable, as guidelines in providing corrosion protection for tank systems.)

(iv) For underground tank system components that are likely to be adversely affected by vehicular traffic, a determination of design or operational measures that will protect the tank system against potential damage; and

(v) Design considerations to ensure that:

(I) Tank foundations will maintain the load of a full tank;

(II) Tank systems will be anchored to prevent flotation or dislodgment where the tank system is placed in a saturated zone, or is located within a seismic fault zone subject to the standards of part (2(i)1 of this rule; and

(III) Tank systems will withstand the effects of frost heave.

2. The owner or operator of a new tank system must ensure that proper handling procedures are adhered to in order to prevent damage to the system during installation. Prior to covering, enclosing, or placing a new tank system or component in use, an independent, qualified installation inspector or a qualified Professional Engineer, either of whom is trained and experienced in the proper installation of tank systems or components, must inspect the system for the presence of any of the following items:

(i) Weld breaks;

(ii) Punctures;

(iii) Scrapes of protective coatings;

(iv) Cracks;

(v) Corrosion;

(vi) Other structural damage or inadequate construction/installation.

All discrepancies must be remedied before the tank system is covered, enclosed, or placed in use.

3. New tank systems or components that are placed underground and that are backfilled must be provided with a backfill material that is a noncorrosive, porous, homogeneous substance and that is installed so that the backfill is placed completely around the tank and compacted to ensure that the tank and piping are fully and uniformly supported.

4. All new tanks and ancillary equipment must be tested for tightness prior to being covered, enclosed, or placed in use. If a tank system is found not to be tight, all repairs necessary to remedy the leak(s) in the system must be performed prior to the tank system being covered, enclosed, or placed into use.

5. Ancillary equipment must be supported and protected against physical damage and excessive stress due to settlement, vibration, expansion, or contraction.

   (Note: The piping system installation procedures described in American Petroleum Institute (API) Publication 1615 (November 1979), "Installation of Underground Petroleum Storage Systems," or ANSI Standard B31.3, "Petroleum Refinery Piping," and ANSI Standard B31.4 "Liquid Petroleum Transportation Piping System," may be used, where applicable, as guidelines for proper installation of piping systems.)

6. The owner or operator must provide the type and degree of corrosion protection recommended by an independent corrosion expert, based on the information provided under subpart 1(iii) of this subparagraph, or other corrosion protection if the Commissioner believes other corrosion protection is necessary to ensure the integrity of the tank system during use of the tank system. The installation of a corrosion protection system that is field fabricated must be supervised by an independent corrosion expert to ensure proper installation.

7. The owner or operator must obtain and keep on file at the facility written statements by those persons required to certify the design of the tank system and supervise the installation of the tank system in accordance with the requirements of parts 2 through 6 of this subparagraph, that attest that the tank system was properly designed and installed and that repairs, pursuant to parts 2 and 4 of this subparagraph, were performed. These written statements must also include the certification statement as required in Rule 0400-12-01-.07(2)(a)10.

(d) Containment and Detection of Releases [40 CFR 264.193]

1. In order to prevent the release of hazardous waste or hazardous constituents to the environment, secondary containment that meets the requirements of this subparagraph must be provided (except as provided in parts 6 and 7 of this subparagraph):

   (i) For all new and existing tank systems or components, prior to their being put into service;

   (ii) For tank systems that store or treat materials that become hazardous wastes, within two years of the hazardous waste listing, or when the tank system has reached 15 years of age, whichever comes later.

2. Secondary containment systems must be:

   (i) Designed, installed, and operated to prevent any migration of wastes or accumulated liquid out of the system to the soil, ground water, or surface water at any time during the use of the tank system; and

   (ii) Capable of detecting and collecting releases and accumulated liquids until the collected material is removed.

3. To meet the requirements of part 2 of this subparagraph, secondary containment systems must be at a minimum:

(i) Constructed of or lined with materials that are compatible with the wastes(s) to be placed in the tank system and must have sufficient strength and thickness to prevent failure owing to pressure gradients (including static head and external hydrological forces), physical contact with the waste to which it is exposed, climatic conditions, and the stress of daily operation (including stresses from nearby vehicular traffic);

(ii) Placed on a foundation or base capable of providing support to the secondary containment system, resistance to pressure gradients above and below the system, and capable of preventing failure due to settlement, compression, or uplift;

(iii) Provided with a leak-detection system that is designed and operated so that it will detect the failure of either the primary or secondary containment structure or the presence of any release of hazardous waste or accumulated liquid in the secondary containment system within 24 hours, or at the earliest practicable time if the owner or operator can demonstrate to the Commissioner that existing detection technologies or site conditions will not allow detection of a release within 24 hours; and

(iv) Sloped or otherwise designed or operated to drain and remove liquids resulting from leaks, spills, or precipitation. Spilled or leaked waste and accumulated precipitation must be removed from the secondary containment system within 24 hours, or in as timely a manner as is possible to prevent harm to human health and the environment, if the owner or operator can demonstrate to the Commissioner that removal of the released waste or accumulated precipitation cannot be accomplished within 24 hours.

(Note: If the collected material is a hazardous waste under Rule 0400-12-01-.02, it is subject to management as a hazardous waste in accordance with all applicable requirements of Rules 0400-12-01-.03 through .06. If the collected material is discharged through a point source to waters of the United States, it is subject to the requirements of sections 301, 304, and 402 of the Clean Water Act, as amended. If discharged to a Publicly Owned Treatment Works (POTW), it is subject to the requirements of section 307 of the Clean Water Act, as amended. If the collected material is released to the environment, it may be subject to the reporting requirements of 40 CFR part 302.)

4. Secondary containment for tanks must include one or more of the following devices:

(i) A liner (external to the tank);

(ii) A vault;

(iii) A double-walled tank; or

(iv) An equivalent device as approved by the Commissioner.

5. In addition to the requirements of parts 2, 3, and 4 of this subparagraph, secondary containment systems must satisfy the following requirements:

(i) External liner systems must be:

(I) Designed or operated to contain 100 percent of the capacity of the largest tank within its boundary;

(II) Designed or operated to prevent run-on or infiltration of precipitation into the secondary containment system unless the collection system has

sufficient excess capacity to contain run-on or infiltration. Such additional capacity must be sufficient to contain precipitation from a 25-year, 24-hour rainfall event;

(III) Free of cracks or gaps; and

(IV) Designed and installed to surround the tank completely and to cover all surrounding earth likely to come into contact with the waste if the waste is released from the tank(s) (i.e., capable of preventing lateral as well as vertical migration of the waste).

(ii) Vault systems must be:

(I) Designed or operated to contain 100 percent of the capacity of the largest tank within its boundary;

(II) Designed or operated to prevent run-on or infiltration of precipitation into the secondary containment system unless the collection system has sufficient excess capacity to contain run-on or infiltration. Such additional capacity must be sufficient to contain precipitation from a 25-year, 24-hour rainfall event;

(III) Constructed with chemical-resistant water stops in place at all joints (if any);

(IV) Provided with an impermeable interior coating or lining that is compatible with the stored waste and that will prevent migration of waste into the concrete;

(V) Provided with a means to protect against the formation of and ignition of vapors within the vault, if the waste being stored or treated:

I. Meets the definition of ignitable waste under Rule 0400-12-01-.02(3)(b); or

II. Meets the definition of reactive waste under Rule 0400-12-01-.02(3)(d), and may form an ignitable or explosive vapor; and

(VI) Provided with an exterior moisture barrier or be otherwise designed or operated to prevent migration of moisture into the vault if the vault is subject to hydraulic pressure.

(iii) Double-walled tanks must be:

(I) Designed as an integral structure (i.e., an inner tank completely enveloped within an outer shell) so that any release from the inner tank is contained by the outer shell;

(II) Protected, if constructed of metal, from both corrosion of the primary tank interior and of the external surface of the outer shell; and

(III) Provided with a built-in continuous leak detection system capable of detecting a release within 24 hours, or at the earliest practicable time, if the owner or operator can demonstrate to the Commissioner, and the Commissioner concludes, that the existing detection technology or site conditions would not allow detection of a release within 24 hours.

(Note: The provisions outlined in the Steel Tank Institute's (STI) "Standard for Dual Wall Underground Steel Storage Tanks" may be used as guidelines for aspects of the design of underground steel double-walled tanks.)

6. Ancillary equipment must be provided with secondary containment (e.g., trench, jacketing, double-walled piping) that meets the requirements of parts 2 and 3 of this subparagraph except for:

   (i) Aboveground piping (exclusive of flanges, joints, valves, and other connections) that are visually inspected for leaks on a daily basis;

   (ii) Welded flanges, welded joints, and welded connections that are visually inspected for leaks on a daily basis;

   (iii) Sealless or magnetic coupling pumps and sealless valves, that are visually inspected for leaks on a daily basis; and

   (iv) Pressurized aboveground piping systems with automatic shut-off devices (e.g., excess flow check valves, flow metering shutdown devices, loss of pressure actuated shut-off devices) that are visually inspected for leaks on a daily basis.

7. The owner or operator may obtain a variance from the requirements of this paragraph if the Commissioner finds, as a result of a demonstration by the owner or operator that alternative design and operating practices, together with location characteristics, will prevent the migration of any hazardous waste or hazardous constituents into the ground water; or surface water at least as effectively as secondary containment during the active life of the tank system or that in the event of a release that does migrate to ground water or surface water, no substantial present or potential hazard will be posed to human health or the environment. New underground tank systems may not, per a demonstration in accordance with subpart (ii) of this part, be exempted from the secondary containment requirements of this subparagraph.

   (i) In deciding whether to grant a variance based on a demonstration of equivalent protection of ground water and surface water, 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 thickness of soils present between the tank system and ground water; and

      (IV) All other factors that would influence the quality and mobility of the hazardous constituents and the potential for them to migrate to ground water or surface water.

   (ii) In deciding whether to grant a variance based on a demonstration of no substantial present or potential hazard, the Commissioner will consider:

      (I) The potential adverse effects on ground water, surface water, and land quality taking into account:

         I. The physical and chemical characteristics of the waste in the tank system, including its potential for migration,

         II. The hydrogeological characteristics of the facility and surrounding land,

         III. The potential for health risks caused by human exposure to waste constituents,

         IV. The potential for damage to wildlife, crops, vegetation, and physical structures caused by exposure to waste constituents, and

V. The persistence and permanence of the potential adverse effects;

(II) The potential adverse effects of a release on ground-water quality, taking into account:

I. The quantity and quality of ground water and the direction of ground-water flow,

II. The proximity and withdrawal rates of ground-water users,

III. The current and future uses of ground water in the area, and

IV. The existing quality of ground water, including other sources of contamination and their cumulative impact on the ground-water quality;

(III) The potential adverse effects of a release on surface water quality, taking into account:

I. The quantity and quality of ground water and the direction of ground-water flow,

II. The patterns of rainfall in the region,

III. The proximity of the tank system to surface waters,

IV. The current and future uses of surface waters in the area and any water quality standards established for those surface waters, and

V. The existing quality of surface water, including other sources of contamination and the cumulative impact on surface-water quality; and

(IV) The potential adverse effects of a release on the land surrounding the tank system, taking into account:

I. The patterns of rainfall in the region, and

II. The current and future uses of the surrounding land.

(iii) The owner or operator of a tank system, for which a variance from secondary containment had been granted in accordance with the requirements of subpart (i) of this part, at which a release of hazardous waste has occurred from the primary tank system but has not migrated beyond the zone of engineering control (as established in the variance), must:

(I) Comply with the requirements of subparagraph (g) of this paragraph, except part 4; and

(II) Decontaminate or remove contaminated soil to the extent necessary to:

I. Enable the tank system for which the variance was granted to resume operation with the capability for the detection of releases at least equivalent to the capability it had prior to the release; and

II. Prevent the migration of hazardous waste or hazardous constituents to ground water or surface water; and

(III) If contaminated soil cannot be removed or decontaminated in accordance with item (II) of this subpart, comply with the requirement of part (h)2 of this paragraph.

(iv) The owner or operator of a tank system, for which a variance from secondary containment had been granted in accordance with the requirements of subpart (i) of this part, at which a release of hazardous waste has occurred from the primary tank system and has migrated beyond the zone of engineering control (as established in the variance), must:

(I) Comply with the requirements of parts (g)1 through (g)4 of this paragraph; and

(II) Prevent the migration of hazardous waste or hazardous constituents to ground water or surface water, if possible, and decontaminate or remove contaminated soil. If contaminated soil cannot be decontaminated or removed or if ground water has been contaminated, the owner or operator must comply with the requirements of part (h) 2 of this paragraph; and

(III) If repairing, replacing, or reinstalling the tank system, provide secondary containment in accordance with the requirements of parts 1 through 6 of this subparagraph or reapply for a variance from secondary containment and meet the requirements for new tank systems in subparagraph (c) of this paragraph if the tank system is replaced. The owner or operator must comply with these requirements even if contaminated soil can be decontaminated or removed and ground water or surface water has not been contaminated.

8. The following procedures must be followed in order to request a variance from secondary containment:

(i) The Commissioner must be notified in writing by the owner or operator that he intends to conduct and submit a demonstration for a variance from secondary containment as allowed in part 7 of this subparagraph according to the following schedule:

(I) For existing tank systems, at least 24 months prior to the date that secondary containment must be provided in accordance with part 1 of this subparagraph;

(II) For new tank systems, at least 30 days prior to entering into a contract for installation;

(ii) As part of the notification, the owner or operator must also submit to Commissioner a description of the steps necessary to conduct the demonstration and a timetable for completing each of the steps. The demonstration must address each of the factors listed in subparts 7(1) or 7(ii) of this subparagraph;

(iii) The demonstration for a variance must be completed within 180 days after notifying the Commissioner of an intent to conduct the demonstration; and

(iv) If a variance is granted under this paragraph, the Commissioner will require the permittee to construct and operate the tank system in the manner that was demonstrated to meet the requirements for the variance.

9. All tank systems, until such time as secondary containment that meets the requirements of this subparagraph is provided, must comply with the following:

(i) For non-enterable underground tanks, a leak test that meets the requirements of subpart (b)2(v) of this paragraph or other tank integrity method, as approved or required by the Commissioner, must be conducted at least annually.

(ii) For other than non-enterable underground tanks, the owner or operator must either conduct a leak test as in subpart (i) of this part or develop a schedule and procedure for an assessment of the overall condition of the tank system by a qualified Professional Engineer. The schedule and procedure must be adequate to detect obvious cracks, leaks, and corrosion or erosion that may lead to cracks and leaks. The owner or operator must remove the stored waste from the tank, if necessary, to allow the condition of all internal tank surfaces to be assessed. The frequency of these assessments must be based on the material of construction of the tank and its ancillary equipment, the age of the system, the type of corrosion or erosion protection used, the rate of corrosion or erosion observed during the previous inspection, and the characteristics of the waste being stored or treated.

(iii) For ancillary equipment, a leak test or other integrity assessment as approved by the Commissioner must be conducted at least annually.

(Note: The practices described in the American Petroleum Institute (API) Publication Guide for Inspection of Refinery Equipment, Chapter XIII, "Atmospheric and Low-Pressure Storage Tanks," 4th edition, 1981, may be used, where applicable, as guidelines for assessing the overall condition of the tank system.)

(iv) The owner or operator must maintain on file at the facility a record of the results of the assessments conducted in accordance with subparts (i) through (iii) of this part.

(v) If a tank system or component is found to be leaking or unfit for use as a result of the leak test or assessment in subparts (i) through (iii) of this part, the owner or operator must comply with the requirements of subparagraph (g) of this paragraph.

(e) General Operating Requirements [40 CFR 264.194]

1. Hazardous wastes or treatment reagents must not be placed in a tank system if they could cause the tank, its ancillary equipment, or the containment system to rupture, leak, corrode, or otherwise fail.

2. The owner or operator must use appropriate controls and practices to prevent spills and overflows from tank or containment systems. These include at a minimum:

(i) Spill prevention controls (e.g., check valves, dry disconnect couplings);

(ii) Overfill prevention controls (e.g., level sensing devices, high level alarms, automatic feed cutoff, or bypass to a standby tank); and

(iii) Maintenance of sufficient freeboard in uncovered tanks to prevent overtopping by wave or wind action or by precipitation.

3. The owner or operator must comply with the requirements of subparagraph (g) of this paragraph if a leak or spill occurs in the tank system.

(f) Inspections [40 CFR 264.195]

1. The owner or operator must develop and follow a schedule and procedure for inspecting overfill controls.

2. The owner or operator must inspect at least once each operating day, data gathered from monitoring and leak detection equipment (e.g., pressure or temperature gauges,

monitoring wells) to ensure that the tank system is being operated according to its design.

(Note: Part (2)(f)3 of this rule requires the owner or operator to remedy any deterioration or malfunction he finds. Subparagraph (g) of this paragraph requires the owner or operator to notify the Commissioner within 24 hours of confirming a leak. Also, Federal 40 CFR part 302 may require the owner or operator to notify the National Response Center of a release and Section 304 of Title III of the Superfund Amendments and Reauthorization Act of 1986 may require notification of the Tennessee Emergency Management Agency.)

3. In addition, except as noted under part 4 of this subparagraph , the owner or operator must inspect at least once each operating day:

   (i) Above ground portions of the tank system, if any, to detect corrosion or releases of waste.

   (ii) The construction materials and the area immediately surrounding the externally accessible portion of the tank system, including the secondary containment system (e.g., dikes) to detect erosion or signs of releases of hazardous waste (e.g., wet spots, dead vegetation).

4. Owners or operators of tank systems that either use leak detection systems to alert facility personnel to leaks, or implement established workplace practices to ensure leaks are promptly identified, must inspect at least weekly those areas described in subparts 3(i) and 3(ii) of this subparagraph. Use of the alternate inspection schedule must be documented in the facility's operating record. This documentation must include a description of the established workplace practices at the facility.

5. Performance Track member facilities may inspect on a less frequent basis, upon approval by the Regional Administrator, but must inspect at least once each month. To apply for a less than weekly inspection frequency, the Performance Track member facility must follow the procedures described in subpart (2)(f)2(v) of this rule.

6. Ancillary equipment that is not provided with secondary containment, as described in subparts (d)6(i) through (d)6(iv) of this subparagraph, must be inspected at least once each operating day.

7. The owner or operator must inspect cathodic protection systems, if present, according to, at a minimum, the following schedule to ensure that they are functioning properly:

   (i) The proper operation of the cathodic protection system must be confirmed within six months after initial installation and annually thereafter; and

   (ii) All sources of impressed current must be inspected and/or tested, as appropriate, at least bimonthly (i.e., every other month).

   (Note: The practices described in the National Association of Corrosion Engineers (NACE) standard, "Recommended Practice (RP-02-85) -- Control of External Corrosion on Metallic Buried, Partially Buried, or Submerged Liquid Storage Systems," and the American Petroleum Institute (API) Publication 1632, "Cathodic Protection of Underground Petroleum Storage Tanks and Piping Systems," may be used, where applicable, as guidelines in maintaining and inspecting cathodic protection systems.)

8. The owner or operator must document in the operating record of the facility an inspection of those items in parts 1 through 3 of this subparagraph.

(g) Response to Leaks or Spills and Disposition of Leaking or Unfit-for-use Tank Systems [40 CFR 264.196]

A tank system or secondary containment system from which there has been a leak or spill, or which is unfit for use, must be removed from service immediately, and the owner or operator must satisfy the following requirements:

1. Cessation of use; prevent flow or addition of wastes

   The owner or operator must immediately stop the flow of hazardous waste into the tank system or secondary containment system and inspect the system to determine the cause of the release.

2. Removal of waste from tank system or secondary containment system

   (i) If the release was from the tank system, the owner/operator must, within 24 hours after detection of the leak or, if the owner/operator demonstrates that it is not possible, at the earliest practicable time, remove as much of the waste as is necessary to prevent further release of hazardous waste to the environment and to allow inspection and repair of the tank system to be performed.

   (ii) If the material released was to a secondary containment system, all released materials must be removed within 24 hours or in as timely a manner as is possible to prevent harm to human health and the environment.

3. Containment of visible releases to the environment

   The owner/operator must immediately conduct a visual inspection of the release and, based upon that inspection:

   (i) Prevent further migration of the leak or spill to soils or surface water; and

   (ii) Remove, and properly dispose of, any visible contamination of the soil or surface water.

4. Notifications, reports

   (i) Any release to the environment, except as provided in subpart 4(ii) of this subparagraph, must be reported to the Commissioner within 24 hours of its detection. If the release has been reported to the National Response Center pursuant to Federal 40 CFR part 302 or to the Tennessee Emergency Management Agency that report will satisfy this requirement.

   (ii) A leak or spill of hazardous waste is exempted from the requirements of this part if it is:

      (I) Less than or equal to a quantity of one (1) pound, and

      (II) Immediately contained and cleaned up.

   (iii) Within 30 days of detection of a release to the environment, a report containing the following information must be submitted to the Division Director:

      (I) Likely route of migration of the release;

      (II) Characteristics of the surrounding soil (soil composition, geology, hydrogeology, climate);

      (III) Results of any monitoring or sampling conducted in connection with the release (if available). If sampling or monitoring data relating to the release are not available within 30 days, these data must be submitted to the Division Director as soon as they become available.

(IV) Proximity to downgradient drinking water, surface water, and populated areas; and

(V) Description of response actions taken or planned.

5. Provision of secondary containment, repair, or closure

(i) Unless the owner/operator satisfies the requirements of subparts (ii) through (iv) of this part, the tank system must be closed in accordance with subparagraph (h) of this paragraph.

(ii) If the cause of the release was a spill that has not damaged the integrity of the system, the owner/operator may return the system to service as soon as the released waste is removed and repairs, if necessary, are made.

(iii) If the cause of the release was a leak from the primary tank system into the secondary containment system, the system must be repaired prior to returning the tank system to service.

(iv) If the source of the release was a leak to the environment from a component of a tank system without secondary containment, the owner/operator must provide the component of the system from which the leak occurred with secondary containment that satisfies the requirements of subparagraph (d) of this paragraph before it can be returned to service, unless the source of the leak is an aboveground portion of a tank system that can be inspected visually. If the source is an aboveground component that can be inspected visually, the component must be repaired and may be returned to service without secondary containment as long as the requirements of part 6 of this subparagraph are satisfied. If a component is replaced to comply with the requirements of this subparagraph, that component must satisfy the requirements for new tank systems or components in subparagraphs (c) and (d) of this paragraph. Additionally, if a leak has occurred in any portion of a tank system component that is not readily accessible for visual inspection (e.g., the bottom of an inground or onground tank), the entire component must be provided with secondary containment in accordance with subparagraph (d) of this paragraph prior to being returned to use.

6. Certification of major repairs

If the owner/operator has repaired a tank system in accordance with part 5 of this subparagraph, and the repair has been extensive (e.g., installation of an internal liner; repair of a ruptured primary containment or secondary containment vessel), the tank system must not be returned to service unless the owner/operator has obtained a certification by a qualified Professional Engineer in accordance with Rule 0400-12-01-.07(2)(a)10 that the repaired system is capable of handling hazardous wastes without release for the intended life of the system. This certification must be placed in the operating record and maintained until closure of the facility.

(Note: The Commissioner may, on the basis of any information received that there is or has been a release of hazardous waste or hazardous constituents into the environment, issue an order under T.C.A. §68-212-111 requiring corrective action or such other response as deemed necessary to protect human health or the environment.)

(Note: See part (2)(f)3 of this rule for the requirements necessary to remedy a failure. Also, Federal 40 CFR part 302 may require the owner or operator to notify the National Response Center of certain releases and Section 304 of Title III of the Superfund Amendments and Reauthorization Act of 1986 may require notification of the Tennessee Emergency Management Agency.)

(h) Closure and Post-closure Care [40 CFR 264.197]

1. At closure of a tank system, the owner or operator must remove or decontaminate all waste residues, contaminated containment system components (liners, etc.), contaminated soils, and structures and equipment contaminated with waste, and manage them as hazardous waste, unless Rule 0400-12-01-.02(1)(c)4 applies. The closure plan, closure activities, cost estimates for closure, and financial responsibility for tank systems must meet all of the requirements specified in paragraphs (7) and (8) of this rule.

2. If the owner or operator demonstrates that not all contaminated soils can be practicably removed or decontaminated as required in part 1 of this subparagraph, then the owner or operator must close the tank system 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. In addition, for the purposes of closure, post-closure, and financial responsibility, such a tank system is then considered to be a landfill, and the owner or operator must meet all of the requirements for landfills specified in paragraphs (7) and (8) of this rule.

3. If an owner or operator has a tank system that does not have secondary containment that meets the requirements of parts (d)2 through (d)6 of this paragraph and has not been granted a variance from the secondary containment requirements in accordance with part (d)7 of this paragraph, then:

   (i) The closure plan for the tank system must include both a plan for complying with part 1 of this subparagraph and a contingent plan for complying with part 2 of this subparagraph.

   (ii) A contingent post-closure plan for complying with part 2 of this subparagraph must be prepared and submitted as part of the permit application.

   (iii) The cost estimates calculated for closure and post-closure care must reflect the costs of complying with the contingent closure plan and the contingent post-closure plan, if those costs are greater than the costs of complying with the closure plan prepared for the expected closure under part 1 of this subparagraph.

   (iv) Financial assurance must be based on the cost estimates in subpart (iii) of this part.

   (v) For the purposes of the contingent closure and post-closure plans, such a tank system is considered to be a landfill, and the contingent plans must meet all of the closure, post-closure, and financial responsibility requirements for landfills under paragraphs (7) and (8) of this rule.

(i) Special Requirements for Ignitable or Reactive Wastes [40 CFR 264.198]

1. Ignitable or reactive waste must not be placed in tank systems, unless:

   (i) The waste is treated, rendered, or mixed before or immediately after placement in the tank system so that:

      (I) The resulting waste, mixture, or dissolved material no longer meets the definition of ignitable or reactive waste under paragraph (3)(b) or (3)(d) of Rule 0400-12-01-.02, and

      (II) Part (2)(h)2 of this rule is complied with; or

   (ii) The waste is stored or treated in such a way that it is protected from any material or conditions that may cause the waste to ignite or react; or

   (iii) The tank system is used solely for emergencies.

2. The owner or operator of a facility where ignitable or reactive waste is stored or treated in a tank must comply with the requirements for the maintenance of protective distances

between the waste management area and any public ways, streets, alleys, or an adjoining property line that can be built upon as required in Tables 2-1 through 2-6 of the National Fire Protection Association's "Flammable and Combustible Liquids Code" (1977 or 1981) (see Rule 0400-12-01-.01(2)(b)).

(j) Special Requirements for Incompatible Wastes [40 CFR 264.199]

1. Incompatible wastes, or incompatible wastes and materials, must not be placed in the same tank system, unless part (2)(h)2 of this rule is complied with.

2. Hazardous waste must not be placed in a tank system that has not been decontaminated and that previously held an incompatible waste or material, unless part (2)(h)2 of this rule is complied with.

(k) Air Emission Standards [40 CFR 264.200]

The owner or operator shall manage all hazardous waste placed in a tank in accordance with the applicable requirements of paragraphs (30), (31), and (32) of this rule.

(11) Surface Impoundments [40 CFR 264 Subpart K]

(a) Applicability [40 CFR 264.220]

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 [40 CFR 264.221]

1. Any surface impoundment that is not covered by part 3 of this subparagraph or Rule 0400-12-01-.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 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), 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 unit on which construction commences after January 29, 1992, each lateral expansion of a surface impoundment unit on which construction commences after July 29, 1992 and each replacement of an existing surface impoundment unit that is to commence reuse after July 29, 1992 must install two or more liners and a leachate collection and removal system between such liners. "Construction commences" is as defined in Rule 0400-12-01-.01(2)(a) under "existing facility".

(i) (I) The liner system must include:

I. A top liner designed and constructed of materials (e.g., a geomembrane) to prevent the migration of hazardous constituents into such liner during the active life and post-closure care period; and

II. A composite bottom liner, consisting of at least two components. The upper component must be designed and constructed of materials (e.g., a geomembrane) to prevent the migration of hazardous constituents into this component during the active life and post-closure care period. The lower component must be designed and constructed of materials to minimize the migration of hazardous constituents if a breach in the upper component were to occur. The lower component must be constructed of at least 3 feet (91 cm) of compacted soil material with a hydraulic conductivity of no more than 1×10^{-7} cm/sec.

(II) The liners must comply with subparts (b)1(i),(ii) and (iii) of this paragraph.

(ii) The leachate collection and removal system between the liners, and immediately above the bottom composite liner in the case of multiple leachate collection and removal systems, is also a leak detection system. This leak detection system must be capable of detecting, collecting, and removing leaks of hazardous constituents at the earliest practicable time through all areas of the top liner likely to be exposed to waste or leachate during the active life and post-closure care period. The requirements for a leak detection system in this subpart are satisfied by installation of a system that is, at a minimum:

(I) Constructed with a bottom slope of one percent or more;

(II) Constructed of granular drainage materials with a hydraulic conductivity of 1×10^{-1} cm/sec or more and a thickness of 12 inches (30.5 cm) or more; or constructed of synthetic or geonet drainage materials with a transmissivity of 3×10^{-4} m^2/sec or more;

(III) Constructed of materials that are chemically resistant to the waste managed in the surface impoundment and the leachate expected to be generated, and of sufficient strength and thickness to prevent collapse under the pressures exerted by overlying wastes and any waste cover materials or equipment used at the surface impoundment;

(IV) Designed and operated to minimize clogging during the active life and post-closure care period; and

(V) Constructed with sumps and liquid removal methods (e.g., pumps) of sufficient size to collect and remove liquids from the sump and prevent liquids from backing up into the drainage layer. Each unit must have its own sump(s). The design of each sump and removal system must provide a method for measuring and recording the volume of liquids present in the sump and of liquids removed.

(iii) The owner or operator shall collect and remove pumpable liquids in the sumps to minimize the head on the bottom liner.

(iv) The owner or operator of a leak detection system that is not located completely above the seasonal high water table must demonstrate that the operation of the leak detection system will not be adversely affected by the presence of ground water.

4. The Commissioner may approve alternative design or operating practices to those specified in part 3 of this subparagraph if the owner or operator demonstrates to the Commissioner that such design and operating practices, together with location characteristics:

(i) Will prevent the migration of any hazardous constituent into the ground water or surface water at least as effectively as the liners and leachate collection and removal system specified in part 3 of this subparagraph; and

(ii) Will allow detection of leaks of hazardous constituents through the top liner at least as effectively.

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 characteristic in Rule 0400-12-01-.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 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 removed or decontaminated, the owner or operator of such impoundment will comply with appropriate post-closure requirements, including but not limited to ground-water 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 Rule 0400-12-01-.01(2)(a)); and

III. The monofill is in compliance with generally applicable ground-water monitoring requirements for facilities with permits under T.C.A. Section 68-212-108 of the Act;

(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 of any replacement surface impoundment unit is exempt from part 3 of this subparagraph if:

(i) The existing unit was constructed in compliance with the design standards of paragraph (11) of this rule; and

(ii) There is no reason to believe that the liner is not functioning as designed.

7. 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.

8. 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.

9. 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) Action Leakage Rate [40 CFR 264.222]

1. The Commissioner shall approve an action leakage rate for surface impoundment units subject to part (b)3 or 4 of this paragraph. The action leakage rate is the maximum design flow rate that the leak detection system (LDS) can remove without the fluid head on the bottom liner exceeding 1 foot. The action leakage rate must include an adequate safety margin to allow for uncertainties in the design (e.g., slope, hydraulic conductivity, thickness of drainage material), construction, operation, and location of the LDS, waste and leachate characteristics, likelihood and amounts of other sources of liquids in the LDS, and proposed response actions (e.g., the action leakage rate must consider decreases in the flow capacity of the system over time resulting from siltation and clogging, rib layover and creep of synthetic components of the system, overburden pressures, etc.).

2. To determine if the action leakage rate has been exceeded, the owner or operator must convert the weekly or monthly flow rate from the monitoring data obtained under part (g)4 of this paragraph to an average daily flow rate (gallons per acre per day) for each sump. Unless the Commissioner approves a different calculation, the average daily flow rate for each sump must be calculated weekly during the active life and closure period, and if the unit is closed in accordance with part (i)2 of this paragraph, monthly during the post-closure care period when monthly monitoring is required under part (g)4 of this paragraph.

(d) Response Actions [40 CFR 264.223]

1. The owner or operator of surface impoundment units subject to parts (b)3 or 4 of this paragraph must have an approved response action plan before receipt of waste. The

response action plan must set forth the actions to be taken if the action leakage rate has been exceeded. At a minimum, the response action plan must describe the actions specified in part 2 of this subparagraph.

2. If the flow rate into the leak detection system exceeds the action leakage rate for any sump, the owner or operator must:

   (i) Notify the Commissioner in writing of the exceedance within 7 days of the determination;

   (ii) Submit a preliminary written assessment to the Commissioner within 14 days of the determination, as to the amount of liquids, likely sources of liquids, possible location, size, and cause of any leaks, and short-term actions taken and planned;

   (iii) Determine to the extent practicable the location, size, and cause of any leak;

   (iv) Determine whether waste receipt should cease or be curtailed, whether any waste should be removed from the unit for inspection, repairs, or controls, and whether or not the unit should be closed;

   (v) Determine any other short-term and longer-term actions to be taken to mitigate or stop any leaks; and

   (vi) Within 30 days after the notification that the action leakage rate has been exceeded, submit to the Commissioner the results of the analyses specified in subparts (iii), (iv), and (v) of this part, the results of actions taken, and actions planned. Monthly thereafter, as long as the flow rate in the leak detection system exceeds the action leakage rate, the owner or operator must submit to the Commissioner a report summarizing the results of any remedial actions taken and actions planned.

3. To make the leak and/or remediation determinations in subparts 2(iii), (iv), and (v) of this subparagraph, the owner or operator must:

   (i) (I) Assess the source of liquids and amounts of liquids by source,

   (II) Conduct a fingerprint, hazardous constituent, or other analyses of the liquids in the leak detection system to identify the source of liquids and possible location of any leaks, and the hazard and mobility of the liquid; and

   (III) Assess the seriousness of any leaks in terms of potential for escaping into the environment; or

   (ii) Document why such assessments are not needed.

(e) (RESERVED) [40 CFR 264.224]

(f) (RESERVED) [40 CFR 264.225]

(g) Monitoring and Inspection [40 CFR 264.226]

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

(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.

4. (i) An owner or operator required to have a leak detection system under parts (b)3 or 4 of this paragraph must record the amount of liquids removed from each leak detection system sump at least once each week during the active life and closure period.

(ii) After the final cover is installed, the amount of liquids removed from each leak detection system sump must be recorded at least monthly. If the liquid level in the sump stays below the pump operating level for two consecutive months, the amount of liquids in the sumps must be recorded at least quarterly. If the liquid level in the sump stays below the pump operating level for two consecutive quarters, the amount of liquids in the sumps must be recorded at least semi-annually. If at any time during the post-closure care period the pump operating level is exceeded at units on quarterly or semi-annual recording schedules, the owner or operator must return to monthly recording of amounts of liquids removed from each sump until the liquid level again stays below the pump operating level for two consecutive months.

(iii) "Pump operating level" is a liquid level proposed by the owner or operator and approved by the Commissioner based on pump activation level, sump dimensions, and level that avoids backup into the drainage layer and minimizes head in the sump.

(h) Emergency Repairs; Contingency Plans [40 CFR 264.227]

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;

(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) Closure and Post-closure Care [40 CFR 264.228]

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 0400-12-01-.02(1)(c)4 applies; or

(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)(h) through (k) of this rule, including maintenance and monitoring throughout the post-closure care period (specified in the permit under subparagraph (7)(h) 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 leak detection system in accordance with item (b)3(ii)(IV), subpart (b)3(iii), and part (g)4 of this rule, and comply with all other applicable leak detection system requirements of this rule;

(iii) Maintain and monitor the ground-water monitoring system and comply with all other applicable requirements of paragraph (6) of this rule; and

(iv) 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)(i) 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 [40 CFR 264.229]

Ignitable or reactive waste must not be placed in a surface impoundment, unless the waste and impoundment satisfy all applicable requirements of Rule 0400-12-01-.10, and:

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 Rules 0400-12-01-.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 [40 CFR 264.230]

Incompatible wastes, or incompatible wastes and materials, (see Appendix V in paragraph (57) of this rule 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 [40 CFR 264.231]

1. Hazardous Wastes F020, F021, F022, F023, F026, and F027 must not be placed in a surface impoundment unless the owner or operator 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.

(m) Air Emission Standards [40 CFR 264.232]

The owner or operator shall manage all hazardous waste placed in a surface impoundment in accordance with the applicable requirements of paragraphs (31) and (32) of this rule.

(12) Waste Piles [40 CFR 264 Subpart L]

(a) Applicability [40 CFR 264.250]

1. The regulations in this paragraph apply to owners and operators of facilities that store or treat hazardous waste in piles, except as subparagraph (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;

(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 [40 CFR 264.251]

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:

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 pressures 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 of each new waste pile unit, each lateral expansion of a waste pile unit, and each replacement of an existing waste pile unit must install two or more liners and a leachate collection and removal system above and between such liners.

(i) (I) The liner system must include:

I. A top liner designed and constructed of materials (e.g., a geomembrane) to prevent the migration of hazardous constituents into such liner during the active life and post-closure care period; and

II. A composite bottom liner, consisting of at least two components. The upper component must be designed and constructed of materials (e.g., a geomembrane) to prevent the migration of hazardous constituents into this component during the active life and post-closure care period. The lower component must be designed and constructed of materials to minimize the migration of hazardous constituents if a breach in the upper component were to occur. The lower component must be constructed of at least 3 feet (91 cm) of compacted soil material with a hydraulic conductivity of no more than 1×10^{-7} cm/sec.

(II) The liners must comply with items 1(i)(I),(II), and (III) of this subparagraph.

(ii) The leachate collection and removal system immediately above the top liner must be designed, constructed, operated, and maintained to collect and remove leachate from the waste pile during the active life and post-closure care period. 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 comply with items 3(iii)(III) and (IV) of this subparagraph.

(iii) The leachate collection and removal system between the liners, and immediately above the bottom composite liner in the case of multiple leachate collection and removal systems, is also a leak detection system. This leak detection system must be capable of detecting, collecting, and removing leaks of hazardous constituents at the earliest practicable time through all areas of the top liner likely to be exposed to waste or leachate during the active life and post-closure care period. The requirements for a leak detection system in this paragraph are satisfied by installation of a system that is, at a minimum:

(I) Constructed with a bottom slope of one percent or more;

(II) Constructed of granular drainage materials with a hydraulic conductivity of 1×10^{-2} cm/sec or more and a thickness of 12 inches (30.5 cm) or

more; or constructed of synthetic or geonet drainage materials with a transmissivity of 3×10^{-5} m^2/sec or more;

(III) Constructed of materials that are chemically resistant to the waste managed in the waste pile and the leachate expected to be generated, and of sufficient strength and thickness to prevent collapse under the pressures exerted by overlying wastes, waste cover materials, and equipment used at the waste pile;

(IV) Designed and operated to minimize clogging during the active life and post-closure care period; and

(V) Constructed with sumps and liquid removal methods (e.g., pumps) of sufficient size to collect and remove liquids from the sump and prevent liquids from backing up into the drainage layer. Each unit must have its own sump(s). The design of each sump and removal system must provide a method for measuring and recording the volume of liquids present in the sump and of liquids removed.

(iv) The owner or operator shall collect and remove pumpable liquids in the leak detection system sumps to minimize the head on the bottom liner.

(v) The owner or operator of a leak detection system that is not located completely above the seasonal high water table must demonstrate that the operation of the leak detection system will not be adversely affected by the presence of ground water.

4. The Commissioner may approve alternative design or operating practices to those specified in part 3 of this subparagraph if the owner or operator demonstrates to the Commissioner that such design and operating practices, together with location characteristics:

(i) Will prevent the migration of any hazardous constituent into the ground water or surface water at least as effectively as the liners and leachate collection and removal systems specified in part 3 of this subparagraph; and

(ii) Will allow detection of leaks of hazardous constituents through the top liner at least as effectively.

5. Part 3 of this subparagraph does not apply to monofills that are granted a waiver by the Commissioner in accordance with part (11)(b)5 of this rule.

6. The owner or operator of any replacement waste pile unit is exempt from part 3 of this subparagraph if:

(i) The existing unit was constructed in compliance with the design standards of paragraph (11) of this rule; and

(ii) There is no reason to believe that the liner is not functioning as designed.

7. 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.

8. 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.

9. 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.

10. 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.

11. 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) Action Leakage Rate [40 CFR 264.252]

1. The Commissioner shall approve an action leakage rate for waste pile units subject to parts (b)3 or 4 of this paragraph. The action leakage rate is the maximum design flow rate that the leak detection system (LDS) can remove without the fluid head on the bottom liner exceeding 1 foot. The action leakage rate must include an adequate safety margin to allow for uncertainties in the design (e.g., slope, hydraulic conductivity, thickness of drainage material), construction, operation, and location of the LDS, waste and leachate characteristics, likelihood and amounts of other sources of liquids in the LDS, and proposed response actions (e.g., the action leakage rate must consider decreases in the flow capacity of the system over time resulting from siltation and clogging, rib layover and creep of synthetic components of the system, overburden pressures, etc.).

2. To determine if the action leakage rate has been exceeded, the owner or operator must convert the weekly flow rate from the monitoring data obtained under part (e)3 of this paragraph to an average daily flow rate (gallons per acre per day) for each sump. Unless the Commissioner approves a different calculation, the average daily flow rate for each sump must be calculated weekly during the active life and closure period.

(d) Response Actions [40 CFR 264.253]

1. The owner or operator of waste pile units subject to parts (b)3 or 4 of this paragraph must have an approved response action plan before receipt of waste. The response action plan must set forth the actions to be taken if the action leakage rate has been exceeded. At a minimum, the response action plan must describe the actions specified in part 2 of this subparagraph.

2. If the flow rate into the leak detection system exceeds the action leakage rate for any sump, the owner or operator must:

(i) Notify the Commissioner in writing of the exceedance within 7 days of the determination;

(ii) Submit a preliminary written assessment to the Commissioner within 14 days of the determination, as to the amount of liquids, likely sources of liquids, possible location, size, and cause of any leaks, and short-term actions taken and planned;

(iii) Determine to the extent practicable the location, size, and cause of any leak;

(iv) Determine whether waste receipt should cease or be curtailed, whether any waste should be removed from the unit for inspection, repairs, or controls, and whether or not the unit should be closed;

(v) Determine any other short-term and long-term actions to be taken to mitigate or stop any leaks; and

(vi) Within 30 days after the notification that the action leakage rate has been exceeded, submit to the Commissioner the results of the analyses specified in subparts (iii), (iv) and (v) of this part, the results of actions taken, and actions planned. Monthly thereafter, as long as the flow rate in the leak detection system exceeds the action leakage rate, the owner or operator must submit to the Commissioner a report summarizing the results of any remedial actions taken and actions planned.

3. To make the leak and/or remediation determinations in subparts 2(iii), (iv) and (v) of this subparagraph, the owner or operator must:

(i) (I) Assess the source of liquids and amounts of liquids by source,

(II) Conduct a fingerprint, hazardous constituent, or other analyses of the liquids in the leak detection system to identify the source of liquids and possible location of any leaks, and the hazard and mobility of the liquid; and

(III) Assess the seriousness of any leaks in terms of potential for escaping into the environment; or

(ii) Document why such assessments are not needed.

(e) Monitoring and Inspection [40 CFR 264.254]

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.

3. An owner or operator required to have a leak detection system under part (b)3 of this paragraph must record the amount of liquids removed from each leak detection system sump at least once each week during the active life and closure period.

(f) (RESERVED) [40 CFR 264.255]

(g) Special Requirements for Ignitable or Reactive Waste [40 CFR 264.256]

Ignitable or reactive waste must not be place in a waste pile unless the waste and waste pile satisfy all applicable requirements of Rule 0400-12-01-.10, and:

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 0400-12-01-.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.

(h) Special Requirements for Incompatible Wastes [40 CFR 264.257]

1. Incompatible wastes, or incompatible wastes and materials, (see Appendix V in paragraph (57) of this rule 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 [40 CFR 264.258]

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 0400-12-01-.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)(i) of this rule for complying with part 2 of this subparagraph 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 paragraph.

(j) Special Requirements for Hazardous Wastes F020, F021, F022, F023, F026, and F027 [40 CFR 264.259]

1. Hazardous Wastes F020, F021, F022, F023, F026, and F027 must not be placed in waste piles that are not enclosed (as defined in subparagraph (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 piles 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 [40 CFR 264 Subpart M]

(a) Applicability [40 CFR 264.270]

The regulations in this subpart 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.

(b) Treatment Program [40 CFR 264.271]

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 subpart. Hazardous constituents are constituents identified in Appendix VIII in paragraph (5) of Rule 0400-12-01-.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 [40 CFR 264.272]

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 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 0400-12-01-.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 VIII in paragraph (5) of Rule 0400-12-01-.02);

(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;

(V) In the case of field tests, the potential for migration of hazardous constituents to ground water or surface water.

(d) Design and Operating Requirements [40 CFR 264.273]

The Commissioner will specify in the facility permit how the owner or operator will design, construct, operate, and maintain the land treatment unit in compliance with this subparagraph.

1. The owner or 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.

(e) (RESERVED) [40 CFR 264.274]

(f) (RESERVED) [40 CFR 264.275]

(g) Food-chain Crops [40 CFR 264.276]

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 demonstrating, 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 paragraph prior to the planting of crops at the facility for all constituents identified

in Appendix VIII of Rule 0400-12-01-.02(5) 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.

(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 (kilograms per hectare)
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 meq/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) [40 CFR 264.277]

(i) Unsaturated Zone Monitoring [40 CFR 264.278]

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 constituents (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 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.

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 constituent 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.

(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 subparagraph, 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 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 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) of this subparagraph 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 accordance with the unsaturated zone monitoring program established under this subparagraph.

(j) Recordkeeping [40 CFR 264.279]

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 [40 CFR 264.280]

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 a qualified 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 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 (6) of this rule if the Commissioner finds that the owner or operator satisfies 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 [40 CFR 264.281]

The owner or operator must not apply ignitable or reactive waste to the treatment zone unless the waste and the treatment zone meet all applicable requirements of Rule 0400-12-01-.10, and:

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 0400-12-01-.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 [40 CFR 264.282]

The owner or operator must not place incompatible wastes, or incompatible wastes and materials (see Appendix V in paragraph (57) of this rule 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 [40 CFR 264.283]

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 facility 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 part. 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 land treatment facilities 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 [40 CFR 264 Subpart N]

(a) Applicability [40 CFR 264.300]

The regulations in this paragraph apply to owners and 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 [40 CFR 264.301]

1. Any landfill that is not covered by part 3 of this subparagraph or Rule 0400-12-01-.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 anytime 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

(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 to 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 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 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 unit on which construction commences after January 29, 1992, each lateral expansion of a landfill unit on which construction commences after July 29, 1992, and each replacement of an existing landfill unit that is to commence reuse after July 29, 1992 must install two or more liners and a leachate collection and removal system above and between such liners. "Construction commences" is as defined in Rule 0400-12-01-.01(2)(a) under "existing facility".

(i) (I) The liner system must include:

I. A top liner designed and constructed of materials (e.g., a geomembrane) to prevent the migration of hazardous constituents into such liner during the active life and post-closure care period; and

II. A composite bottom liner, consisting of at least two components. The upper component must be designed and constructed of materials (e.g., a geomembrane) to prevent the migration of hazardous constituents into this component during the active life and post-closure care period. The lower component must be designed and constructed of materials to minimize the migration of hazardous constituents if a breach in the upper component were to occur. The lower component must be constructed of at least 3 feet (91 cm) of compacted soil material with a hydraulic conductivity of no more than 1×10^{-7} cm/sec.

(II) The liners must comply with items 1(i)(I), (II) and (III) of this subparagraph.

(ii) The leachate collection and removal system immediately above the top liner must be designed, constructed, operated, and maintained to collect and remove leachate from the landfill during the active life and post-closure care period. 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 comply with items (iii)(III) and (IV) of this part.

(iii) The leachate collection and removal system between the liners, and immediately above the bottom composite liner in the case of multiple leachate collection and removal systems, is also a leak detection system. This leak detection system

must be capable of detecting, collecting, and removing leaks of hazardous constituents at the earliest practicable time through all areas of the top liner likely to be exposed to waste or leachate during the active life and post-closure care period. The requirements for a leak detection system in this paragraph are satisfied by installation of a system that is, at a minimum:

(I) Constructed with a bottom slope of one percent or more;

(II) Constructed of granular drainage materials with a hydraulic conductivity of 1×10^{-2} cm/sec or more and a thickness of 12 inches (30.5 cm) or more; or constructed of synthetic or geonet drainage materials with a transmissivity of 3×10^{-5} m^2/sec or more;

(III) Constructed of materials that are chemically resistant to the waste managed in the landfill and the leachate expected to be generated, and of sufficient strength and thickness to prevent collapse under the pressures exerted by overlying wastes, waste cover materials, and equipment used at the landfill;

(IV) Designed and operated to minimize clogging during the active life and post-closure care period; and

(V) Constructed with sumps and liquid removal methods (e.g., pumps) of sufficient size to collect and remove liquids from the sump and prevent liquids from backing up into the drainage layer. Each unit must have its own sump(s). The design of each sump and removal system must provide a method for measuring and recording the volume of liquids present in the sump and of liquids removed.

(iv) The owner or operator shall collect and remove pumpable liquids in the leak detection system sumps to minimize the head on the bottom liner.

(v) The owner or operator of a leak detection system that is not located completely above the seasonal high water table must demonstrate that the operation of the leak detection system will not be adversely affected by the presence of ground water.

4. The Commissioner may approve alternative design or operating practices to those specified in part 3 of this subparagraph if the owner or operator demonstrates to the Commissioner that such design and operating practices, together with location characteristics:

(i) Will prevent the migration of any hazardous constituent into the ground water or surface water at least as effectively as the liners and leachate collection and removal systems specified in part 3 of this subparagraph; and

(ii) Will allow detection of leaks of hazardous constituents through the top liner at least as effectively.

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 Toxicity Characteristic in Rule 0400-12-01-.02(3)(e), with Hazardous Waste Codes D004 through D017; 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 Rule 0400-12-01-.01(2)(a)); and

III. The monofill is in compliance with generally applicable ground-water monitoring requirements for facilities with permits under T.C.A. Section 68-212-108 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 of any replacement landfill unit is exempt from part 3 of this subparagraph if:

(i) The existing unit was constructed in compliance with the design standards of paragraph (11) of this rule; and

(ii) There is no reason to believe that the liner is not functioning as designed.

7. 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.

8. 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.

9. 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.

10. 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.

11. 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.

12. 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 she 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) Action Leakage Rate [40 CFR 264.302]

1. The Commissioner shall approve an action leakage rate for landfill units subject to parts (b)3 or 4 of this paragraph. The action leakage rate is the maximum design flow rate that the leak detection system (LDS) can remove without the fluid head on the bottom liner exceeding I foot. The action leakage rate must include an adequate safety margin to allow for uncertainties in the design (e.g., slope, hydraulic conductivity, thickness of drainage material), construction, operation, and location of the LDS, waste and leachate characteristics, likelihood and amounts of other sources of liquids in the LDS, and proposed response actions (e.g., the action leakage rate must consider decreases in the flow capacity of the system over time resulting from siltation and clogging, rib layover and creep of synthetic components of the system, overburden pressures, etc.).

2. To determine if the action leakage rate has been exceeded, the owner or operator must convert the weekly or monthly flow rate from the monitoring data obtained under part (d)3 of this paragraph to an average daily flow rate (gallons per acre per day) for each sump. Unless the Commissioner approves a different calculation, the average daily flow rate for each sump must be calculated weekly during the active life and closure period, and monthly during the post-closure care period when monthly monitoring is required under part (d)3 of this paragraph.

(d) Monitoring and Inspection [40 CFR 264.303]

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:

   (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.

3. (i) An owner or operator required to have a leak detection system under parts (b)3 or 4 of this subparagraph must record the amount of liquids removed from each leak detection system sump at least once each week during the active life and closure period.

   (ii) After the final cover is installed, the amount of liquids removed from each leak detection system sump must be recorded at least monthly. If the liquid level in the sump stays below the pump operating level for two consecutive months, the amount of liquids in the sumps must be recorded at least quarterly. If the liquid level in the sump stays below the pump operating level for two consecutive quarters, the amount of liquids in the sumps must be recorded at least semi-

annually. If at any time during the post-closure care period the pump operating level is exceeded at units on quarterly or semi-annual recording schedules, the owner or operator must return to monthly recording of amounts of liquids removed from each sump until the liquid level again stays below the pump operating level for two consecutive months.

(iii) "Pump operating level" is a liquid level proposed by the owner or operator and approved by the Commissioner based on pump activation level, sump dimensions, and level that avoids backup into the drainage layer and minimizes head in the sump.

(e) Response Actions [40 CFR 264.304]

1. The owner or operator of landfill units subject to parts (b)3 or 4 of this paragraph must have an approved response action plan before receipt of waste. The response action plan must set forth the actions to be taken if the action leakage rate has been exceeded. At a minimum, the response action plan must describe the actions specified in part 2 of this subparagraph.

2. If the flow rate into the leak detection system exceeds the action leakage rate for any sump, the owner or operator must:

(i) Notify the Commissioner in writing of the exceedance within 7 days of the determination;

(ii) Submit a preliminary written assessment to the Commissioner within 14 days of the determination, as to the amount of liquids, likely sources of liquids, possible location, size, and cause of any leaks, and short-term actions taken and planned;

(iii) Determine to the extent practicable the location, size, and cause of any leak;

(iv) Determine whether waste receipt should cease or be curtailed, whether any waste should be removed from the unit for inspection, repairs, or controls, and whether or not the unit should be closed;

(v) Determine any other short-term and longer-term actions to be taken to mitigate or stop any leaks; and

(vi) Within 30 days after the notification that the action leakage rate has been exceeded, submit to the Commissioner the results of the analyses specified in subparts (e)2(iii), (iv) and (v) of this paragraph, the results of actions taken, and actions planned. Monthly thereafter, as long as the flow rate in the leak detection system exceeds the action leakage rate, the owner or operator must submit to the Commissioner a report summarizing the results of any remedial actions taken and actions planned.

3. To make the leak and/or remediation determinations in subparts (e)2(iii), (iv), and (v) of this paragraph, the owner or operator must:

(i) (I) Assess the source of liquids and amounts of liquids by source,

(II) Conduct a fingerprint, hazardous constituent, or other analyses of the liquids in the leak detection system to identify the source of liquids and possible location of any leaks, and the hazard and mobility of the liquid; and

(III) Assess the seriousness of any leaks in terms of potential for escaping into the environment; or

(ii) Document why such assessments are not needed.

(f) (RESERVED) [40 CFR 264.305]

(i) (RESERVED) [40 CFR 264.308]

(j) Surveying and Recordkeeping [40 CFR 264.309]

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 [40 CFR 264.310]

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)(h) through (k) of this rule, including maintenance and monitoring throughout the post-closure care period (specified in the permit under subparagraph (7)(h) 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 leak detection system in accordance with item (b)3(iii)(IV) and subpart (b)3(iv) and part (d)3 of this paragraph, and comply with all other applicable leak detection system requirements of this rule;

   (iv) Maintain and monitor the ground-water monitoring system and comply with all other applicable requirements of paragraph (6) of this rule;

   (v) Prevent run-on and run-off from eroding or otherwise damaging the final cover; and

   (vi) Protect and maintain surveyed benchmarks used in complying with subparagraph (j) of this paragraph.

(l) (RESERVED) [40 CFR 264.311]

(m) Special Requirements for Ignitable or Reactive Waste [40 CFR 264.312]

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 and landfill meet all applicable requirements of Rule 0400-12-01-.10, and:

   (i) The resulting waste, mixture, or dissolution of material no longer meets the definition of ignitable or reactive waste under subparagraph (3)(b) and (d) of Rule 0400-12-01-.02; and

   (ii) Part (2)(h)2 of this rule is complied with.

2. Except for prohibited wastes which remain subject to treatment standards in Rule 0400-12-01-.10(3), 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 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 [40 CFR 264.313]

Incompatible wastes, or incompatible wastes and materials, (see Appendix V of paragraph (57) of this rule 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 [40 CFR 264.314]

1. The placement of bulk or non-containerized liquid hazardous waste or hazardous waste containing free liquids (whether or not sorbents have been added) in any landfill is prohibited.

   (Note: Implementation of this provision between May 8, 1985 and February 2, 1986 remains with EPA.)

2. To demonstrate the absence or presence of free liquids in either a containerized or a bulk waste, the following test must be used: Method 9095B (Paint Filter Liquids Test) as described in "Test Methods for Evaluating Solid Waste, Physical/Chemical Methods" (see 40 CFR 260.11; Rule 0400-12-01-.01(2)(b)1).

3. 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 sorbent 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.

4. Sorbents used to treat free liquids to be disposed of in landfills must be nonbiodegradable. Nonbiodegradable sorbents are: materials listed or described in subpart (i) of this part; materials that pass one of the tests in subpart (ii) of this part; or materials that are determined to be nonbiodegradable through the Rule 0400-12-01-.01 petition process.

(i) Nonbiodegradable Sorbents

(I) Inorganic minerals, other inorganic materials, and elemental carbon (e.g., aluminosilicates, clays, smectites, Fuller's earth, bentonite, calcium bentonite, montmorillonite, calcined montmorillonite, kaolinite, micas (illite), vermiculites, zeolites; calcium carbonate (organic free limestone); oxides/hydroxides, alumina, lime, silica (sand), diatomaceous earth; perlite (volcanic glass); expanded volcanic rock; volcanic ash; cement kiln dust; fly ash; rice hull ash; activated charcoal/activated carbon); or

(II) High molecular weight synthetic polymers (e.g., polyethylene, high density polyethylene (HDPE), polypropylene, polystyrene, polyurethane, polyacrylate, polynorborene, polyisobutylene, ground synthetic rubber, cross-linked allylstyrene and tertiary butyl copolymers). This does not include polymers derived from biological material or polymers specifically designed to be degradable; or

(III) Mixtures of these nonbiodegradable materials.

(ii) Tests for Nonbiodegradable Sorbents

(I) The sorbent material is determined to be nonbiodegradable under ASTM Method G21-70 (1984a)-Standard Practice for Determining Resistance of Synthetic Polymer Materials to Fungi (see 40 CFR 260.11; Rule 0400-12-01-.01(2)(b)1); or

(II) The sorbent material is determined to be nonbiodegradable under ASTM Method G22-76 (1984b)-Standard Practice for Determining Resistance of Plastics to Bacteria; or

(III) The sorbent material is determined to be non-biodegradable under OECD test 301B: [CO2 Evolution (Modified Sturm Test)].

5. 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 Rule 0400-12-01-.01(2)(a)).

(p) Special Requirements for Containers [40 CFR 264.315]

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 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) [40 CFR 264.316]

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 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 sorbent material, determined to be nonbiodegradable in accordance with part (o)4 of this paragraph, to completely sorb all of the liquid contents of the inside containers. The metal outer container must be full after it has been packed with inside containers and sorbent material.

3. The sorbent 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 0400-12-01-.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 0400-12-01-.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.

6. Such disposal is in compliance with the requirements of Rule 0400-12-01-.10. Persons who incinerate lab packs according to the requirements in Rule 0400-12-01-.10(3)(c)3(i) may use fiber drums in place of metal outer containers. Such fiber drums must meet the DOT specifications in 49 CFR 173.12 and be overpacked according to the requirements in part 2 of this subparagraph.

(r) Special Requirements for Hazardous Wastes F020, F021, F022, F023, F026, and F027 [40 CFR 264.317]

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 subparagraph, 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 the 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 requirements.

2. The Commissioner may determine that additional design, operating, and monitoring requirements are necessary for landfills 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 [40 CFR 264 Subpart O]

(a) Applicability [40 CFR 264.340]

1. The regulations of this paragraph apply to owners and operators of hazardous waste incinerators (as defined in Rule 0400-12-01-.01(2)(a)), except as subparagraph (1)(b) of this rule provides otherwise.

2. Integration of the MACT standards

(i) Except as provided by subparts 2(ii)through 2 (v) of this subparagraph, the standards of this rule do not apply to a new hazardous waste incineration unit that becomes subject to RCRA permit requirements after October 12, 2005; or no longer apply when an owner or operator of an existing hazardous waste incineration unit demonstrates compliance with the maximum achievable control technology (MACT) requirements of 40 CFR 63 Subpart EEE by conducting a comprehensive performance test and submitting to the Commissioner a Notification of Compliance under 40 CFR 63.1207(j) and 63.1210(d) documenting compliance with the requirements of 40 CFR 63 Subpart EEE. Nevertheless, even after this demonstration of compliance with the MACT standards, Hazardous Waste permit conditions that were based on the standards of this rule will continue to be in effect until they are removed from the permit or the permit is terminated or revoked, unless the permit expressly provides otherwise.

(ii) The MACT standards do not replace the closure requirements of subparagraph (15)(1) or the applicable requirements of paragraphs (1) through (8), (31), and (32) of this rule.

(iii) The particulate matter standard of part (d)3 of this paragraph remains in effect for incinerators that elect to comply with the alternative to the particulate matter standard of §63.1206(b)(14).

(iv) The following requirements remain in effect for startup, shutdown, and malfunction events if you elect to comply with item (12)(a)1(i)(I) of Rule 0400-12-01-.07 to minimize emissions of toxic compounds from these events:

(I) Part (15)(f)1 of this rule requiring that an incinerator operate in accordance with operating requirements specified in the permit; and

(II) Part (15)(f)3 of this rule requiring compliance with the emission standards and operating requirements during startup and shutdown if hazardous waste is in the combustion chamber, except for particular hazardous wastes.

(v) The particulate matter standard of part (d)3 of this paragraph remains in effect for incinerators that elect to comply with the alternative to the particulate matter standard of 40 CFR 63.1206(b)(14) and 63.1219(e).

3. 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 subparagraph (b) of this paragraph (Waste analysis) and subparagraph (l) of this paragraph (Closure),

(i) If the Commissioner finds that the waste to be burned is:

(I) Listed as a hazardous waste in Rule 0400-12-01-.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 0400-12-01-.02(4) solely because it is reactive (Hazard Code R) for characteristics other than those listed in Rule 0400-12-01-.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 0400-12-01-.02(3); or

(IV) A hazardous waste solely because it possesses any of the reactivity characteristics described by Rule 0400-12-01-.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 VIII of Rule 0400-12-01-.02, which would reasonably be expected to be in the waste.

4. If the waste to be burned is one which is described by items 3(i)(I) through (IV) of this subparagraph and contains insignificant concentrations of the hazardous constituents listed in Appendix VIII of Rule 0400-12-01-.02, then the Commissioner may, in establishing permit conditions, exempt the applicant from all requirements of this paragraph, except subparagraph (b) of this paragraph (Waste analysis) and subparagraph (l) of this paragraph (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.

5. The owner or operator of an incinerator may conduct trial burns subject only to the requirements of Rule 0400-12-01-.07(1)(e) (Short term and incinerator permits).

(b) Waste Analysis [40 CFR 264.341]

1. As a portion of the trial burn plan required by Rule 0400-12-01-.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 0400-12-01-.07. Owners or operators of new hazardous waste incinerators must provide the information required by part (1)(e)3 or (5)(b)5 of Rule 0400-12-01-.07 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) [40 CFR 264.342]

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 VIII of Rule 0400-12-01-.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 0400-12-01-.07(1)(e) for obtaining trial burn permits.

(d) Performance Standards [40 CFR 264.343]

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:

$$DRE = \frac{W_{in} - W_{out}}{W_{in}} \times 100\%$$

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, or 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 difficult 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.

2. An incinerator burning hazardous waste and producing stack emissions of more than 1.8 kilograms per hour (4 pounds per hour) of hydrogen chloride (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.

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 subparagraph. However, evidence that compliance with those permit conditions is insufficient to ensure compliance with the performance requirements of this subparagraph may be "information" justifying modification, revocation, or reissuance of a permit under Rule 0400-12-01-.07(9)(c).

(e) Hazardous Waste Incinerator Permits [40 CFR 264.344]

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 0400-12-01-.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 0400-12-01-.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 subpart, 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;

   (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 0400-12-01-.07(5)(b)5(iii), as sufficient to ensure compliance with the performance standards of subparagraph (d) of this paragraph.

(f) Operating Requirements [40 CFR 264.345]

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.

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 alternate 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) (RESERVED) [40 CFR 264.346]

(h) Monitoring and Inspections [40 CFR 264.347]

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 record required by subparagraph (5)(d) of this rule and maintained in the operating record for five years, or as required by a permit issued after the effective date of this rulemaking, but no less than five (5) years.

(i) (RESERVED) [40 CFR 264.348]

(j) (RESERVED) [40 CFR 364.349]

(k) (RESERVED) [40 CFR 264.350]

(l) Closure [40 CFR 264.351]

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 0400-12-01-.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 applicable requirements of Rules 0400-12-01-.03 through .07 and .09.)

(16) Thermal Treatment

The regulations of Rule 0400-12-01-.05(16)(d), (f), (h), (l), and (m) 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 0400-12-01-.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) 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) 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.

(19) (RESERVED) [40 CFR 264, Subpart P]

(20) (RESERVED) [40 CFR 264, Subpart Q]

(21) (RESERVED) [40 CFR 264, Subparts R]

(22) Special Provisions for Cleanup [40 CFR 264, Subpart S]

(a) Applicability of Corrective Action Management Unit (CAMU) Regulations [40 CFR 264.550]

1. Except as provided in part 2 of this subparagraph, CAMUs are subject to the requirements of subparagraph (22)(c) of this rule.

2. CAMUs that were approved before April 22, 2002, or for which substantially complete applications (or equivalents) were submitted to the Department on or before November 20, 2000, are subject to the requirements in subparagraph (22)(b) of this rule for grandfathered CAMUs; CAMU waste, activities, and design will not be subject to the standards in subparagraph (22)(c) of this rule, so long as the waste, activities, and design remain within the general scope of the CAMU as approved.

(b) Grandfathered Corrective Action Management Units (CAMUs) [40 CFR 264.551]

1. To implement remedies under subparagraph (6)(l) of this rule, or to implement remedies at a permitted facility that is not subject to subparagraph (6)(l) of this rule, the Commissioner may designate an area at the facility as a corrective action management unit under the requirements in this subparagraph. Corrective action management unit means an area within a facility that is used only for managing remediation wastes for implementing corrective action or cleanup at the facility. A CAMU must be located within the contiguous property under the control of the owner or operator where the wastes to be managed in the CAMU originated. One or more CAMUs may be designated at a facility.

(i) Placement of remediation wastes into or within a CAMU does not constitute land disposal of hazardous wastes.

(ii) Consolidation or placement of remediation wastes into or within a CAMU does not constitute creation of a unit subject to minimum technology requirements.

2. (i) The Commissioner may designate a regulated unit (as defined in subpart (6)(a)1(ii) of this rule) as a CAMU, or may incorporate a regulated unit into a CAMU, if:

(I) The regulated unit is closed or closing, meaning it has begun the closure process under Rules 0400-12-01-.05(7)(d) or .06(7)(d), and

(II) Inclusion of the regulated unit will enhance implementation of effective, protective and reliable remedial actions for the facility.

(ii) The paragraphs (6), (7), and (8) requirements and the unit-specific requirements of Rules 0400-12-01-.05 or .06 that applied to that regulated unit will continue to apply to that portion of the CAMU after incorporation into the CAMU.

3. The Commissioner shall designate a CAMU in accordance with the following:

(i) The CAMU shall facilitate the implementation of reliable, effective, protective, and cost-effective remedies;

(ii) Waste management activities associated with the CAMU shall not create unacceptable risks to humans or to the environment resulting from exposure to hazardous wastes or hazardous constituents;

(iii) The CAMU shall include uncontaminated areas of the facility, only if including such areas for the purpose of managing remediation waste is more protective than management of such wastes at contaminated areas of the facility;

(iv) Areas within the CAMU, where wastes remain in place after closure of the CAMU, shall be managed and contained so as to minimize future releases, to the extent practicable;

(v) The CAMU shall enable the use, when appropriate, of treatment technologies (including innovative technologies) to enhance the long-term effectiveness of remedial actions by reducing the toxicity, mobility, or volume of wastes that will remain in place after closure of the CAMU; and

(vi) The CAMU shall, to the extent practicable, minimize the land area of the facility upon which wastes will remain in place after closure of the CAMU.

4. The owner/operator shall provide sufficient information to enable the Commissioner to designate a CAMU in accordance with the criteria in this subparagraph.

5. The Commissioner shall specify, in the permit or order, requirements for CAMUs to include the following:

(i) The areal configuration of the CAMU.

(ii) Requirements for remediation waste management to include the specification of applicable design, operation and closure requirements.

(iii) Requirements for ground water monitoring that are sufficient to:

(I) Continue to detect and to characterize the nature, extent, concentration, direction, and movement of existing releases of hazardous constituents in ground water from sources located within the CAMU; and

(II) Detect and subsequently characterize releases of hazardous constituents to ground water that may occur from areas of the CAMU in which wastes will remain in place after closure of the CAMU.

(iv) Closure and post-closure requirements.

(I) Closure of corrective action management units shall:

I. Minimize the need for further maintenance; and

II. Control, minimize, or eliminate, to the extent necessary to protect human health and the environment, for areas where wastes remain in place, post-closure escape of hazardous waste, hazardous constituents, leachate, contaminated runoff, or hazardous waste decomposition products to the ground, to surface waters, or to the atmosphere.

(II) Requirements for closure of CAMUs shall include the following, as appropriate and as deemed necessary by the Commissioner for a given CAMU:

I. Requirements for excavation, removal, treatment or containment of wastes;

II. For areas in which wastes will remain after closure of the CAMU, requirements for capping of such areas; and

III. Requirements for removal and decontamination of equipment, devices, and structures used in remediation waste management activities within the CAMU.

(III) In establishing specific closure requirements for CAMUs under part 5 of this subparagraph, the Commissioner shall consider the following factors:

I. CAMU characteristics;

II. Volume of wastes which remain in place after closure;

III. Potential for releases from the CAMU;

IV. Physical and chemical characteristics of the waste;

V. Hydrological and other relevant environmental conditions at the facility which may influence the migration of any potential or actual release; and

VI. Potential for exposure of humans and environmental receptors if releases were to occur from the CAMU.

(IV) Post-closure requirements as necessary to protect human health and the environment, to include, for areas where wastes will remain in place, monitoring and maintenance activities, and the frequency with which such activities shall be performed to ensure the integrity of any cap, final cover, or other containment system.

6. The Commissioner shall document the rationale for designating CAMUs and shall make such documentation available to the public.

7. Incorporation of a CAMU into an existing permit must be approved by the Commissioner according to the procedures for Agency-initiated permit modifications under Rule 0400-12-01-.07(9)(c)2, or according to the permit modification procedures of Rule 0400-12-01-.07(9)(c)5.

8. The designation of a CAMU does not change the Department's existing authority to address clean-up levels, media-specific points of compliance to be applied to remediation at a facility, or other remedy selection decisions.

(c) Corrective Action Management Units (CAMU) [40 CFR 264.552]

1. To implement remedies under subparagraph (6)(l) of this rule or to implement remedies at a permitted facility that is not subject to subparagraph (6)(l) of this rule, the Commissioner may designate an area at the facility as a corrective action management unit under the requirements in this subparagraph. Corrective action management unit means an area within a facility that is used only for managing CAMU-eligible wastes for implementing corrective action or cleanup at the facility. A CAMU must be located within the contiguous property under the control of the owner or operator where the wastes to be managed in the CAMU originated. One or more CAMUs may be designated at a facility.

(i) CAMU-eligible waste means:

(I) All solid and hazardous wastes, and all media (including ground water, surface water, soils, and sediments) and debris, that are managed for implementing cleanup. As-generated wastes (either hazardous or non-hazardous) from ongoing industrial operations at a site are not CAMU-eligible wastes.

(II) Wastes that would otherwise meet the description in item (I) of this subpart are not "CAMU-Eligible Wastes" where:

I. The wastes are hazardous wastes found during cleanup in intact or substantially intact containers, tanks, or other non-land-based units found above ground, unless the wastes are first placed in the tanks, containers or non-land-based units as part of cleanup, or the containers or tanks are excavated during the course of cleanup; or

II. The Commissioner exercises the discretion in subpart (ii) of this part to prohibit the wastes from management in a CAMU.

(III) Notwithstanding item (I) of this subpart, where appropriate, as-generated non-hazardous waste may be placed in a CAMU where such waste is being used to facilitate treatment or the performance of the CAMU.

(ii) The Commissioner may prohibit, where appropriate, the placement of waste in a CAMU where the Commissioner has or receives information that such wastes have not been managed in compliance with applicable land disposal treatment standards of Rule 0400-12-01-.10, or applicable unit design requirements of this rule, or applicable unit design requirements of Rule 0400-12-01-.05, or that non-compliance with other applicable requirements of these rules likely contributed to the release of the waste.

(iii) Prohibition against placing liquids in CAMUs.

(I) The placement of bulk or noncontainerized liquid hazardous waste or free liquids contained in hazardous waste (whether or not sorbents have been added) in any CAMU is prohibited except where placement of such wastes facilitates the remedy selected for the waste.

(II) The requirements in part (14)(o)3 of this rule for placement of containers holding free liquids in landfills apply to placement in a CAMU except where placement facilitates the remedy selected for the waste.

(III) The placement of any liquid which is not a hazardous waste in a CAMU is prohibited unless such placement facilitates the remedy selected for the waste or a demonstration is made pursuant to part (14)(o)4 of this rule.

(IV) The absence or presence of free liquids in either a containerized or a bulk waste must be determined in accordance with part (14)(o)2 of this rule. Sorbents used to treat free liquids in CAMUs must meet the requirements of part (14)(o)4 of this rule.

(iv) Placement of CAMU-eligible wastes into or within a CAMU does not constitute land disposal of hazardous wastes.

(v) Consolidation or placement of CAMU-eligible wastes into or within a CAMU does not constitute creation of a unit subject to minimum technology requirements.

2. (i) The Commissioner may designate a regulated unit (as defined in part (6)(a)1(ii) of this rule) as a CAMU, or may incorporate a regulated unit into a CAMU, if:

(I) The regulated unit is closed or closing, meaning it has begun the closure process under subparagraph (7)(d) of this rule or subparagraph (7)(d) of Rule 0400-12-01-.05; and

(II) Inclusion of the regulated unit will enhance implementation of effective, protective and reliable remedial actions for the facility.

(ii) The paragraphs (6) (7), and (8) requirements and the unit-specific requirements of this rule or Rule 0400-12-01-.05 that applied to the regulated unit will continue to apply to that portion of the CAMU after incorporation into the CAMU.

3. The Commissioner shall designate a CAMU that will be used for storage and/or treatment only in accordance with part 6 of this subparagraph. The Commissioner shall designate all other CAMUs in accordance with the following:

(i) The CAMU shall facilitate the implementation of reliable, effective, protective, and cost-effective remedies;

(ii) Waste management activities associated with the CAMU shall not create unacceptable risks to humans or to the environment resulting from exposure to hazardous wastes or hazardous constituents;

(iii) The CAMU shall include uncontaminated areas of the facility, only if including such areas for the purpose of managing CAMU-eligible waste is more protective than management of such wastes at contaminated areas of the facility;

(iv) Areas within the CAMU, where wastes remain in place after closure of the CAMU, shall be managed and contained so as to minimize future releases, to the extent practicable;

(v) The CAMU shall expedite the timing of remedial activity implementation, when appropriate and practicable;

(vi) The CAMU shall enable the use, when appropriate, of treatment technologies (including innovative technologies) to enhance the long-term effectiveness of remedial actions by reducing the toxicity, mobility, or volume of wastes that will remain in place after closure of the CAMU; and

(vii) The CAMU shall, to the extent practicable, minimize the land area of the facility upon which wastes will remain in place after closure of the CAMU.

4. The owner/operator shall provide sufficient information to enable the Commissioner to designate a CAMU in accordance with the criteria in this subparagraph. This must include, unless not reasonably available, information on:

(i) The origin of the waste and how it was subsequently managed (including a description of the timing and circumstances surrounding the disposal and/or release):

(ii) Whether the waste was listed or identified as hazardous at the time of disposal and/or release; and

(iii) Whether the disposal and/or release of the waste occurred before or after the land disposal requirements of Rule 0400-12-01-.10 were in effect for the waste listing or characteristic.

5. The Commissioner shall specify, in the permit or order, requirements for CAMUs to include the following:

(i) The areal configuration of the CAMU.

(ii) Except as provided in part 7 of this subparagraph, requirements for CAMU-eligible waste management to include the specification of applicable design, operation, treatment and closure requirements.

(iii) Minimum design requirements

CAMUs, except as provided in part 6 of this subparagraph, into which wastes are placed must be designed in accordance with the following:

(I) Unless the Commissioner approves alternate requirements under item (II) of this subpart, CAMUs that consist of new, replacement, or laterally expanded units must include a composite liner and a leachate collection system that is designed and constructed to maintain less than a 30-cm depth of leachate over the liner. For purposes of this subparagraph, composite liner means a system consisting of two components; the upper component must consist of a minimum 30-mil flexible membrane liner (FML), and the lower component must consist of at least a two-foot layer of compacted soil with a hydraulic conductivity of no more than $1x10^{-7}$ cm/sec. FML components consisting of high density polyethylene (HDPE) must be at least 60 mil thick. The FML component must be installed in direct and uniform contact with the compacted soil component;

(II) Alternate requirements

The Commissioner may approve alternate requirements if:

I. The Commissioner finds that alternate design and operating practices, together with location characteristics, will prevent the migration of any hazardous constituents into the ground water or surface water at least as effectively as the liner and leachate collection systems in item (I) of this subpart; or

II. The CAMU is to be established in an area with existing significant levels of contamination, and the Commissioner finds that an alternative design, including a design that does not include a liner, would prevent migration from the unit that would exceed long-term remedial goals.

(iv) Minimum treatment requirements

Unless the wastes will be placed in a CAMU for storage and/or treatment only in accordance with part 6 of this subparagraph, CAMU-eligible wastes that, absent this subparagraph, would be subject to the treatment requirements of Rule 0400-12-01-.10, and that the Commissioner determines contain principal hazardous constituents must be treated to the standards specified in item (III) of this subpart.

(I) Principal hazardous constituents are those constituents that the Commissioner determines pose a risk to human health and the environment substantially higher than the cleanup levels or goals at the site.

I. In general, the Commissioner will designate as principal hazardous constituents:

A. Carcinogens that pose a potential direct risk from ingestion or inhalation at the site at or above 10^{-3}; and

B. Non-carcinogens that pose a potential direct risk from ingestion or inhalation at the site an order of magnitude or greater over their reference dose.

II. The Commissioner will also designate constituents as principal hazardous constituents, where appropriate, when risks to human

health and the environment posed by the potential migration of constituents in wastes to ground water are substantially higher than cleanup levels or goals at the site; when making such a designation, the Commissioner may consider such factors as constituent concentrations, and fate and transport characteristics under site conditions.

III. The Commissioner may also designate other constituents as principal hazardous constituents that the Commissioner determines pose a risk to human health and the environment substantially higher than the cleanup levels or goals at the site.

(II) In determining which constituents are "principal hazardous constituents," the Commissioner must consider all constituents which, absent this subparagraph, would be subject to the treatment requirements in Rule 0400-12-01-.10.

(III) Waste that the Commissioner determines contains principal hazardous constituents must meet treatment standards determined in accordance with item (IV) or item (V) of this subpart.

(IV) Treatment standards for wastes placed in CAMUs

I. For non-metals, treatment must achieve 90 percent reduction in total principal hazardous constituent concentrations, except as provided by subitem III of this item.

II. For metals, treatment must achieve 90 percent reduction in principal hazardous constituent concentrations as measured in leachate from the treated waste or media (tested according to the TCLP) or 90 percent reduction in total constituent concentrations (when a metal removal treatment technology is used), except as provided by subitem III of this item.

III. When treatment of any principal hazardous constituents to at 90 percent reduction standard would result in a concentration less than 10 times the Universal Treatment Standard for that constituent, treatment to achieve constituent concentrations less than 10 times the Universal Treatment Standard is not required. Universal Treatment Standards are identified in subparagraph (3)(i) of Rule 0400-12-01-.10.

IV. For waste exhibiting the hazardous characteristic of ignitability, corrosivity or reactivity, the waste must also be treated to eliminate these characteristics.

V. For debris, the debris must be treated in accordance with subparagraph (3)(f) of Rule 0400-12-01-.10, or by methods or to levels established under subitems (iv)(IV)I through IV or item (iv)(V) of this subpart, whichever the Commissioner determines is appropriate.

VI. Alternatives to TCLP

For metal bearing wastes for which metals removal treatment is not used, the Commissioner may specify a leaching test other than the TCLP (SW846 Method 1311, part (2)(b)1 of Rule 0400-12-01-.01) to measure treatment effectiveness, provided the Commissioner determines that an alternative leach testing protocol is appropriate for use, and that the alternative more accurately reflects conditions at the site that affect leaching.

(V) Adjusted standards

The Commissioner may adjust the treatment level or method in item (IV) of this subpart to a higher or lower level, based on one or more of the following factors, as appropriate. The adjusted level or method must be protective of human health and the environment:

I. The technical impracticability of treatment to the levels or by the methods in item (IV) of this subpart;

II. The levels or methods in item (IV) of this subpart would result in concentrations of principal hazardous constituents (PHCs) that are significantly above or below cleanup standards applicable to the site (established either site-specifically, or promulgated under state or federal law);

III. The views of the affected local community on the treatment levels or methods in item (IV) of this subpart as applied at the site, and, for treatment levels, the treatment methods necessary to achieve these levels;

IV. The short-term risks presented by the on-site treatment method necessary to achieve the levels or treatment methods in item (IV) of this subpart;

V. The long-term protection offered by the engineering design of the CAMU and related engineering controls:

A. Where the treatment standards in item (IV) of this subpart are substantially met and the principal hazardous constituents in the waste or residuals are of very low mobility; or

B. Where cost-effective treatment has been used and the CAMU meets the Subtitle C liner and leachate collection requirements for new land disposal units at parts (14)(b)3 and 4 of this rule; or

C. Where, after review of appropriate treatment technologies, the Commissioner determines that cost-effective treatment is not reasonably available, and the CAMU meets the Subtitle C liner and leachate collection requirements for new land disposal units at parts (14)(b)3 and 4 of this rule; or

D. Where cost-effective treatment has been used and the principal hazardous constituents in the treated wastes are of very low mobility; or

E. Where, after review of appropriate treatment technologies, the Commissioner determines that cost-effective treatment is not reasonably available, the principal hazardous constituents in the wastes are of very low mobility, and either the CAMU meets or exceeds the liner standards for new, replacement, or laterally expanded CAMUs in item (iii)(I) and (II) of this part, or the CAMU provides substantially equivalent or greater protection.

(VI) The treatment required by the treatment standards must be completed prior to, or within a reasonable time after, placement in the CAMU.

(VII) For the purpose of determining whether wastes placed in CAMUs have met site-specific treatment standards, the Commissioner may, as appropriate, specify a subset of the principal hazardous constituents in the waste as analytical surrogates for determining whether treatment standards have been met for other principal hazardous constituents. This specification will be based on the degree of difficulty of treatment and analysis of constituents with similar treatment properties.

(v) Except as provided in part 6 of this subparagraph, requirements for ground water monitoring and corrective action that are sufficient to:

(I) Continue to detect and to characterize the nature, extent, concentration, direction, and movement of existing releases of hazardous constituents in ground water from sources located within the CAMU; and

(II) Detect and subsequently characterize releases of hazardous constituents to ground water that may occur from areas of the CAMU in which wastes will remain in place after closure of the CAMU; and

(III) Require notification to the Commissioner and corrective action as necessary to protect human health and the environment for releases to ground water from the CAMU.

(vi) Except as provided in part 6 of this subparagraph, closure and post-closure requirements:

(I) Closure of corrective action management units shall:

I. Minimize the need for further maintenance; and

II. Control, minimize, or eliminate, to the extent necessary to protect human health and the environment, for areas where wastes remain in place, post-closure escape of hazardous wastes, hazardous constituents, leachate, contaminated runoff, or hazardous waste decomposition products to the ground, to surface waters, or to the atmosphere.

(II) Requirements for closure of CAMUs shall include the following, as appropriate and as deemed necessary by the Commissioner for a given CAMU:

I. Requirements for excavation, removal, treatment or containment of wastes; and

II. Requirements for removal and decontamination of equipment, devices, and structures used in CAMU-eligible waste management activities within the CAMU.

(III) In establishing specific closure requirements for CAMUs under part 5 of this subparagraph, the Commissioner shall consider the following factors:

I. CAMU characteristics;

II. Volume of wastes which remain in place after closure;

III. Potential for releases from the CAMU;

IV. Physical and chemical characteristics of the waste;

V. Hydrogeological and other relevant environmental conditions at the facility which may influence the migration of any potential or actual releases; and

VI. Potential for exposure of humans and environmental receptors if releases were to occur from the CAMU.

(IV) Cap requirements:

I. At final closure of the CAMU, for areas in which wastes will remain after closure of the CAMU, with constituent concentrations at or above remedial levels or goals applicable to the site, the owner or operator must cover the CAMU with a final cover designed and constructed to meet the following performance criteria, except as provided in subitem II of this item:

A. Provide long-term minimization of migration of liquids through the closed unit;

B. Function with minimum maintenance;

C. Promote drainage and minimize erosion or abrasion of the cover;

D. Accommodate settling and subsidence so that the cover's integrity is maintained; and

E. Have a permeability less than or equal to the permeablility of any bottom liner system or natural subsoils present.

II. The Commissioner may determine that modifications to subitem I of this item are needed to facilitate treatment or the performance of the CAMU (e. g., to promote biodegradation).

(V) Post-closure requirements as necessary to protect human health and the environment, to include, for areas where wastes will remain in place, monitoring and maintenance activities, and the frequency with which such activities shall be performed to ensure the integrity of any cap, final cover, or other containment system.

6. CAMUs used for storage and/or treatment only are CAMUs in which wastes will not remain after closure. Such CAMUs must be designated in accordance with all of the requirements of this subparagraph, except as follows:

(i) CAMUs that are used for storage and/or treatment only and that operate in accordance with the time limits established in the staging pile regulations at item 4(i)(III), part 8, and part 9 of subparagraph (22)(e) of this rule are subject to the requirements for staging piles at items 4(i)(I) and (II), subpart 4(ii), part 5 and 6, and parts 10 and 11 of subparagraph (22)(e) of this rule in lieu of the performance standards and requirements for CAMUs in this subparagraph at part 3 and subparts 5(iii) through (vi).

(ii) CAMUs that are used for storage and/or treatment only and that do not operate in accordance with the time limits established in the staging pile regulations at item 4(i)(III), part 8, and part 9 of subparagraph (22)(e) of this rule:

(I) Must operate in accordance with a time limit, established by the Commissioner, that is no longer than necessary to achieve a timely remedy selected for the waste, and

(II) Are subject to the requirements for staging piles at items 4(i)(I) and (II), subpart 4(ii), part 5 and part 6, and part 10 and part 11 of subparagraph (22)(e) of this rule in lieu of the performance standards and requirements for CAMUs in this subparagraph at part 3 and subparts 5(iv) and 5(vi).

7. CAMUs into which wastes are placed where all wastes have constituent levels at or below remedial levels or goals applicable to the site do not have to comply with the requirements for liners at item (iii)(1) of part 5, caps at item (vi)(IV) of part 5, groundwater monitoring requirements at subpart (v) of part 5, or, for treatment and/or storage only CAMUs, the design standards at part 6 of this subparagraph.

8. The Commissioner shall provide public notice and a reasonable opportunity for public comment before designating a CAMU. Such notice shall include the rationale for any proposed adjustments under item 5(iv)(V) of this subparagraph to the treatment standards in item 5 (iv)(IV) of this subparagraph.

9. Notwithstanding any other provision of this subparagraph, the Commissioner may impose additional requirements as necessary to protect human health and the environment.

10. Incorporation of a CAMU into an existing permit must be approved by the Commissioner according to the procedures for Department initiated permit modifications under subparagraph (9)(c) of Rule 0400-12-01-.07, or according to the permit modification procedures of part (9)(c)5 of Rule 0400-12-01-.07.

11. The designation of a CAMU does not change the Department's existing authority to address clean-up levels, media-specific points of compliance to be applied to remediation at a facility, or other remedy selection decisions.

(d) Temporary Units (TU) [40 CFR 264.553]

1. For temporary tanks and container storage areas used to treat or store hazardous remediation wastes during remedial activities required under subparagraph (6)(I) of this rule, or at a permitted facility that is not subject to subparagraph (6)(I) of this rule, the Commissioner may designate a unit at the facility as a temporary unit. A temporary unit must be located within the contiguous property under the control of the owner/operator where the wastes to be managed in the temporary unit originated. For temporary units, the Commissioner may replace the design, operating, or closure standard applicable to these units under this rule or Rule 0400-12-01-.05 with alternative requirements which protect human health and the environment.

2. Any temporary unit to which alternative requirements are applied in accordance with part 1 of this subparagraph shall be:

(i) Located within the facility boundary; and

(ii) Used only for treatment or storage of remediation wastes.

3. In establishing standards to be applied to a temporary unit, the Commissioner shall consider the following factors:

(i) Length of time such unit will be in operation;

(ii) Type of unit;

(iii) Volumes of wastes to be managed;

(iv) Physical and chemical characteristics of the wastes to be managed in the unit;

(v) Potential for releases from the unit;

(vi) Hydrogeological and other relevant environmental conditions at the facility which may influence the migration of any potential releases; and

(vii) Potential for exposure of humans and environmental receptors if releases were to occur from the unit.

4. The Commissioner shall specify in the permit or order the length of time a temporary unit will be allowed to operate, to be no longer than a period of one year. The Commissioner shall also specify the design, operating, and closure requirements for the unit.

5. The Commissioner may extend the operational period of a temporary unit once for no longer than a period of one year beyond that originally specified in the permit or order, if the Commissioner determines that:

(i) Continued operation of the unit will not pose a threat to human health and the environment; and

(ii) Continued operation of the unit is necessary to ensure timely and efficient implementation of remedial actions at the facility.

6. Incorporation of a temporary unit or a time extension for a temporary unit into an existing permit shall be:

(i) Approved in accordance with the procedures for Agency-initiated permit modifications under Rule 0400-12-01-.07(9)(c)2; or

(ii) Requested by the owner/operator as a Class II modification according to the procedures under Rule 0400-12-01-.07(9)(c)5.

7. The Commissioner shall document the rationale for designating a temporary unit and for granting time extensions for temporary units and shall make such documentation available to the public.

(e) Staging Piles [40 CFR 264.554]

(Note: This subparagraph is written in a special format to make it easier to understand the regulatory requirements. Like other Department regulations, this establishes enforceable legal requirements. For this "I" and "you" refer to the owner/operator.)

1. What is a staging pile? A staging pile is an accumulation of solid, non-flowing remediation waste (as defined in Rule 0400-12-01-.01(2)(a)) that is not a containment building and is used only during remedial operations for temporary storage at a facility. A staging pile must be located within the contiguous property under the control of the owner/operator where the wastes to be managed in the staging pile originated. Staging piles must be designated by the Commissioner according to the requirements in this subparagraph.

(i) For the purposes of this subparagraph, storage includes mixing, sizing, blending, or other similar physical operations as long as they are intended to prepare the wastes for subsequent management or treatment.

(ii) [RESERVED]

2. When may I use a staging pile? You may use a staging pile to store hazardous remediation waste (or remediation waste otherwise subject to land disposal restrictions) only if you follow the standards and design criteria the Director has designated for that staging pile. The Commissioner must designate the staging pile in a permit or, at an interim status facility, in a closure plan or order (consistent with Rule 0400-12-01-

.07(3)(c)1(v) and 2(v)). The Commissioner must establish conditions in the permit, closure plan, or order that comply with parts 4 through 11 of this subparagraph.

3. What information must I provide to get a staging pile designated? When seeking a staging pile designation, you must provide:

   (i) Sufficient and accurate information to enable the Commissioner to impose standards and design criteria for your staging pile according to parts 4 through 11 of this subparagraph;

   (ii) Certification by a qualified Professional Engineer for technical data, such as design drawings and specifications, and engineering studies, unless the Commissioner determines, based on information that you provide, that this certification is not necessary to ensure that a staging pile will protect human health and the environment; and

   (iii) Any additional information the Commissioner determines is necessary to protect human health and the environment.

4. What performance criteria must a staging pile satisfy? The Commissioner must establish the standards and design criteria for the staging pile in the permit, closure plan, or order.

   (i) The standards and design criteria must comply with the following:

      (I) The staging pile must facilitate a reliable, effective and protective remedy;

      (II) The staging pile must be designed so as to prevent or minimize releases of hazardous wastes and hazardous constituents into the environment, and minimize or adequately control cross-media transfer, as necessary to protect human health and the environment (for example, through the use of liners, covers, run-off/run-on controls, as appropriate); and

      (III) The staging pile must not operate for more than two years, except when the Commissioner grants an operating term extension under part 9 of this subparagraph (entitled "May I receive an operating extension for a staging pile?"). You must measure the two-year limit, or other operating term specified by the Commissioner in the permit, closure plan, or order, from the first time you place remediation waste into a staging pile. You must maintain a record of the date when you first placed remediation waste into the staging pile for the life of the permit, closure plan, or order, or for three years, whichever is longer.

   (ii) In setting the standards and design criteria, the Commissioner must consider the following factors:

      (I) Length of time the pile will be in operation;

      (II) Volumes of wastes you intend to store in the pile;

      (III) Physical and chemical characteristics of the wastes to be stored in the unit;

      (IV) Potential for releases from the unit;

      (V) Hydrogeological and other relevant environmental conditions at the facility that may influence the migration of any potential releases; and

      (VI) Potential for human and environmental exposure to potential releases from the unit;

5. May a staging pile receive ignitable or reactive remediation waste? You must not place ignitable or reactive remediation waste in a staging pile unless:

   (i) You have treated, rendered or mixed the remediation waste before you placed it in the staging pile so that:

      (I) The remediation waste no longer meets the definition of ignitable or reactive under Rule 0400-12-01-.02(3)(b) or (d); and

      (II) You have complied with part (2)(h)2 of this rule; or

   (ii) You manage the remediation waste to protect it from exposure to any material or condition that may cause it to ignite or react.

6. How do I handle incompatible remediation wastes in a staging pile? The term "incompatible waste" is defined in Rule 0400-12-01-.01(2)(a). You must comply with the following requirements for incompatible wastes in staging piles:

   (i) You must not place incompatible remediation wastes in the same staging pile unless you have complied with part (2)(h)2 of this rule;

   (ii) If remediation waste in a staging pile is incompatible with any waste or material stored nearby in containers, other piles, open tanks or land disposal units (for example, surface impoundments), you must separate the incompatible materials, or protect them from one another by using a dike, berm, wall or other device; and

   (iii) You must not pile remediation waste on the same base where incompatible wastes or materials were previously piled, unless the base has been decontaminated sufficiently to comply with part (2)(h)2 of this rule.

7. Are staging piles subject to Land Disposal Restrictions (LDR) and Minimum Technological Requirements (MTR)? No. Placing hazardous remediation wastes into a staging pile does not constitute land disposal of hazardous wastes or create a unit that is subject to the minimum technological requirements of RCRA 3004(o).

8. How long may I operate a staging pile? The Commissioner may allow a staging pile to operate for up to two years after hazardous remediation waste is first placed into the pile. You must use a staging pile no longer than the length of time designated by the Commissioner in the permit, closure plan, or order (the "operating term"), except as provided in part 9 of this subparagraph.

9. May I receive an operating extension for a staging pile?

   (i) The Commissioner may grant one operating term extension of up to 180 days beyond the operating term limit contained in the permit, closure plan, or order (see part 12 of this subparagraph for modification procedures). To justify to the Commissioner the need for an extension, you must provide sufficient and accurate information to enable the Commissioner to determine that continued operation of the staging pile:

      (I) Will not pose a threat to human health and the environment; and

      (II) Is necessary to ensure timely and efficient implementation of remedial actions at the facility.

   (ii) The Commissioner may, as a condition of the extension, specify further standards and design criteria in the permit, closure plan, or order, as necessary, to ensure protection of human health and the environment.

10. What is the closure requirement for a staging pile located in a previously contaminated area?

(i) Within 180 days after the operating term of the staging pile expires, you must close a staging pile located in a previously contaminated area of the site by removing or decontaminating all:

(I) Remediation waste;

(II) Contaminated containment system components; and

(III) Structures and equipment contaminated with waste and leachate.

(ii) You must also decontaminate contaminated subsoils in a manner and according to a schedule that the Commissioner determines will protect human health and the environment.

(iii) The Commissioner must include the above requirements in the permit, closure plan, or order in which the staging pile is designated.

11. What is the closure requirement for a staging pile located in an uncontaminated area?

(i) Within 180 days after the operating term of the staging pile expires, you must close a staging pile located in an uncontaminated area of the site according to part (12)(i)1 and subparagraph (7)(b) of this rule or according to Rule 0400-12-01-.05(12)(i) and Rule 0400-12-01-.05(7)(b).

(ii) The Commissioner must include the above requirement in the permit, closure plan, or order in which the staging pile is designated.

12. How may my existing permit (for example, RAP), closure plan, or order be modified to allow me to use a staging pile?

(i) To modify a permit, other than a RAP, to incorporate a staging pile or staging pile operating term extension, either:

(I) The Commissioner must approve the modification under the procedures for Department-initiated permit modifications in Rule 0400-12-01-.07(9)(c); or

(II) You must request a Class 2 modification under Rule 0400-12-01-.07(9)(c)5.

(ii) To modify a RAP to incorporate a staging pile or staging pile operating term extension, you must comply with the RAP modification requirements under Rule 0400-12-01-.07(11)(d)1 and (d)5.

(iii) To modify a closure plan to incorporate a staging pile or staging pile operating term extension, you must follow the applicable requirements under part (7)(c)3 of this rule or Rule 0400-12-01-.05(7)(c)3.

(iv) To modify an order to incorporate a staging pile or staging pile operating term extension, you must follow the terms of the order and the applicable provisions of Rule 0400-12-01-.07(3)(c)1(v) or 2(v).

13. Is information about the staging pile available to the public? The Commissioner must document the rationale for designating a staging pile or staging pile operating term extension and make this documentation available to the public.

(f) Disposal of CAMU-eligible wastes in permitted hazardous waste landfills [40 CFR 264.555]

1. The Commissioner with regulatory oversight at the location where the cleanup is taking place may approve placement of CAMU-eligible wastes in hazardous waste landfills not

located at the site from which the waste originated, without the wastes meeting the requirements of Rule 0400-12-01-.10, if the conditions in subparts (i) through (iii) of this part are met.

(i) The waste meets the definition of CAMU-eligible waste in subparts 1(i) and (ii) of subparagraph (c) of this paragraph.

(ii) The Commissioner with regulatory oversight at the location where the cleanup is taking place identifies principal hazardous constituents in such waste, in accordance with item (c)5(iv)(I) and (II) of this paragraph, and requires that such principal hazardous constituents are treated to any of the following standards specified for CAMU-eligible wastes:

(I) The treatment standards under item (c)5(iv)(IV) of this paragraph; or

(II) Treatment standards adjusted in accordance with subitems 5(iv)(V)I, III, IV or section 5(iv)(V)VA of subparagraph (c) of this paragraph.

(III) Treatment standards adjusted in accordance with section 5(iv)(V)VB of subparagraph (c) of this paragraph, where treatment has been used and that treatment significantly reduces the toxicity or mobility of the principal hazardous constituents in the waste, minimizing the short-term and long-term threat posed by the waste, including the threat at the remediation site.

(iii) The landfill receiving the CAMU-eligible waste must have a RCRA hazardous waste permit, meet the requirements for new landfills in paragraph (14) of this rule, and be authorized to accept CAMU-eligible wastes; for the purposes of this requirement, "permit" does not include interim status.

2. The person seeking approval shall provide sufficient information to enable the Commissioner with regulatory oversight at the location where the cleanup is taking place to approve placement of CAMU-eligible waste in accordance with part 1 of this subparagraph. Information required by subparts (c)4(i) through (iii) of this paragraph for CAMU applications must be provided, unless not reasonably available.

3. The Commissioner with regulatory oversight at the location where the cleanup is taking place shall provide public notice and a reasonable opportunity for public comment before approving CAMU eligible waste for placement in an off-site permitted hazardous waste landfill, consistent with the requirements for CAMU approval at part (c)8 of this paragraph. The approval must be specific to a single remediation.

4. Applicable hazardous waste management requirements in this subparagraph, including recordkeeping requirements to demonstrate compliance with treatment standards approved under this subparagraph, for CAMU-eligible waste must be incorporated into the receiving facility permit through permit issuance or permit modification, providing notice and an opportunity for comment and a hearing. Notwithstanding subparagraph (8)(g) of Rule 0400-12-01-.07 a landfill may not receive hazardous CAMU-eligible waste under this subparagraph unless its permit specifically authorizes receipt of such waste.

5. For each remediation, CAMU-eligible waste may not be placed in an off-site landfill authorized to receive CAMU-eligible waste in accordance with part 4 of this subparagraph until the following additional conditions have been met:

(i) The landfill owner/operator notifies the Commissioner responsible for oversight of the landfill and persons on the facility mailing list, maintained in accordance with item (7)(e)3(i)(V) of Rule 0400-12-01-.07, of his or her intent to receive CAMU-eligible waste in accordance with this subparagraph; the notice must identify the source of the remediation waste, the principal hazardous constituents in the waste, and treatment requirements.

(ii) Persons on the facility mailing list may provide comments, including objections to the receipt of the CAMU-eligible waste, to the Commissioner within 15 days of the notification.

(iii) The Commissioner may object to the placement of the CAMU-eligible waste in the landfill within 30 days of notification; the Commissioner may extend the review period an additional 30 days because of public concerns or insufficient information.

(iv) CAMU-eligible wastes may not be placed in the landfill until the Commissioner has notified the facility owner/operator that he or she does not object to its placement.

(v) If the Commissioner objects to the placement or does not notify the facility owner/operator that he or she has chosen not to object, the facility may not receive the waste, notwithstanding subparagraph (8)(g) of Rule 0400-12-01-.07, until the objection has been resolved, or the owner/operator obtains a permit modification in accordance with the procedures of part (9)(c)5 of Rule 0400-12-01-.07 specifically authorizing receipt of the waste.

(vi) As part of the permit issuance or permit modification process of part 4 of this subparagraph, the Commissioner may modify, reduce, or eliminate the notification requirements of this subparagraph as they apply to specific categories of CAMU-eligible waste, based on minimal risk.

6. Generators of CAMU-eligible wastes sent off-site to a hazardous waste landfill under this subparagraph must comply with the requirements of subpart (1)(g)1(iv) of Rule 0400-12-01-10; off-site facilities treating CAMU-eligible wastes to comply with this subparagraph must comply with the requirements of subpart (1)(g)2(iv) of Rule 0400-12-01-.10, except that the certification must be with respect to the treatment requirements of subpart 1(ii) of this subparagraph.

7. For the purposes of this subparagraph only, the "design of the CAMU" in subitem (c)5(iv)(V)V of this rule means design of the permitted Subtitle C landfill.

(23) (RESERVED) [40 CFR 264 Subparts T]

(24) (RESERVED) [40 CFR 264 Subparts U]

(25) (RESERVED) [40 CFR 264 Subparts V]

(26) Drip Pads [40 CFR 264 Subpart W]

(a) Applicability [40 CFR 264.570]

1. The requirements of this paragraph apply to owners and operators of facilities that use new or existing drip pads to convey treated wood drippage, precipitation, and/or surface water run-off to an associated collection system. Existing drip pads are those constructed before December 6, 1990 and those for which the owner or operator has a design and has entered into binding financial or other agreements for construction prior to December 6, 1990. All other drip pads are new drip pads. The requirement at subpart (d)2(iii) of this paragraph to install a leak collection system applies only to those drip pads that are constructed after December 24, 1992 except for those constructed after December 24, 1992 for which the owner or operator has a design and has entered into binding financial or other agreements for construction prior to December 24, 1992.

2. The owner or operator of any drip pad that is inside or under a structure that provides protection from precipitation so that neither run-off nor run-on is generated is not subject to regulation under parts (d)5 or 6 of this paragraph, as appropriate.

3. The requirements of this subpart are not applicable to the management of infrequent and incidental drippage in storage yards provided that:

(i) The owner or operator maintains and complies with a written contingency plan that describes how the owner or operator will respond immediately to the discharge of such infrequent and incidental drippage. At a minimum, the contingency plan must describe how the owner or operator will do the following:

(I) Clean up the drippage;

(II) Document the cleanup of the drippage;

(III) Retain documents regarding cleanup for three years; and

(IV) Manage the contaminated media in a manner consistent with Federal regulations.

(b) Assessment of Existing Drip Pad Integrity [40 CFR 264.571]

1. For each existing drip pad as defined in subparagraph (a) of this paragraph, the owner or operator must evaluate the drip pad and determine whether it meets all of the requirements of this paragraph, except the requirements for liners and leak detection systems of part (d)2 of this paragraph. No later than the effective date of this rule, the owner or operator must obtain and keep on file at the facility a written assessment of the drip pad, reviewed and certified by a qualified Professional Engineer that attests to the results of the evaluation. The assessment must be reviewed, updated and re-certified annually until all upgrades, repairs, or modifications necessary to achieve compliance with all of the standards of subparagraph (d) of this paragraph are complete. The evaluation must document the extent to which the drip pad meets each of the design and operating standards of subparagraph (d) of this paragraph, except the standards for liners and leak detection systems, specified in part (d)2 of this paragraph.

2. The owner or operator must develop a written plan for upgrading, repairing, and modifying the drip pad to meet the requirements of part (d)2 of this paragraph, and submit the plan to the Commissioner no later than 2 years before the date that all repairs, upgrades, and modifications are complete. This written plan must describe all changes to be made to the drip pad in sufficient detail to document compliance with all the requirements of subparagraph (d) of this paragraph. The plan must be reviewed and certified by a qualified Professional Engineer.

3. Upon completion of all upgrades, repairs, and modifications, the owner or operator must submit to the Commissioner, the as-built drawings for the drip pad together with a certification by a qualified Professional Engineer attesting that the drip pad conforms to the drawings.

4. If the drip pad is found to be leaking or unfit for use, the owner or operator must comply with the provisions of part (d)13 of this paragraph or close the drip pad in accordance with subparagraph (f) of this paragraph.

(c) Design and Installation of New Drip Pads [40 CFR 264.572]

Owners and operators of new drip pads must ensure that the pads are designed, installed, and operated in accordance with one of the following:

1. all of the requirements of subparagraph (d) of this paragraph (except subpart (d)1(iv)) and subparagraphs (e) and (f) of this paragraph, or

2. all of the requirements of subparagraph (d) of this paragraph (except part (d)2), and subparagraphs (e) and (f) of this paragraph.

(d) Design and Operating Requirements [40 CFR 264.573]

1. Drip pads must:

(i) Be constructed of non-earthen materials, excluding wood and non-structurally supported asphalt;

(ii) Be sloped to free-drain treated wood drippage, rain and other waters, or solutions of drippage and water or other wastes to the associated collection system;

(iii) Have a curb or berm around the perimeter;

(iv) (I) Have a hydraulic conductivity of less than or equal to $1x10^{-7}$ centimeters per second, e.g., existing concrete drip pads must be sealed, coated, or covered with a surface material with a hydraulic conductivity of less than or equal to $1x10^{-7}$ centimeters per second such that the entire surface where drippage occurs or may run across is capable of containing such drippage and mixtures of drippage and precipitation, materials, or other wastes while being routed to an associated collection system. This surface material must be maintained free of cracks and gaps that could adversely affect its hydraulic conductivity, and the material must be chemically compatible with the preservatives that contact the drip pad. The requirements of this provision apply only to existing drip pads and those drip pads for which the owner or operator elects to comply with part (c)2 instead of part (c)1 of this paragraph.

(II) The owner or operator must obtain and keep on file at the facility a written assessment of the drip pad, reviewed and certified by a qualified Professional Engineer that attests to the results of the evaluation. The assessment must be reviewed, updated and recertified annually. The evaluation must document the extent to which the drip pad meets the design and operating standards of this subparagraph, except for part 2 of this subparagraph.

(v) Be of sufficient structural strength and thickness to prevent failure due to physical contact, climatic conditions, the stress of daily operations, e.g., variable and moving loads such as vehicle traffic, movement of wood, etc.

(Note: The Commissioner will generally consider applicable standards established by professional organizations generally recognized by the industry such as the American Concrete Institute (ACI) or the American Society of Testing and Materials (ASTM) in judging the structural integrity requirement of this subparagraph.)

2. If an owner/operator elects to comply with part (c)1 instead of part (c)2 of this paragraph, the drip pad must have:

(i) A synthetic liner installed below the drip pad that is designed, constructed, and installed to prevent leakage from the drip pad into the adjacent subsurface soil or groundwater or surface water at any time during the active life (including the closure period) of the drip pad. The liner must be constructed of materials that will prevent waste from being absorbed into the liner and to prevent releases into the adjacent subsurface soil or groundwater 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 drip pad leakage to which they are exposed, climatic conditions, the stress of installation, and the stress of daily operation (including stresses from vehicular traffic on the drip pad);

(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 that could come in contact with the waste or leakage; and

(ii) A leakage detection system immediately above the liner that is designed, constructed, maintained and operated to detect leakage from the drip pad. The leakage detection system must be:

(I) Constructed of materials that are:

I. Chemically resistant to the waste managed in the drip pad and the leakage that might be generated; and

II. Of sufficient strength and thickness to prevent collapse under the pressures exerted by overlaying materials and by any equipment used at the drip pad;

(II) Designed and operated to function without clogging through the scheduled closure of the drip pad; and

(III) Designed so that it will detect the failure of the drip pad or the presence of a release of hazardous waste or accumulated liquid at the earliest practicable time.

(iii) A leakage collection system immediately above the liner that is designed, constructed, maintained and operated to collect leakage from the drip pad such that it can be removed from below the drip pad. The date, time, and quantity of any leakage collected in this system and removed must be documented in the operating log.

3. Drip pads must be maintained such that they remain free of cracks, gaps, corrosion, or other deterioration that could cause hazardous waste to be released from the drip pad.

(Note: See part 13 of this subparagraph for remedial action required if deterioration or leakage is detected.)

4. The drip pad and associated collection system must be designed and operated to convey, drain, and collect liquid resulting from drippage or precipitation in order to prevent run-off.

5. Unless protected by a structure, as described in part (a)2 of this paragraph, the owner or operator must design, construct, operate and maintain a run-on control system capable of preventing flow onto the drip pad during peak discharge from at least a 24-hour, 25-year storm, unless the system has sufficient excess capacity to contain any run-off that might enter the system.

6. Unless protected by a structure or cover as described in part (a)2 of this paragraph, 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.

7. The drip pad must be evaluated to determine that it meets the requirements of parts 1 through 6 of this subparagraph and the owner or operator must obtain a statement from a qualified Professional Engineer certifying that the drip pad design meets the requirements of this subparagraph.

8. Drippage and accumulated precipitation must be removed from the associated collection system as necessary to prevent overflow onto the drip pad.

9. The drip pad surface must be cleaned thoroughly in a manner and frequency such that accumulated residues of hazardous waste or other materials are removed, with residues being properly managed as hazardous waste, so as to allow weekly inspections of the entire drip pad surface without interference or hindrance from accumulated residues of hazardous waste or other materials on the drip pad. The owner or operator must document the date and time of each cleaning and the cleaning procedure used in the facility's operating log. The owner/operator must determine if the residues are hazardous as per Rule 0400-12-01-.03(1)(b) and, if so, must manage them under Rules 0400-12-01-.02 through .07, .09 and .10.

10. Drip pads must be operated and maintained in a manner to minimize tracking of hazardous waste or hazardous waste constituents off the drip pad as a result of activities by personnel or equipment.

11. After being removed from the treatment vessel, treated wood from pressure and non-pressure processes must be held on the drip pad until drippage has ceased. The owner or operator must maintain records sufficient to document that all treated wood is held on the pad following treatment in accordance with this requirement.

12. Collection and holding units associated with run-on and run-off control systems must be emptied or otherwise managed as soon as possible after storms to maintain design capacity of the system.

13. Throughout the active life of the drip pad and as specified in the permit, if the owner or operator detects a condition that may have caused or has caused a release of hazardous waste, the condition must be repaired within a reasonably prompt period of time following discovery, in accordance with the following procedures:

    (i) Upon detection of a condition that may have caused or has caused a release of hazardous waste (e.g., upon detection of leakage in the leak detection system), the owner or operator must:

        (I) Enter a record of the discovery in the facility operating log;

        (II) Immediately remove the portion of the drip pad affected by the condition from service;

        (III) Determine what steps must be taken to repair the drip pad and clean up any leakage from below the drip pad, and establish a schedule for accomplishing the repairs;

        (IV) Within 24 hours after discovery of the condition, notify the Commissioner of the condition and, within 10 working days, provide written notice to the Commissioner with a description of the steps that will be taken to repair the drip pad and clean up any leakage, and the schedule for accomplishing this work.

    (ii) The Commissioner will review the information submitted, make a determination regarding whether the pad must be removed from service completely or partially until repairs and cleanup are complete and notify the owner or operator of the determination and the underlying rationale in writing.

    (iii) Upon completing all repairs and cleanup, the owner or operator must notify the Commissioner in writing and provide a certification signed by an independent, qualified registered professional engineer, that the repairs and cleanup have been completed according to the written plan submitted in accordance with item (i)(IV) of this part.

14. Should a permit be necessary, 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.

15. The owner or operator must maintain, as part of the facility operating log, documentation of past operating and waste handling practices. This must include identification of preservative formulations used in the past, a description of drippage management practices, and a description of treated wood storage and handling practices.

(e) Inspections [40 CFR 264.574]

1. During construction or installation, liners 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, liners must be inspected and certified as meeting the requirements of subparagraph (d) of this paragraph by a qualified Professional Engineer. This certification must be maintained at the facility as part of the facility operating record. After installation, liners and covers must be inspected to ensure tight seams and joints and the absence of tears, punctures, or blisters.

2. While a drip pad 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) The presence of leakage in and proper functioning of leak detection system.

   (iii) Deterioration or cracking of the drip pad surface.

   (Note: See part (d)13 of this paragraph for remedial action required if deterioration or leakage is detected.)

(f) Closure [40 CFR 264.575]

1. At closure, the owner or operator must remove or decontaminate all waste residues, contaminated containment system components (pad, liners, etc.), contaminated subsoils, and structures and equipment contaminated with waste and leakage, and manage them as hazardous waste.

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 closure and post-closure care requirements that apply to landfills (subparagraph (14)(k) of this rule). For permitted units, the requirement to have a permit continues throughout the post-closure period. In addition, for the purpose of closure, post-closure, and financial responsibility, such a drip pad is then considered to be landfill, and the owner or operator must meet all of the requirements for landfills specified in paragraphs (7) and (8) of this rule.

3. (i) The owner or operator of an existing drip pad, as defined in subparagraph (a) of this paragraph, that does not comply with the liner requirements of subpart (d)2(i) of this paragraph must:

   (I) Include in the closure plan for the drip pad 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(i) 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 (7)(c) and (8)(e) of this rule for closure and post-closure care of a drip pad 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 part 1 of this subparagraph.

(27) Miscellaneous Units [40 CFR 264 Subpart X]

(a) Applicability [40 CFR 264.600]

The requirements in this subpart apply to owners and operators of facilities that treat, store, or dispose of hazardous waste in miscellaneous units, except as paragraph (1) of this rule provides otherwise.

(b) Environmental Performance Standards [40 CFR 264.601]

A miscellaneous unit must be located, designed, constructed, operated, maintained, and closed in a manner that will ensure protection of human health and the environment. Permits for miscellaneous units are to contain such terms and provisions as necessary to protect human health and the environment, including, but not limited to, as appropriate, design and operating requirements, detection and monitoring requirements, and requirements for responses to releases of hazardous waste or hazardous constituents from the unit. Permit terms and provisions must include those requirements of paragraphs (9) through (15), (30), (31), and (32) of this rule, Rule 0400-12-01-.07, 40 CFR 63 Subpart EEE, and 40 CFR 146 that are appropriate for the miscellaneous unit being permitted. Protection of human health and the environment includes, but is not limited to:

1. Prevention of any releases that may have adverse effects on human health or the environment due to migration of waste constituents in the ground water or subsurface environment, considering:

(i) The volume and physical and chemical characteristics of the waste in the unit, including its potential for migration through soil, liners, or other containing structures;

(ii) The hydrologic and geologic characteristics of the unit and the surrounding area;

(iii) The existing quality of ground water, including other sources of contamination and their cumulative impact on the ground water;

(iv) The quantity and direction of ground-water flow;

(v) The proximity to and withdrawal rates of current and potential ground-water users;

(vi) The patterns of land use in the region;

(vii) The potential for deposition or migration of waste constituents into subsurface physical structures, and into the root zone of food-chain crops and other vegetation;

(viii) The potential for health risks caused by human exposure to waste constituents; and

(ix) The potential for damage to domestic animals, wildlife, crops, vegetation, and physical structures caused by exposure to waste constituents;

2. Prevention of any releases that may have adverse effects on human health or the environment due to migration of waste constituents in surface water, or wetlands or on the soil surface considering:

(i) The volume and physical and chemical characteristics of the waste in the unit;

(ii) The effectiveness and reliability of containing, confining, and collecting systems and structures in preventing migration;

(iii) The hydrologic characteristics of the unit and the surrounding area, including the topography of the land around the unit;

(iv) The patterns of precipitation in the region;

(v) The quantity, quality, and direction of ground-water flow;

(vi) The proximity of the unit to surface waters;

(vii) The current and potential uses of nearby surface waters and any water quality standards established for those surface waters;

(viii) The existing quality of surface waters and surface soils, including other sources of contamination and their cumulative impact on surface waters and surface soils;

(ix) The patterns of land use in the region;

(x) The potential for health risks caused by human exposure to waste constituents; and

(xi) The potential for damage to domestic animals, wildlife, crops, vegetation, and physical structures caused by exposure to waste constituents.

3. Prevention of any release that may have adverse effects on human health or the environment due to migration of waste constituents in the air, considering:

(i) The volume and physical and chemical characteristics of the waste in the unit, including its potential for the emission and dispersal of gases, aerosols and particulates;

(ii) The effectiveness and reliability of systems and structures to reduce or prevent emissions of hazardous constituents to the air;

(iii) The operating characteristics of the unit;

(iv) The atmospheric, meteorologic, and topographic characteristics of the unit and the surrounding area;

(v) The existing quality of the air, including other sources of contamination and their cumulative impact on the air;

(vi) The potential for health risks caused by human exposure to waste constituents; and

(vii) The potential for damage to domestic animals, wildlife, crops, vegetation, and physical structures caused by exposure to waste constituents.

(c) Monitoring, Analysis, Inspection, Response, Reporting, and Corrective Action [40 CFR 264.602]

Monitoring, testing, analytical data, inspections, response, and reporting procedures and frequencies must ensure compliance with subparagraph (b) of this paragraph, and

subparagraphs (2)(f), (3)(d), (5)(f) and (g) and (h), and (6)(l) of this rule as well as meet any additional requirements needed to protect human health and the environment as specified in the permit.

(d) Post-closure Care [40 CFR 264.603]

A miscellaneous unit that is a disposal unit must be maintained in a manner that complies with subparagraph (b) of this paragraph during the post-closure care period. In addition, if a treatment or storage unit has contaminated soils or ground water that cannot be completely removed or decontaminated during closure, then that unit must also meet the requirements of subparagraph (b) of this paragraph during post-closure care. The post-closure plan under subparagraph (7)(i) of this rule must specify the procedures that will be used to satisfy this requirement.

(28) (RESERVED) [40 CFR 264 Subpart Y]

(29) (RESERVED) [40 CFR 264 Subpart Z]

(30) Air Emission Standards for Process Vents [40 CFR 264 Subpart AA]

(a) Applicability [40 CFR 264.1030]

1. The regulations in this subparagraph apply to owners and operators of facilities that treat, store, or dispose of hazardous wastes except as provided in subparagraph (1)(b) of this rule.

2. Except for parts (e)4 and (e)5 of this paragraph, this paragraph applies to process vents associated with distillation, fractionation, thin-film evaporation, solvent extraction, or air or steam stripping operations that manage hazardous wastes with organic concentrations of at least 10 ppmw, if these operations are conducted in one of the following:

(i) A unit that is subject to the permitting requirements of Rule 0400-12-01-.07, or

(ii) A unit (including a hazardous waste recycling unit) that is not exempt from permitting under the provisions of Rule 0400-12-01-.03(4)(e)2 (i.e., a hazardous waste recycling unit that is not a 90-day tank or container) and that is located at a hazardous waste management facility otherwise subject to the permitting requirements of Rule 0400-12-01-.07, or

(iii) A unit that is exempt from permitting under the provisions of Rule 0400-12-01-.03(4)(e)2 (i.e., a "90-day" tank or container) and is not a recycling unit under the provisions of Rule 0400-12-01-.02(1)(f).

3. For the owner or operator of a facility subject to this paragraph and who received a final permit under RCRA section 3005 and/or T.C.A. §68-212-108 prior to December 6, 1996, the requirements of this paragraph shall be incorporated into the permit when the permit is reissued in accordance the requirements of Rule 0400-12-01-.07(7)(i) or reviewed in accordance with the requirements of Rule 0400-12-01-.07(8)(c)4. Until such date when the owner and operator receive a final permit incorporating the requirements of this paragraph, the owner and operator are subject to the requirements of Rule 0400-12-01-.05(27).

4. (Reserved) [40 CFR 264.1030(d)]

5. The requirements of this paragraph do not apply to the process vents at a facility where the facility owner or operator certifies that all of the process vents that would otherwise be subject to this paragraph are equipped with and operating air emission controls in accordance with the process vent requirements of an applicable Clean Air Act regulation codified under 40 CFR part 60, part 61, or part 63. The documentation of compliance under regulations at 40 CFR part 60, part 61, or part 63 shall be kept with, or made readily available with, the facility operating record.

(Note: The requirements of subparagraphs (c) through (g) of this paragraph apply to process vents on hazardous waste recycling units previously exempt under Rule 0400-12-01-.02(1)(f)3(i). Other exemptions under Rules 0400-12-01-.02(1)(d), .03(4)(e), and .06(1)(b)7 are not affected by these requirements.)

(b) Definitions [40 CFR 264.1031]

As used in this paragraph, all terms not defined herein shall have the meaning given them in Tennessee Code Annotated §§68-212-101 et seq. and Rules 0400-12-01-.01 through .06 and .09.

"Air stripping operation" is a desorption operation employed to transfer one or more volatile components from a liquid mixture into a gas (air) either with or without the application of heat to the liquid. Packed towers, spray towers, and bubble-cap, sieve, or valve-type plate towers are among the process configurations used for contacting the air and a liquid.

"Bottoms receiver" means a container or tank used to receive and collect the heavier bottoms fractions of the distillation feed stream that remain in the liquid phase.

"Closed-vent system" means a system that is not open to the atmosphere and that is composed of piping, connections, and, if necessary, flow-inducing devices that transport gas or vapor from a piece or pieces of equipment to a control device.

"Condenser" means a heat-transfer device that reduces a thermodynamic fluid from its vapor phase to its liquid phase.

"Connector" means flanged, screwed, welded, or other joined fittings used to connect two pipelines or a pipeline and a piece of equipment. For the purposes of reporting and recordkeeping, connector means flanged fittings that are not covered by insulation or other materials that prevent location of the fittings.

"Continuous recorder" means a data-recording device recording an instantaneous data value at least once every 15 minutes.

"Control device" means an enclosed combustion device, vapor recovery system, or flare. Any device the primary function of which is the recovery or capture of solvents or other organics for use, reuse, or sale (e.g., a primary condenser on a solvent recovery unit) is not a control device.

"Control device shutdown" means the cessation of operation of a control device for any purpose.

"Distillate receiver" means a container or tank used to receive and collect liquid material (condensed) from the overhead condenser of a distillation unit and from which the condensed liquid is pumped to larger storage tanks or other process units.

"Distillation operation" means an operation, either batch or continuous, separating one or more feed stream(s) into two or more exit streams, each exit stream having component concentrations different from those in the feed stream(s). The separation is achieved by the redistribution of the components between the liquid and vapor phase as they approach equilibrium within the distillation unit.

"Double block and bleed system" means two block valves connected in series with a bleed valve or line that can vent the line between the two block valves.

"Equipment" means each valve, pump, compressor, pressure relief device, sampling connection system, open-ended valve or line, or flange or other connector, and any control devices or systems required by this subpart.

"Flame zone" means the portion of the combustion chamber in a boiler occupied by the flame envelope.

"Flow indicator" means a device that indicates whether gas flow is present in a vent stream.

"First attempt at repair" means to take rapid action for the purpose of stopping or reducing leakage of organic material to the atmosphere using best practices.

"Fractionation operation" means a distillation operation or method used to separate a mixture of several volatile components of different boiling points in successive stages, each stage removing from the mixture some proportion of one of the components.

"Hazardous waste management unit shutdown" means a work practice or operational procedure that stops operation of a hazardous waste management unit or part of a hazardous waste management unit. An unscheduled work practice or operational procedure that stops operation of a hazardous waste management unit or part of a hazardous waste management unit for less than 24 hours is not a hazardous waste management unit shutdown. The use of spare equipment and technically feasible bypassing of equipment without stopping operation are not hazardous waste management unit shutdowns.

"Hot well" means a container for collecting condensate as in a steam condenser serving a vacuum-jet or steam-jet ejector.

"In gas/vapor service" means that the piece of equipment contains or contacts a hazardous waste stream that is in the gaseous state at operating conditions.

"In heavy liquid service" means that the piece of equipment is not in gas/vapor service or in light liquid service.

"In light liquid service" means that the piece of equipment contains or contacts a waste stream where the vapor pressure of one or more of the organic components in the stream is greater than 0.3 kilopascals (kPa) at 20 °C, the total concentration of the pure organic components having a vapor pressure greater than 0.3 kPa at 20 °C is equal to or greater than 20 percent by weight, and the fluid is a liquid at operating conditions.

"In situ sampling systems" means nonextractive samplers or in-line samplers.

"In vacuum service" means that equipment is operating at an internal pressure that is at least 5 kPa below ambient pressure.

"Malfunction" means any sudden failure of a control device or a hazardous waste management unit or failure of a hazardous waste management unit to operate in a normal or usual manner, so that organic emissions are increased.

"Open-ended valve or line" means any valve, except pressure relief valves, having one side of the valve seat in contact with hazardous waste and one side open to the atmosphere, either directly or through open piping.

"Pressure release" means the emission of materials resulting from the system pressure being greater than the set pressure of the pressure relief device.

"Process heater" means a device that transfers heat liberated by burning fuel to fluids contained in tubes, including all fluids except water that are heated to produce steam.

"Process vent" means any open-ended pipe or stack that is vented to the atmosphere either directly, through a vacuum-producing system, or through a tank (e.g., distillate receiver, condenser, bottoms receiver, surge control tank, separator tank, or hot well) associated with hazardous waste distillation, fractionation, thin-film evaporation, solvent extraction, or air or steam stripping operations.

"Repaired" means that equipment is adjusted, or otherwise altered, to eliminate a leak.

"Sampling connection system" means an assembly of equipment within a process or waste management unit used during periods of representative operation to take samples of the process

or waste fluid. Equipment used to take non-routine grab samples is not considered a sampling connection system.

"Sensor" means a device that measures a physical quantity or the change in a physical quantity, such as temperature, pressure, flow rate, pH, or liquid level.

"Separator tank" means a device used for separation of two immiscible liquids.

"Solvent extraction operation" means an operation or method of separation in which a solid or solution is contacted with a liquid solvent (the two being mutually insoluble) to preferentially dissolve and transfer one or more components into the solvent.

"Startup" means the setting in operation of a hazardous waste management unit or control device for any purpose.

"Steam stripping operation" means a distillation operation in which vaporization of the volatile constituents of a liquid mixture takes place by the introduction of steam directly into the charge.

"Surge control tank" means a large-sized pipe or storage reservoir sufficient to contain the surging liquid discharge of the process tank to which it is connected.

"Thin-film evaporation operation" means a distillation operation that employs a heating surface consisting of a large diameter tube that may be either straight or tapered, horizontal or vertical. Liquid is spread on the tube wall by a rotating assembly of blades that maintain a close clearance from the wall or actually ride on the film of liquid on the wall.

"Vapor incinerator" means any enclosed combustion device that is used for destroying organic compounds and does not extract energy in the form of steam or process heat.

"Vented" means discharged through an opening, typically an open-ended pipe or stack, allowing the passage of a stream of liquids, gases, or fumes into the atmosphere. The passage of liquids, gases, or fumes is caused by mechanical means such as compressors or vacuum-producing systems or by process-related means such as evaporation produced by heating and not caused by tank loading and unloading (working losses) or by natural means such as diurnal temperature changes.

(c) Standards: Process Vents [40 CFR 264.1032]

1. The owner or operator of a facility with process vents associated with distillation, fractionation, thin-film evaporation, solvent extraction, or air or steam stripping operations managing hazardous wastes with organic concentrations of at least 10 ppmw shall either:

   (i) Reduce total organic emissions from all affected process vents at the facility below 1.4 kg/h (3 lb/h) and 2.8 Mg/yr (3.1 tons/yr), or

   (ii) Reduce, by use of a control device, total organic emissions from all affected process vents at the facility by 95 weight percent.

2. If the owner or operator installs a closed-vent system and control device to comply with the provisions of part 1 of this subparagraph the closed-vent system and control device must meet the requirements of subparagraph (d) of this paragraph.

3. Determinations of vent emissions and emission reductions or total organic compound concentrations achieved by add-on control devices may be based on engineering calculations or performance tests. If performance tests are used to determine vent emissions, emission reductions, or total organic compound concentrations achieved by add-on control devices, the performance tests must conform with the requirements of part (e)3 of this paragraph.

4. When an owner or operator and the Commissioner do not agree on determinations of vent emissions and/or emission reductions or total organic compound concentrations

achieved by add-on control devices based on engineering calculations, the procedures in part (e)3 of this paragraph shall be used to resolve the disagreement.

(d) Standards: Closed-vent Systems and Control Devices [40 CFR 264.1033]

1. (i) Owners or operators of closed-vent systems and control devices used to comply with provisions of this part shall comply with the provisions of this subparagraph.

(ii) (I) The owner or operator of an existing facility who cannot install a closed-vent system and control device to comply with the provisions of this paragraph on the effective date that the facility becomes subject to the provisions of this paragraph must prepare an implementation schedule that includes dates by which the closed-vent system and control device will be installed and in operation. The controls must be installed as soon as possible, but the implementation schedule may allow up to 30 months after the effective date that the facility becomes subject to this paragraph for installation and startup.

(II) Any unit that begins operation after December 21, 1990, and is subject to the provisions of this paragraph when operation begins, must comply with the rules immediately (i.e., must have control devices installed and operating on startup of the affected unit); the 30-month implementation schedule does not apply.

(III) The owner or operator of any facility in existence on the effective date of a statutory or regulatory amendment that renders the facility subject to this paragraph shall comply with all requirements of this paragraph as soon as practicable but no later than 30 months after the amendment's effective date. When control equipment required by this paragraph can not be installed and begin operation by the effective date of the amendment, the facility owner or operator shall prepare an implementation schedule that includes the following information: Specific calendar dates for award of contracts or issuance of purchase orders for the control equipment, initiation of on-site installation of the control equipment, completion of the control equipment installation, and performance of any testing to demonstrate that the installed equipment meets the applicable standards of this paragraph. The owner or operator shall enter the implementation schedule in the operating record or in a permanent, readily available file located at the facility.

(IV) Owners and operators of facilities and units that become newly subject to the requirements of this paragraph after December 8, 1997, due to an action other than those described in item 1(ii)(III) of this subparagraph must comply with all applicable requirements immediately (i.e., must have control devices installed and operating on the date the facility or unit becomes subject to this paragraph; the 30-month implementation schedule does not apply).

2. A control device involving vapor recovery (e.g., a condenser or adsorber) shall be designed and operated to recover the organic vapors vented to it with an efficiency of 95 weight percent or greater unless the total organic emission limits of subpart (c)1(i) of this paragraph for all affected process vents can be attained at an efficiency less than 95 weight percent.

3. An enclosed combustion device (e.g., a vapor incinerator, boiler, or process heater) shall be designed and operated to reduce the organic emissions vented to it by 95 weight percent or greater; to achieve a total organic compound concentration of 20 ppmv, expressed as the sum of the actual compounds, not carbon equivalents, on a dry basis corrected to 3 percent oxygen; or to provide a minimum residence time of 0.50 seconds at a minimum temperature of 760 °C. If a boiler or process heater is used as the control

device, then the vent stream shall be introduced into the flame zone of the boiler or process heater.

4. (i) A flare shall be designed for and operated with no visible emissions as determined by the methods specified in subpart 5(i) of this subparagraph, except for periods not to exceed a total of 5 minutes during any 2 consecutive hours.

(ii) A flare shall be operated with a flame present at all times, as determined by the methods specified in item 6(ii)(III) of this subparagraph.

(iii) A flare shall be used only if the net heating value of the gas being combusted is 11.2 MJ/scm (300 Btu/scf) or greater if the flare is steam-assisted or air-assisted; or if the net heating value of the gas being combusted is 7.45 MJ/scm (200 Btu/scf) or greater if the flare is nonassisted. The net heating value of the gas being combusted shall be determined by the methods specified in subpart 5(ii) of this subparagraph.

(iv) (I) A steam-assisted or nonassisted flare shall be designed for and operated with an exit velocity, as determined by the methods specified in subpart 5(iii) of this subparagraph, less than 18.3 m/s (60 ft/s), except as provided in items (iv)(II) and (III) of this part.

(II) A steam-assisted or nonassisted flare designed for and operated with an exit velocity, as determined by the methods specified in subpart 5(iii) of this subparagraph, equal to or greater than 18.3 m/s (60 ft/s) but less than 122 m/s (400 ft/s) is allowed if the net heating value of the gas being combusted is greater than 37.3 MJ/scm (1,000 Btu/scf).

(III) A steam-assisted or nonassisted flare designed for and operated with an exit velocity, as determined by the methods specified in subpart 5(iii) of this subparagraph, less than the velocity, V_{max}, as determined by the method specified in subpart 5(iv) of this subparagraph and less than 122 m/s (400 ft/s) is allowed.

(v) An air-assisted flare shall be designed and operated with an exit velocity less than the velocity, V_{max}, as determined by the method specified in subpart 5(v) of this subparagraph.

(vi) A flare used to comply with this subparagraph shall be steam-assisted, air-assisted, or nonassisted.

5. (i) Reference Method 22 in 40 CFR part 60 shall be used to determine the compliance of a flare with the visible emission provisions of this paragraph. The observation period is 2 hours and shall be used according to Method 22.

(ii) The net heating value of the gas being combusted in a flare shall be calculated using the following equation:

$$H_T = K \left[\sum_{i=1}^{n} C_i H_i \right]$$

where:

H_T = Net heating value of the sample, MJ/scm; where the net enthalpy per mole of offgas is based on combustion at 25 °C and 760 mm Hg, but the standard temperature for determining the volume corresponding to 1 mol is 20 °C;

K = Constant, 1.74 x 10^{-7} (1/ppm) (g mol/scm) (MJ/kcal) where standard temperature for (g mol/scm) is 20 °C;

C_i = Concentration of sample component i in ppm on a wet basis, as measured for organics by Reference Method 18 in 40 CFR part 60 and measured for hydrogen and carbon monoxide by ASTM D 1946-82 (See Rule 0400-12-01-.01(2)(b)); and

H_i = Net heat of combustion of sample component i, kcal/9 mol at 25 °C and 760 mm Hg. The heats of combustion may be determined using ASTM D 2382-83 (See Rule 0400-12-01-.01(2)(b)) if published values are not available or cannot be calculated.

(iii) The actual exit velocity of a flare shall be determined by dividing the volumetric flow rate (in units of standard temperature and pressure), as determined by Reference Methods 2, 2A, 2C, or 2D in 40 CFR part 60 as appropriate, by the unobstructed (free) cross-sectional area of the flare tip.

(iv) The maximum allowed velocity in m/s, V_{max}, for a flare complying with item 4(iv)(III) of this subparagraph shall be determined by the following equation:

$$\mathrm{Log}_{10}(V_{max}) = (H_T + 28.8)/31.7$$

where:

28.8 = Constant,

31.7 = Constant,

H_T = The net heating value as determined in subpart (ii) of this part.

(v) The maximum allowed velocity in m/s, V_{max}, for an air-assisted flare shall be determined by the following equation:

V_{max} = 8.706+0.7084 (H_T)

where:

8.706 = Constant,

0.7084 = Constant,

H_T = The net heating value as determined in subpart 5(ii) of this subparagraph.

6. The owner or operator shall monitor and inspect each control device required to comply with this paragraph to ensure proper operation and maintenance of the control device by implementing the following requirements:

(i) Install, calibrate, maintain, and operate according to the manufacturer's specifications a flow indicator that provides a record of vent stream flow from each affected process vent to the control device at least once every hour. The flow indicator sensor shall be installed in the vent stream at the nearest feasible point to the control device inlet but before the point at which the vent streams are combined.

(ii) Install, calibrate, maintain, and operate according to the manufacturer's specifications a device to continuously monitor control device operation as specified below:

(I) For a thermal vapor incinerator, a temperature monitoring device equipped with a continuous recorder. The device shall have an accuracy of ±1 percent of the temperature being monitored in °C or ±0.5 °C, whichever is greater. The temperature sensor shall be installed at a location in the combustion chamber downstream of the combustion zone.

(II) For a catalytic vapor incinerator, a temperature monitoring device equipped with a continuous recorder. The device shall be capable of monitoring temperature at two locations and have an accuracy of ±1 percent of the temperature being monitored in °C or ±0.5 °C, whichever is greater. One temperature sensor shall be installed in the vent stream at the nearest feasible point to the catalyst bed inlet and a second temperature sensor shall be installed in the vent stream at the nearest feasible point to the catalyst bed outlet.

(III) For a flare, a heat sensing monitoring device equipped with a continuous recorder that indicates the continuous ignition of the pilot flame.

(IV) For a boiler or process heater having a design heat input capacity less than 44 MW, a temperature monitoring device equipped with a continuous recorder. The device shall have an accuracy of ±1 percent of the temperature being monitored in °C or ±0.5 °C, whichever is greater. The temperature sensor shall be installed at a location in the furnace downstream of the combustion zone.

(V) For a boiler or process heater having a design heat input capacity greater than or equal to 44 MW, a monitoring device equipped with a continuous recorder to measure a parameter(s) that indicates good combustion operating practices are being used.

(VI) For a condenser, either:

I. A monitoring device equipped with a continuous recorder to measure the concentration level of the organic compounds in the exhaust vent stream from the condenser, or

II. A temperature monitoring device equipped with a continuous recorder. The device shall be capable of monitoring temperature with an accuracy of ±1 percent of the temperature being monitored in degrees Celsius (°C) or ±0.5 °C, whichever is greater. The temperature sensor shall be installed at a location in the exhaust vent stream from the condenser exit (i.e., product side).

(VII) For a carbon adsorption system that regenerates the carbon bed directly in the control device such as a fixed-bed carbon adsorber, either:

I. A monitoring device equipped with a continuous recorder to measure the concentration level of the organic compounds in the exhaust vent stream from the carbon bed, or

II. A monitoring device equipped with a continuous recorder to measure a parameter that indicates the carbon bed is regenerated on a regular, predetermined time cycle.

(iii) Inspect the readings from each monitoring device required by subparts (i) and (ii) of this part at least once each operating day to check control device operation and, if necessary, immediately implement the corrective measures necessary to ensure the control device operates in compliance with the requirements of this subparagraph.

7. An owner or operator using a carbon adsorption system such as a fixed-bed carbon adsorber that regenerates the carbon bed directly onsite in the control device shall replace the existing carbon in the control device with fresh carbon at a regular, predetermined time interval that is no longer than the carbon service life established as a requirement of subitem (f)2(iv)(III)VI.

8. An owner or operator using a carbon adsorption system such as a carbon canister that does not regenerate the carbon bed directly onsite in the control device shall replace the existing carbon in the control device with fresh carbon on a regular basis by using one of the following procedures:

(i) Monitor the concentration level of the organic compounds in the exhaust vent stream from the carbon adsorption system on a regular schedule, and replace the existing carbon with fresh carbon immediately when carbon breakthrough is indicated. The monitoring frequency shall be daily or at an interval no greater than 20 percent of the time required to consume the total carbon working capacity established as a requirement of subitem (f)2(iv)(III)VII, whichever is longer.

(ii) Replace the existing carbon with fresh carbon at a regular, predetermined time interval that is less than the design carbon replacement interval established as a requirement of subitem (f)2(iv)(III)VII.

9. An alternative operational or process parameter may be monitored if it can be demonstrated that another parameter will ensure that the control device is operated in conformance with these standards and the control device's design specifications.

10. An owner or operator of an affected facility seeking to comply with the provisions of this rule by using a control device other than a thermal vapor incinerator, catalytic vapor incinerator, flare, boiler, process heater, condenser, or carbon adsorption system is required to develop documentation including sufficient information to describe the control device operation and identify the process parameter or parameters that indicate proper operation and maintenance of the control device.

11. A closed-vent system shall meet either of the following design requirements:

(i) Closed-vent systems shall be designed to operate with no detectable emissions, as indicated by an instrument reading of less than 500 ppm above background as determined by the procedure in part (e)2 of this paragraph, and by visual inspections; or

(ii) A closed-vent system shall be designed to operate at a pressure below atmospheric pressure. The system shall be equipped with at least one pressure gauge or other pressure measurement device that can be read from a readily accessible location to verify that negative pressure is being maintained in the closed-vent system when the control device is operating.

12. The owner or operator shall monitor and inspect each closed-vent system required to comply with this subparagraph to ensure proper operation and maintenance of the closed-vent system by implementing the following requirements:

(i) Each closed-vent system that is used to comply with subpart 11(i) of this subparagraph shall be inspected and monitored in accordance with the following requirements:

(I) An initial leak detection monitoring of the closed-vent system shall be conducted by the owner or operator on or before the date that the system becomes subject to this subparagraph. The owner or operator shall monitor the closed-vent system components and connections using the procedures specified in part (e)2 of this paragraph to demonstrate that the closed-vent system operates with no detectable emissions, as indicated by an instrument reading of less than 500 ppmv above background.

(II) After initial leak detection monitoring required in item (i)(I) of this part, the owner or operator shall inspect and monitor the closed-vent system as follows:

I. Closed-vent system joints, seams, or other connections that are permanently or semi-permanently sealed (e.g., a welded joint between two sections of hard piping or a bolted and gasketed ducting flange) shall be visually inspected at least once per year to check for defects that could result in air pollutant emissions. The owner or operator shall monitor a component or connection using the procedures specified in part (e)2 of this paragraph to demonstrate that it operates with no detectable emissions following any time the component is repaired or replaced (e.g., a section of damaged hard piping is replaced with new hard piping) or the connection is unsealed (e.g., a flange is unbolted).

II. Closed-vent system components or connections other than those specified in subitem (i)(II)I of this part shall be monitored annually and at other times as requested by the Commissioner, except as provided for in part 15 of this subparagraph, using the procedures specified in part (e)2 of this paragraph to demonstrate that the components or connections operate with no detectable emissions.

(III) In the event that a defect or leak is detected, the owner or operator shall repair the defect or leak in accordance with the requirements of subpart (iii) of this part.

(IV) The owner or operator shall maintain a record of the inspection and monitoring in accordance with the requirements specified in subparagraph (f) of this paragraph.

(ii) Each closed-vent system that is used to comply with subpart 11(ii) of this subparagraph shall be inspected and monitored in accordance with the following requirements:

(I) The closed-vent system shall be visually inspected by the owner or operator to check for defects that could result in air pollutant emissions. Defects include, but are not limited to, visible cracks, holes, or gaps in ductwork or piping or loose connections.

(II) The owner or operator shall perform an initial inspection of the closed-vent system on or before the date that the system becomes subject to this subparagraph. Thereafter, the owner or operator shall perform the inspections at least once every year.

(III) In the event that a defect or leak is detected, the owner or operator shall repair the defect in accordance with the requirements of subpart (iii) of this part.

(IV) The owner or operator shall maintain a record of the inspection and monitoring in accordance with the requirements specified in subparagraph (f) of this paragraph.

(iii) The owner or operator shall repair all detected defects as follows:

(I) Detectable emissions, as indicated by visual inspection, or by an instrument reading greater than 500 ppmv above background, shall be controlled as soon as practicable, but not later than 15 calendar days after the emission is detected, except as provided for in item (iii)(III) of this part.

(II) A first attempt at repair shall be made no later than 5 calendar days after the emission is detected.

(III) Delay of repair of a closed-vent system for which leaks have been detected is allowed if the repair is technically infeasible without a process unit shutdown, or if the owner or operator determines that emissions resulting from immediate repair would be greater than the fugitive emissions likely to result from delay of repair. Repair of such equipment shall be completed by the end of the next process unit shutdown.

(IV) The owner or operator shall maintain a record of the defect repair in accordance with the requirements specified in subparagraph (f) of this paragraph.

13. Closed-vent systems and control devices used to comply with provisions of this paragraph shall be operated at all times when emissions may be vented to them.

14. The owner or operator using a carbon adsorption system to control air pollutant emissions shall document that all carbon that is a hazardous waste and that is removed from the control device is managed in one of the following manners, regardless of the average volatile organic concentration of the carbon:

(i) Regenerated or reactivated in a thermal treatment unit that meets one of the following:

(I) The owner or operator of the unit has been issued a final permit under Rule 0400-12-01-.07 which implements the requirements of paragraph (27) of this rule; or

(II) The unit is equipped with and operating air emission controls in accordance with the applicable requirements of paragraphs (30) and (32) of this rule or Rules 0400-12-01-.05(27) and (29); or

(III) The unit is equipped with and operating air emission controls in accordance with a national emission standard for hazardous air pollutants under 40 CFR part 61 or 40 CFR part 63.

(ii) Incinerated in a hazardous waste incinerator for which the owner or operator either:

(I) Has been issued a final permit under Rule 0400-12-01-.07 which implements the requirements of paragraph (15) of this rule; or

(II) Has designed and operates the incinerator in accordance with the interim status requirements of Rule 0400-12-01-.05(15).

(iii) Burned in a boiler or industrial furnace for which the owner or operator either:

(I) Has been issued a final permit under Rule 0400-12-01-.07 which implements the requirements of Rule 0400-12-01-.09(8); or

(II) Has designed and operates the boiler or industrial furnace in accordance with the interim status requirements of Rule 0400-12-01-.09(8).

15. Any components of a closed-vent system that are designated, as described in subpart (f)3(ix) of this paragraph, as unsafe to monitor are exempt from the requirements of subitem 12(i)(II)II of this subparagraph if:

(i) The owner or operator of the closed-vent system determines that the components of the closed-vent system are unsafe to monitor because monitoring personnel would be exposed to an immediate danger as a consequence of complying with subitem 12(i)(II)II of this subparagraph; and

(ii) The owner or operator of the closed-vent system adheres to a written plan that requires monitoring the closed-vent system components using the procedure specified in subitem 12(i)(II)II of this subparagraph as frequently as practicable during safe-to-monitor times.

16. The Reference Methods cited in preceding parts of this subparagraph are applicable as those methods exist on the effective date of these regulations.

(e) Test Methods and Procedures [40 CFR 264.1034]

1. Each owner or operator subject to the provisions of this paragraph shall comply with the test methods and procedures requirements provided in this subparagraph.

2. When a closed-vent system is tested for compliance with no detectable emissions, as required in part (d)12 of this paragraph, the test shall comply with the following requirements:

(i) Monitoring shall comply with Reference Method 21 in 40 CFR part 60.

(ii) The detection instrument shall meet the performance criteria of Reference Method 21.

(iii) The instrument shall be calibrated before use on each day of its use by the procedures specified in Reference Method 21.

(iv) Calibration gases shall be:

(I) Zero air (less than 10 ppm of hydrocarbon in air).

(II) A mixture of methane or n-hexane and air at a concentration of approximately, but less than, 10,000 ppm methane or n-hexane.

(v) The background level shall be determined as set forth in Reference Method 21.

(vi) The instrument probe shall be traversed around all potential leak interfaces as close to the interface as possible as described in Reference Method 21.

(vii) The arithmetic difference between the maximum concentration indicated by the instrument and the background level is compared with 500 ppm for determining compliance.

3. Performance tests to determine compliance with part (c)1 of this paragraph and with the total organic compound concentration limit of part (d)3 of this paragraph shall comply with the following:

(i) Performance tests to determine total organic compound concentrations and mass flow rates entering and exiting control devices shall be conducted and data reduced in accordance with the following reference methods and calculation procedures:

(I) Method 2 in 40 CFR part 60 for velocity and volumetric flow rate.

(II) Method 18 or Method 25A in 40 CFR part 60, Appendix A, for organic content. If Method 25A is used, the organic HAP used as the calibration gas must be the single organic HAP representing the largest percent by volume of the emissions. The use of Method 25A is acceptable if the response from the high-level calibration gas is at least 20 times the standard deviation of the response from the zero calibration gas when the instrument is zeroed on the most sensitive scale.

(III) Each performance test shall consist of three separate runs; each run conducted for at least 1 hour under the conditions that exist when the hazardous waste management unit is operating at the highest load or capacity level reasonably expected to occur. For the purpose of determining total organic compound concentrations and mass flow rates, the average of results of all runs shall apply. The average shall be computed on a time-weighted basis.

(IV) Total organic mass flow rates shall be determined by the following equation:

I. For sources utilizing Method 18.

$$E_h = Q_{2sd} \left\{ \sum_{i=1}^{n} C_i MW_i \right\} [0.0416] [10^{-6}]$$

where:

E_h = Total organic mass flow rate, kg/h;

Q_{2sd} = Volumetric flow rate of gases entering or exiting control device, as determined by Method 2, dscm/h;

n = Number of organic compounds in the vent gas;

C_i = Organic concentration in ppm, dry basis, of compound i in the vent gas, as determined by Method 18;

MW_i = Molecular weight of organic compound i in the vent gas, kg/kg-mol;

0.0416 = Conversion factor for molar volume, kg-mol/m^3 (@ 293 K and 760 mm Hg);

10^{-6} = Conversion from ppm.

II. For sources utilizing Method 25A.

$$E_h = (Q)(C)(MW)(0.0416)(10^{-6})$$

Where:

E_h = Total organic mass flow rate, kg/h;

Q = Volumetric flow rate of gases entering or exiting control device, as determined by Method 2, dscm/h;

C = Organic concentration in ppm, dry basis, as determined by Method 25A;

MW = Molecular weight of propane, 44;

0.0416 = Conversion factor for molar volume, kg-mol/m3 (@ 293 K and 760 mm Hg);

10^{-6} = Conversion from ppm.

(V) The annual total organic emission rate shall be determined by the following equation:

$$E_A = (E_h)(H)$$

where:

E_A = Total organic mass emission rate, kg/y;

E_h = Total organic mass flow rate for the process vent, kg/h;

H = Total annual hours of operations for the affected unit, h.

(VI) Total organic emissions from all affected process vents at the facility shall be determined by summing the hourly total organic mass emission rates (E_h as determined in item 3(i)(IV) of this subparagraph) and by summing the annual total organic mass emission rates (E_A, as determined in item 3(i)(V) of this subparagraph) for all affected process vents at the facility.

(ii) The owner or operator shall record such process information as may be necessary to determine the conditions of the performance tests. Operations during periods of startup, shutdown, and malfunction shall not constitute representative conditions for the purpose of a performance test.

(iii) The owner or operator of an affected facility shall provide, or cause to be provided, performance testing facilities as follows:

(I) Sampling ports adequate for the test methods specified in subpart 3(i) of this subparagraph.

(II) Safe sampling platform(s).

(III) Safe access to sampling platform(s).

(IV) Utilities for sampling and testing equipment.

(iv) For the purpose of making compliance determinations, the time-weighted average of the results of the three runs shall apply. In the event that a sample is accidentally lost or conditions occur in which one of the three runs must be discontinued because of forced shutdown, failure of an irreplaceable portion of the sample train, extreme meteorological conditions, or other circumstances beyond the owner or operator's control, compliance may, upon the Commissioner's approval, be determined using the average of the results of the two other runs.

4. To show that a process vent associated with a hazardous waste distillation, fractionation, thin-film evaporation, solvent extraction, or air or steam stripping operation is not subject to the requirements of this subpart, the owner or operator must make an initial determination that the time-weighted, annual average total organic concentration of the waste managed by the waste management unit is less than 10 ppmw using one of the following two methods:

(i) Direct measurement of the organic concentration of the waste using the following procedures:

(I) The owner or operator must take a minimum of four grab samples of waste for each waste stream managed in the affected unit under process conditions expected to cause the maximum waste organic concentration.

(II) For waste generated onsite, the grab samples must be collected at a point before the waste is exposed to the atmosphere such as in an enclosed pipe or other closed system that is used to transfer the waste after generation to the first affected distillation, fractionation, thin-film evaporation, solvent extraction, or air or steam stripping operation. For waste generated offsite, the grab samples must be collected at the inlet to the first waste management unit that receives the waste provided the waste has been transferred to the facility in a closed system such as a tank truck and the waste is not diluted or mixed with other waste.

(III) Each sample shall be analyzed and the total organic concentration of the sample shall be computed using Method 9060A of "Test Methods for Evaluating Solid Waste, Physical/Chemical Methods," EPA Publication SW-846, or analyzed for its individual organic constituents. (See 40 CFR 260.11; Rule 0400-12-01-.01(2)(b)1.)

(IV) The arithmetic mean of the results of the analyses of the four samples shall apply for each waste stream managed in the unit in determining the time-weighted, annual average total organic concentration of the waste. The time-weighted average is to be calculated using the annual quantity of each waste stream processed and the mean organic concentration of each waste stream managed in the unit.

(ii) Using knowledge of the waste to determine that its total organic concentration is less than 10 ppmw. Documentation of the waste determination is required. Examples of documentation that shall be used to support a determination under this provision include production process information documenting that no organic compounds are used, information that the waste is generated by a process that is identical to a process at the same or another facility that has previously been demonstrated by direct measurement to generate a waste stream having a total organic content less than 10 ppmw, or prior speciation analysis results on the same waste stream where it can also be documented that no process changes have occurred since that analysis that could affect the waste total organic concentration.

5. The determination that distillation, fractionation, thin-film evaporation, solvent extraction, or air or steam stripping operations manage hazardous wastes with time-weighted, annual average total organic concentrations less than 10 ppmw shall be made as follows:

(i) By the effective date that the facility becomes subject to the provisions of this paragraph or by the date when the waste is first managed in a waste management unit, whichever is later, and

(ii) For continuously generated waste, annually, or

(iii) Whenever there is a change in the waste being managed or a change in the process that generates or treats the waste.

6. When an owner or operator and the Commissioner do not agree on whether a distillation, fractionation, thin-film evaporation, solvent extraction, or air or steam stripping operation manages a hazardous waste with organic concentrations of at least 10 ppmw based on knowledge of the waste, the dispute may be resolved by using direct measurement as specified in subpart (i) of part 4 of this subparagraph.

7. The Reference Methods cited in preceding parts of this subparagraph are applicable as those methods exist on the effective date of these regulations.

(f) Recordkeeping Requirements [40 CFR 264.1035]

1. (i) Each owner or operator subject to the provisions of this paragraph shall comply with the recordkeeping requirements of this subparagraph.

(ii) An owner or operator of more than one hazardous waste management unit subject to the provisions of this paragraph may comply with the recordkeeping requirements for these hazardous waste management units in one recordkeeping system if the system identifies each record by each hazardous waste management unit.

2. Owners and operators must record the following information in the facility operating record:

(i) For facilities that comply with the provisions of subpart (d)1(ii) of this paragraph, an implementation schedule that includes dates by which the closed-vent system and control device will be installed and in operation. The schedule must also include a rationale of why the installation cannot be completed at an earlier date. The implementation schedule must be in the facility operating record by the effective date that the facility becomes subject to the provisions of this paragraph.

(ii) Up-to-date documentation of compliance with the process vent standards in subparagraph (c) of this paragraph, including:

(I) Information and data identifying all affected process vents, annual throughput and operating hours of each affected unit, estimated emission rates for each affected vent and for the overall facility (i.e., the total emissions for all affected vents at the facility), and the approximate location within the facility of each affected unit (e.g., identify the hazardous waste management units on a facility plot plan).

(II) Information and data supporting determinations of vent emissions and emission reductions achieved by add-on control devices based on engineering calculations or source tests. For the purpose of determining compliance, determinations of vent emissions and emission reductions must be made using operating parameter values (e.g., temperatures, flow rates, or vent stream organic compounds and concentrations) that represent the conditions that result in maximum organic emissions, such as when the waste management unit is operating at the highest load or capacity level reasonably expected to occur. If the owner or operator takes any action (e.g., managing a waste of different composition or increasing operating hours of affected waste management units) that would result in an increase in total organic emissions from affected process vents at the facility, then a new determination is required.

(iii) Where an owner or operator chooses to use test data to determine the organic removal efficiency or total organic compound concentration achieved by the control device, a performance test plan. The test plan must include:

(I) A description of how it is determined that the planned test is going to be conducted when the hazardous waste management unit is operating at the highest load or capacity level reasonably expected to occur. This shall include the estimated or design flow rate and organic content of each vent stream and define the acceptable operating ranges of key process and control device parameters during the test program.

(II) A detailed engineering description of the closed-vent system and control device including:

I. Manufacturer's name and model number of control device.

II. Type of control device.

III. Dimensions of the control device.

IV. Capacity.

V. Construction materials.

(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) Documentation of compliance with subparagraph (d) of this paragraph shall include the following information:

(I) A list of all information references and sources used in preparing the documentation.

(II) Records, including the dates, of each compliance test required by part (d)11 of this paragraph.

(III) If engineering calculations are used, a design analysis, specifications, drawings, schematics, and piping and instrumentation diagrams based on the appropriate sections of "APTI Course 415: Control of Gaseous Emissions" (see Rule 0400-12-01-.01(2)(b)) or other engineering texts acceptable to the Commissioner that present basic control device design information. Documentation provided by the control device manufacturer or vendor that describes the control device design in accordance with subitems I through VII of this item may be used to comply with this requirement. The design analysis shall address the vent stream characteristics and control device operation parameters as specified below:

I. For a thermal vapor incinerator, the design analysis shall consider the vent stream composition, constituent concentrations, and flow rate. The design analysis shall also establish the design minimum and average temperature in the combustion zone and the combustion zone residence time.

II. For a catalytic vapor incinerator, the design analysis shall consider the vent stream composition, constituent concentrations, and flow rate. The design analysis shall also establish the design minimum and average temperatures across the catalyst bed inlet and outlet.

III. For a boiler or process heater, the design analysis shall consider the vent stream composition, constituent concentrations, and

flow rate. The design analysis shall also establish the design minimum and average flame zone temperatures, combustion zone residence time, and description of method and location where the vent stream is introduced into the combustion zone.

IV. For a flare, the design analysis shall consider the vent stream composition, constituent concentrations, and flow rate. The design analysis shall also consider the requirements specified in part (d)4 of this paragraph.

V. For a condenser, the design analysis shall consider the vent stream composition, constituent concentrations, flow rate, relative humidity, and temperature. The design analysis shall also establish the design outlet organic compound concentration level, design average temperature of the condenser exhaust vent stream, and design average temperatures of the coolant fluid at the condenser inlet and outlet.

VI. For a carbon adsorption system such as a fixed-bed adsorber that regenerates the carbon bed directly onsite in the control device, the design analysis shall consider the vent stream composition, constituent concentrations, flow rate, relative humidity, and temperature. The design analysis shall also establish the design exhaust vent stream organic compound concentration level, number and capacity of carbon beds, type and working capacity of activated carbon used for carbon beds, design total steam flow over the period of each complete carbon bed regeneration cycle, duration of the carbon bed steaming and cooling/drying cycles, design carbon bed temperature after regeneration, design carbon bed regeneration time, and design service life of carbon.

VII. For a carbon adsorption system such as a carbon canister that does not regenerate the carbon bed directly onsite in the control device, the design analysis shall consider the vent stream composition, constituent concentrations, flow rate, relative humidity, and temperature. The design analysis shall also establish the design outlet organic concentration level, capacity of carbon bed, type and working capacity of activated carbon used for carbon bed, and design carbon replacement interval based on the total carbon working capacity of the control device and source operating schedule.

(IV) A statement signed and dated by the owner or operator certifying that the operating parameters used in the design analysis reasonably represent the conditions that exist when the hazardous waste management unit is or would be operating at the highest load or capacity level reasonably expected to occur.

(V) A statement signed and dated by the owner or operator certifying that the control device is designed to operate at an efficiency of 95 percent or greater unless the total organic concentration limit of part (c)1 of this paragraph is achieved at an efficiency less than 95 weight percent or the total organic emission limits of part (c)1 of this paragraph for affected process vents at the facility can be attained by a control device involving vapor recovery at an efficiency less than 95 weight percent. A statement provided by the control device manufacturer or vendor certifying that the control equipment meets the design specifications may be used to comply with this requirement.

(VI) If performance tests are used to demonstrate compliance, all test results.

3. Design documentation and monitoring, operating, and inspection information for each closed-vent system and control device required to comply with the provisions of this rule shall be recorded and kept up-to-date in the facility operating record. The information shall include:

(i) Description and date of each modification that is made to the closed-vent system or control device design.

(ii) Identification of operating parameter, description of monitoring device, and diagram of monitoring sensor location or locations used to comply with subparts (d)6(i) and (ii) of this paragraph.

(iii) Monitoring, operating, and inspection information required by parts (d)6 through 11 of this paragraph.

(iv) Date, time, and duration of each period that occurs while the control device is operating when any monitored parameter exceeds the value established in the control device design analysis as specified below:

(I) For a thermal vapor incinerator designed to operate with a minimum residence time of 0.50 second at a minimum temperature of 760 °C, period when the combustion temperature is below 760 °C.

(II) For a thermal vapor incinerator designed to operate with an organic emission reduction efficiency of 95 weight percent or greater, period when the combustion zone temperature is more than 28 °C below the design average combustion zone temperature established as a requirement of subitem 2(iv)(III)I of this subparagraph.

(III) For a catalytic vapor incinerator, period when:

I. Temperature of the vent stream at the catalyst bed inlet is more than 28 °C below the average temperature of the inlet vent stream established as a requirement of subitem 2(iv)(III)II of this subparagraph, or

II. Temperature difference across the catalyst bed is less than 80 percent of the design average temperature difference established as a requirement of subitem 2(iv)(III)II of this subparagraph.

(IV) For a boiler or process heater, period when:

I. Flame zone temperature is more than 28 °C below the design average flame zone temperature established as a requirement of subitem 2(iv)(III)III of this subparagraph, or

II. Position changes where the vent stream is introduced to the combustion zone from the location established as a requirement of subitem 2(iv)(III)III of this subparagraph.

(V) For a flare, period when the pilot flame is not ignited.

(VI) For a condenser that complies with subitem (d)6(ii)(VI)I of this paragraph, period when the organic compound concentration level or readings of organic compounds in the exhaust vent stream from the condenser are more than 20 percent greater than the design outlet

organic compound concentration level established as a requirement of subitem 2(iv)(III)V of this subparagraph.

(VII) For a condenser that complies with subitem (d)6(ii)(VI)I of this paragraph, period when:

I. Temperature of the exhaust vent stream from the condenser is more than 6 °C above the design average exhaust vent stream temperature established as a requirement of subitem 2(iv)(III)V of this subparagraph; or

II. Temperature of the coolant fluid exiting the condenser is more than 6 °C above the design average coolant fluid temperature at the condenser outlet established as a requirement of subitems 2(iv)(III)V of this subparagraph.

(VIII) For a carbon adsorption system such as a fixed-bed carbon adsorber that regenerates the carbon bed directly onsite in the control device and complies with subitem (d)6(ii)(VII)I of this paragraph, period when the organic compound concentration level or readings of organic compounds in the exhaust vent stream from the carbon bed are more than 20 percent greater than the design exhaust vent stream organic compound concentration level established as a requirement of subitem 2(iv)(III)VI of this subparagraph.

(IX) For a carbon adsorption system such as a fixed-bed carbon adsorber that regenerates the carbon bed directly onsite in the control device and complies with subitem (d)6(iv)(VII)II of this paragraph, period when the vent stream continues to flow through the control device beyond the predetermined carbon bed regeneration time established as a requirement of subitem 2(iv)(III)VI of this subparagraph.

(v) Explanation for each period recorded under subpart (iv) of this part of the cause for control device operating parameter exceeding the design value and the measures implemented to correct the control device operation.

(vi) For a carbon adsorption system operated subject to requirements specified in part (d)7 or subpart (d)8(ii) of this paragraph, date when existing carbon in the control device is replaced with fresh carbon.

(vii) For a carbon adsorption system operated subject to requirements specified in subpart (d)8(i) of this paragraph, a log that records:

(I) Date and time when control device is monitored for carbon breakthrough and the monitoring device reading.

(II) Date when existing carbon in the control device is replaced with fresh carbon.

(viii) Date of each control device startup and shutdown.

(ix) An owner or operator designating any components of a closed- vent system as unsafe to monitor pursuant to part (d)15 of this paragraph shall record in a log that is kept in the facility operating record the identification of closed-vent system components that are designated as unsafe to monitor in accordance with the requirements of part (d)15 of this paragraph, an explanation for each closed-vent system component stating why the closed-vent system component is unsafe to monitor, and the plan for monitoring each closed-vent system component.

(x) When each leak is detected as specified in part (d)12 of this paragraph, the following information shall be recorded:

(I) The instrument identification number, the closed-vent system component identification number, and the operator name, initials, or identification number.

(II) The date the leak was detected and the date of first attempt to repair the leak.

(III) The date of successful repair of the leak.

(IV) Maximum instrument reading measured by Method 21 of 40 CFR part 60, appendix A after it is successfully repaired or determined to be nonrepairable.

(V) "Repair delayed" and the reason for the delay if a leak is not repaired within 15 calendar days after discovery of the leak.

I. The owner or operator may develop a written procedure that identifies the conditions that justify a delay of repair. In such cases, reasons for delay of repair may be documented by citing the relevant sections of the written procedure.

II. If delay of repair was caused by depletion of stocked parts, there must be documentation that the spare parts were sufficiently stocked on-site before depletion and the reason for depletion.

4. Records of the monitoring, operating, and inspection information required by subparts 3(iii) through (x) of this subparagraph shall be maintained by the owner or operator for at least 3 years following the date of each occurrence, measurement, maintenance, corrective action, or record.

5. For a control device other than a thermal vapor incinerator, catalytic vapor incinerator, flare, boiler, process heater, condenser, or carbon adsorption system, the Commissioner will specify the appropriate recordkeeping requirements.

6. Up-to-date information and data used to determine whether or not a process vent is subject to the requirements in subparagraph (c) of this paragraph including supporting documentation as required by subpart (e)4(ii) of this paragraph when application of the knowledge of the nature of the hazardous waste stream or the process by which it was produced is used, shall be recorded in a log that is kept in the facility operating record.

(g) Reporting Requirements [40 CFR 264.1036]

1. A semiannual report shall be submitted by owners and operators subject to the requirements of this paragraph to the Division Director by dates specified by the Commissioner. The report shall include the following information:

(i) The Environmental Protection Agency identification number, name, and address of the facility.

(ii) For each month during the semiannual reporting period, dates when the control device exceeded or operated outside of the design specifications as defined in subpart (f)3(iv) of this paragraph and as indicated by the control device monitoring required by part (d)6 of this paragraph and such exceedances were not corrected within 24 hours, or that a flare operated with visible emissions as defined in part (d)4 of this paragraph and as determined by Method 22 monitoring, the duration and cause of each exceedance or visible emissions, and any corrective measures taken.

2. If, during the semiannual reporting period, the control device does not exceed or operate outside of the design specifications as defined in subpart (f)3(iv) of this paragraph for

more than 24 hours or a flare does not operate with visible emissions as defined in part (d)4 of this paragraph, a report to the Division Director is not required.

3. The Reference Methods cited in preceding parts of this subparagraph are applicable as those methods exist on the effective date of these regulations.

(h)-(t) (RESERVED) [40 CFR 264.1037-264.1049]

(31) Air Emission Standards for Equipment Leaks [40 CFR 264 Subpart BB]

(a) Applicability [40 CFR 264.1050]

1. The regulations in this subpart apply to owners and operators of facilities that treat, store, or dispose of hazardous wastes (except as provided in subparagraphs (1)(b) of this rule).

2. Except as provided in part (o)11 of this paragraph, this paragraph applies to equipment that contains or contacts hazardous wastes with organic concentrations of at least 10 percent by weight that are managed in one of the following:

(i) A unit that is subject to the permitting requirements of Rule 0400-12-01-.07, or

(ii) A unit (including a hazardous waste recycling unit) that is not exempt from permitting under the provisions of Rule 0400-12-01-.03(4)(e)2 (i.e., a hazardous waste recycling unit that is not a "90-day" tank or container) and that is located at a hazardous waste management facility otherwise subject to the permitting requirements of Rule 0400-12-01-.07, or

(iii) A unit that is exempt from permitting under the provisions of Rule 0400-12-01-.03(4)(e)2 (i.e., a "90-day" tank or container) and is not a recycling unit under the provisions of Rule 0400-12-01-.02(1)(f).

3. For the owner or operator of a facility subject to this paragraph and who received a final permit under RCRA section 3005 and/or T.C.A. §68-212-108 prior to December 6, 1996, the requirements of this paragraph shall be incorporated into the permit when the permit is reissued in accordance with the requirements of Rule 0400-12-01-.07(7)(i) or reviewed in accordance with the requirements of Rule 0400-12-01-.07(8)(c)4. Until such date when the owner or operator receives a final permit incorporating the requirements of this paragraph, the owner and operator is subject to the requirements of Rule 0400-12-01-.05(28).

4. Each piece of equipment to which this paragraph applies shall be marked in such a manner that it can be distinguished readily from other pieces of equipment.

5. Equipment that is in vacuum service is excluded from the requirements of subparagraph (c) to (k) of this paragraph if it is identified as required in subpart (o)7(v) of this paragraph.

6. Equipment that contains or contacts hazardous waste with an organic concentration of at least 10 percent by weight for less than 300 hours per calendar year is excluded from the requirements of subparagraphs (c) through (k) of this paragraph if it is identified, as required in subpart (o)7(vi) of this paragraph.

7. (Reserved) [40 CFR 264.1050(g)]

8. Purged coatings and solvents from surface coating operations subject to the national emission standards for hazardous air pollutants (NESHAP) for the surface coating of automobiles and light-duty trucks at 40 CFR part 63, subpart IIII, are not subject to the requirements of this paragraph.

(Note: The requirements of subparagraphs (c) through (p) of this paragraph apply to equipment associated with hazardous waste recycling units previously exempt under Rule 0400-12-01-

.02(1)(f)3(i). Other exemptions under Rules 0400-12-01-.02(1)(d), and .06(1)(b)7 are not affected by these requirements.)

(b) Definitions [40 CFR 264.1051]

As used in this paragraph, all terms shall have the meaning given them in Rule 0400-12-01-.06(30)(b), Tennessee Code Annotated §§68-212-101 et seq. and Rules 0400-12-01-.01 through .06 and .09.

(c) Standards: Pumps in Light Liquid Service [40 CFR 264.1052]

1. (i) Each pump in light liquid service shall be monitored monthly to detect leaks by the methods specified in part (n)2 of this paragraph, except as provided in parts 4, 5, and 6 of this subparagraph.

   (ii) Each pump in light liquid service shall be checked by visual inspection each calendar week for indications of liquids dripping from the pump seal.

2. (i) If an instrument reading of 10,000 ppm or greater is measured, a leak is detected.

   (ii) If there are indications of liquids dripping from the pump seal, a leak is detected.

3. (i) When a leak is detected, it shall be repaired as soon as practicable, but not later than 15 calendar days after it is detected, except as provided in subparagraph (j) of this paragraph.

   (ii) A first attempt at repair (e.g., tightening the packing gland) shall be made no later than 5 calendar days after each leak is detected.

4. Each pump equipped with a dual mechanical seal system that includes a barrier fluid system is exempt from the requirements of part 1 of this subparagraph, provided the following requirements are met:

   (i) Each dual mechanical seal system must be:

      (I) Operated with the barrier fluid at a pressure that is at all times greater than the pump stuffing box pressure, or

      (II) Equipped with a barrier fluid degassing reservoir that is connected by a closed-vent system to a control device that complies with the requirements of subparagraph (k) of this paragraph, or

      (III) Equipped with a system that purges the barrier fluid into a hazardous waste stream with no detectable emissions to the atmosphere.

   (ii) The barrier fluid system must not be a hazardous waste with organic concentrations 10 percent or greater by weight.

   (iii) Each barrier fluid system must be equipped with a sensor that will detect failure of the seal system, the barrier fluid system, or both.

   (iv) Each pump must be checked by visual inspection, each calendar week, for indications of liquids dripping from the pump seals.

   (v) (I) Each sensor as described in subpart 4(iii) of this subparagraph must be checked daily or be equipped with an audible alarm that must be checked monthly to ensure that it is functioning properly.

(II) The owner or operator must determine, based on design considerations and operating experience, a criterion that indicates failure of the seal system, the barrier fluid system, or both.

(vi) (I) If there are indications of liquids dripping from the pump seal or the sensor indicates failure of the seal system, the barrier fluid system, or both based on the criterion determined in item (v)(II) of this part, a leak is detected.

(II) When a leak is detected, it shall be repaired as soon as practicable, but not later than 15 calendar days after it is detected, except as provided in subparagraph (j) of this paragraph.

(III) A first attempt at repair (e.g., relapping the seal) shall be made no later than 5 calendar days after each leak is detected.

5. Any pump that is designated, as described in subpart (o)7(ii) of this paragraph, for no detectable emissions, as indicated by an instrument reading of less than 500 ppm above background, is exempt from the requirements of parts 1,3 and 4 of this paragraph if the pump meets the following requirements:

(i) Must have no externally actuated shaft penetrating the pump housing.

(ii) Must operate with no detectable emissions as indicated by an instrument reading of less than 500 ppm above background as measured by the methods specified in part (n)3 of this paragraph.

(iii) Must be tested for compliance with subpart (ii) of this part initially upon designation, annually, and at other times as requested by the Commissioner.

6. If any pump is equipped with a closed-vent system capable of capturing and transporting any leakage from the seal or seals to a control device that complies with the requirements of subparagraph (k) of this paragraph, it is exempt from the requirements of parts 1 through 5 of this subparagraph.

(d) Standards: Compressors [40 CFR 264.1053]

1. Each compressor shall be equipped with a seal system that includes a barrier fluid system and that prevents leakage of total organic emissions to the atmosphere, except as provided in parts 8 and 9 of this subparagraph.

2. Each compressor seal system as required in part 1 of this subparagraph shall be:

(i) Operated with the barrier fluid at a pressure that is at all times greater than the compressor stuffing box pressure, or

(ii) Equipped with a barrier fluid system that is connected by a closed-vent system to a control device that complies with the requirements of subparagraph (k) of this paragraph, or

(iii) Equipped with a system that purges the barrier fluid into a hazardous waste stream with no detectable emissions to atmosphere.

3. The barrier fluid must not be a hazardous waste with organic concentrations 10 percent or greater by weight.

4. Each barrier fluid system as described in parts 1 through 3 of this subparagraph shall be equipped with a sensor that will detect failure of the seal system, barrier fluid system, or both.

5. (i) Each sensor as required in part 4 of this subparagraph shall be checked daily or shall be equipped with an audible alarm that must be checked monthly to ensure that it is functioning properly unless the compressor is located within the boundary of an unmanned plant site, in which case the sensor must be checked daily.

(ii) The owner or operator shall determine, based on design considerations and operating experience, a criterion that indicates failure of the seal system, the barrier fluid system, or both.

6. If the sensor indicates failure of the seal system, the barrier fluid system, or both based on the criterion determined under subpart 5(ii) of this subparagraph, a leak is detected.

7. (i) When a leak is detected, it shall be repaired as soon as practicable, but not later than 15 calendar days after it is detected, except as provided in subparagraph (j) of this paragraph.

(ii) A first attempt at repair (e.g., tightening the packing gland) shall be made no later than 5 calendar days after each leak is detected.

8. A compressor is exempt from the requirements of parts 1 and 2 of this subparagraph if it is equipped with a closed-vent system capable of capturing and transporting any leakage from the seal to a control device that complies with the requirements of subparagraph (k) of this paragraph, except as provided in part 9 of this subparagraph.

9. Any compressor that is designated, as described in subpart (o)7(ii) of this paragraph for no detectable emissions as indicated by an instrument reading of less than 500 ppm above background is exempt from the requirements of parts 1 through 8 of this subparagraph if the compressor:

(i) Is determined to be operating with no detectable emissions, as indicated by an instrument reading of less than 500 ppm above background, as measured by the method specified in part (n)3 of this paragraph.

(ii) Is tested for compliance with subpart 9(i) of this subparagraph initially upon designation, annually, and at other times as requested by the Commissioner.

(e) Standards: Pressure Relief Devices in Gas/Vapor Service [40 CFR 264.1054]

1. Except during pressure releases, each pressure relief device in gas/vapor service shall be operated with no detectable emissions, as indicated by an instrument reading of less than 500 ppm above background, as measured by the method specified in part (n)3 of this paragraph.

2. (i) After each pressure release, the pressure relief device shall be returned to a condition of no detectable emissions, as indicated by an instrument reading of less than 500 ppm above background, as soon as practicable, but no later than 5 calendar days after each pressure release, except as provided in subparagraph (j) of this paragraph.

(ii) No later than 5 calendar days after the pressure release, the pressure relief device shall be monitored to confirm the condition of no detectable emissions, as indicated by an instrument reading of less than 500 ppm above background, as measured by the method specified in part (n)3 of this paragraph.

3. Any pressure relief device that is equipped with a closed-vent system capable of capturing and transporting leakage from the pressure relief device to a control device as described in subparagraph (k) of this paragraph is exempt from the requirements of parts 1 and 2 of this subparagraph.

(f) Standards: Sampling Connecting Systems [40 CFR 264.1055]

1. Each sampling connection system shall be equipped with a closed-purge, closed-loop, or closed-vent system. This system shall collect the sample purge for return to the process or for routing to the appropriate treatment system. Gases displaced during filling of the sample container are not required to be collected or captured.

2. Each closed-purge, closed-loop, or closed-vent system as required in part 1 of this subparagraph shall meet one of the following requirements:

   (i) Return the purged process fluid directly to the process line;

   (ii) Collect and recycle the purged process fluid; or

   (iii) Be designed and operated to capture and transport all the purged process fluid to a waste management unit that complies with the applicable requirements of subparagraphs (32)(e) through (32)(g) of this rule or a control device that complies with the requirements of subparagraph (k) of this paragraph.

3. In-situ sampling systems and sampling systems without purges are exempt from the requirements of parts 1 and 2 of this subparagraph.

(g) Standards: Open-ended Valves or Lines [40 CFR 264.1056]

1. (i) Each open-ended valve or line shall be equipped with a cap, blind flange, plug, or a second valve.

   (ii) The cap, blind flange, plug, or second valve shall seal the open end at all times except during operations requiring hazardous waste stream flow through the open-ended valve or line.

2. Each open-ended valve or line equipped with a second valve shall be operated in a manner such that the valve on the hazardous waste stream end is closed before the second valve is closed.

3. When a double block and bleed system is being used, the bleed valve or line may remain open during operations that require venting the line between the block valves but shall comply with part 1 of this subparagraph at all other times.

(h) Standards: Valves in Gas/Vapor Service or in Light Liquid Service [40 CFR 264.1057]

1. Each valve in gas/vapor or light liquid service shall be monitored monthly to detect leaks by the methods specified in part (n)2 of this paragraph and shall comply with parts 2 through 5 of this subparagraph, except as provided in parts 6, 7, and 8 of this subparagraph, and subparagraphs (l) and (m) of this paragraph.

2. If an instrument reading of 10,000 ppm or greater is measured, a leak is detected.

3. (i) Any valve for which a leak is not detected for two successive months may be monitored the first month of every succeeding quarter, beginning with the next quarter, until a leak is detected.

   (ii) If a leak is detected, the valve shall be monitored monthly until a leak is not detected for two successive months,

4. (i) When a leak is detected, it shall be repaired as soon as practicable, but no later than 15 calendar days after the leak is detected, except as provided in subparagraph (j) of this paragraph.

   (ii) A first attempt at repair shall be made no later than 5 calendar days after each leak is detected.

5. First attempts at repair include, but are not limited to, the following best practices where practicable:

(i) Tightening of bonnet bolts.

(ii) Replacement of bonnet bolts.

(iii) Tightening of packing gland nuts.

(iv) Injection of lubricant into lubricated packing.

6. Any valve that is designated, as described in subpart (o)7(ii) of this paragraph, for no detectable emissions, as indicated by an instrument reading of less than 500 ppm above background, is exempt from the requirements of part 1 of this subparagraph if the valve:

(i) Has no external actuating mechanism in contact with the hazardous waste stream.

(ii) Is operated with emissions less than 500 ppm above background as determined by the method specified in part (n)3 of this paragraph.

(iii) Is tested for compliance with subpart 6(ii) of this subparagraph initially upon designation, annually, and at other times as requested by the Commissioner.

7. Any valve that is designated, as described in subpart (o)8(i) of this paragraph as an unsafe-to-monitor valve is exempt from the requirements of part 1 of this subparagraph if:

(i) The owner or operator of the valve determines that the valve is unsafe to monitor because monitoring personnel would be exposed to an immediate danger as a consequence of complying with part 1 of this subparagraph.

(ii) The owner or operator of the valve adheres to a written plan that requires monitoring of the valve as frequently as practicable during safe-to-monitor times.

8. Any valve that is designated, as described in subpart (o)8(ii) of this paragraph, as a difficult-to-monitor valve is exempt from the requirements of part 1 of this subparagraph if:

(i) The owner or operator of the valve determines that the valve cannot be monitored without elevating the monitoring personnel more than 2 meters above a support surface.

(ii) The hazardous waste management unit within which the valve is located was in operation before June 21, 1990.

(iii) The owner or operator of the valve follows a written plan that requires monitoring of the valve at least once per calendar year.

(i) Standards: Pumps and Valves in Heavy Liquid Service, Pressure Relief Devices in Light Liquid or Heavy Liquid Service, and Flanges and Other Connectors [40 CFR 264.1058]

1. Pumps and valves in heavy liquid service, pressure relief devices in light liquid or heavy liquid service, and flanges and other connectors shall be monitored within 5 days by the method specified in part (n)2 of this paragraph if evidence of a potential leak is found by visual, audible, olfactory, or any other detection method.

2. If an instrument reading of 10,000 ppm or greater is measured, a leak is detected.

3. (i) When a leak is detected, it shall be repaired as soon as practicable, but not later than 15 calendar days after it is detected, except as provided in subparagraph (j) of this paragraph.

(ii) The first attempt at repair shall be made no later than 5 calendar days after each leak is detected.

4. First attempts at repair include, but are not limited to, the best practices described under part (h)5 of this paragraph.

5. Any connector that is inaccessible or is ceramic or ceramic-lined (e.g., porcelain, glass, or glass-lined) is exempt from the monitoring requirements of part 1 of this subparagraph and from the recordkeeping requirements of subparagraph (o) of this paragraph.

(j) Standards: Delay of Repair [40 CFR 264.1059]

1. Delay of repair of equipment for which leaks have been detected will be allowed if the repair is technically infeasible without a hazardous waste management unit shutdown. In such a case, repair of this equipment shall occur before the end of the next hazardous waste management unit shutdown.

2. Delay of repair of equipment for which leaks have been detected will be allowed for equipment that is isolated from the hazardous waste management unit and that does not continue to contain or contact hazardous waste with organic concentrations at least 10 percent by weight.

3. Delay of repair for valves will be allowed if:

(i) The owner or operator determines that emissions of purged material resulting from immediate repair are greater than the emissions likely to result from delay of repair.

(ii) When repair procedures are effected, the purged material is collected and destroyed or recovered in a control device complying with subparagraph (k) of this paragraph.

4. Delay of repair for pumps will be allowed if:

(i) Repair requires the use of a dual mechanical seal system that includes a barrier fluid system.

(ii) Repair is completed as soon as practicable, but not later than 6 months after the leak was detected.

5. Delay of repair beyond a hazardous waste management unit shutdown will be allowed for a valve if valve assembly replacement is necessary during the hazardous waste management unit shutdown, valve assembly supplies have been depleted, and valve assembly supplies had been sufficiently stocked before the supplies were depleted. Delay of repair beyond the next hazardous waste management unit shutdown will not be allowed unless the next hazardous waste management unit shutdown occurs sooner than 6 months after the first hazardous waste management unit shutdown.

(k) Standards: Closed-vent Systems and Control Devices [40 CFR 264.1060]

1. Owners and operators of closed-vent systems and control devices subject to this paragraph shall comply with the provisions of subparagraph (30)(d) of this rule.

2. (i) The owner or operator of an existing facility who cannot install a closed-vent system and control device to comply with the provisions of this paragraph on the effective date that the facility becomes subject to the provisions of this paragraph must prepare an implementation schedule that includes dates by which the closed-vent system and control device will be installed and in operation. The controls must be installed as soon as possible, but the implementation schedule may allow up to 30 months after the effective date that the facility becomes subject to this paragraph for installation and startup.

(ii) Any unit that begins operation after December 21, 1990, and is subject to the provisions of this paragraph when operation begins, must comply with the rules immediately (i.e., must have control devices installed and operating on startup of the affected unit); the 30-month implementation schedule does not apply.

(iii) The owner or operator of any facility in existence on the effective date of a statutory or regulatory amendment that renders the facility subject to this paragraph shall comply with all requirements of this paragraph as soon as practicable but no later than 30 months after the amendment's effective date. When control equipment required by this paragraph can not be installed and begin operation by the effective date of the amendment, the facility owner or operator shall prepare an implementation schedule that includes the following information: Specific calendar dates for award or contracts or issuance of purchase orders for the control equipment, initiation of on-site installation of the control equipment, completion of the control equipment installation, and performance of any testing to demonstrate that the installed equipment meets the applicable standards of this paragraph. The owner or operator shall enter the implementation schedule in the operating record or in a permanent, readily available file located at the facility.

(iv) Owners and operators of facilities and units that become newly subject to the requirements of this paragraph after December 8, 1997, due to an action other than those described in subpart 2(iii) of this subparagraph must comply with all applicable requirements immediately (i.e., must have control devices installed and operating on the date the facility or unit becomes subject to this paragraph; the 30-month implementation schedule does not apply).

(l) Alternative Standards for Valves in Gas/Vapor Service or in Light Liquid Service: Percentage of Valves Allowed to Leak [40 CFR 264.1061]

1. An owner or operator subject to the requirements of subparagraph (h) of this paragraph may elect to have all valves within a hazardous waste management unit comply with an alternative standard that allows no greater than 2 percent of the valves to leak.

2. The following requirements shall be met if an owner or operator decides to comply with the alternative standard of allowing 2 percent of valves to leak:

(i) A performance test as specified in part 3 of this subparagraph shall be conducted initially upon designation, annually, and at other times requested by the Commissioner.

(ii) If a valve leak is detected, it shall be repaired in accordance with parts (h)4 and 5 of this paragraph.

3. Performance tests shall be conducted in the following manner:

(i) All valves subject to the requirements in subparagraph (h) of this paragraph within the hazardous waste management unit shall be monitored within 1 week by the methods specified in part (n)2 of this paragraph.

(ii) If an instrument reading of 10,000 ppm or greater is measured, a leak is detected.

(iii) The leak percentage shall be determined by dividing the number of valves subject to the requirements in subparagraph (h) of this paragraph for which leaks are detected by the total number of valves subject to the requirements in subparagraph (h) of this paragraph within the hazardous waste management unit.

(m) Alternative Standards for Valves in Gas/Vapor Service or in Light Liquid Service: Skip Period Leak Detection and Repair [40 CFR 264.1062]

1. An owner or operator subject to the requirements of subparagraph (h) of this paragraph may elect for all valves within a hazardous waste management unit to comply with one of the alternative work practices specified in subparts 2(ii) and (iii) of this subparagraph.

2. (i) An owner or operator shall comply with the requirements for valves, as described in subparagraph (h) of this paragraph, except as described in subparts (ii) and (iii) of this part.

   (ii) After two consecutive quarterly leak detection periods with the percentage of valves leaking equal to or less than 2 percent, an owner or operator may begin to skip one of the quarterly leak detection periods (i.e., monitor for leaks once every six months) for the valves subject to the requirements in subparagraph (h) of this paragraph.

   (iii) After five consecutive quarterly leak detection periods with the percentage of valves leaking equal to or less than 2 percent, an owner or operator may begin to skip three of the quarterly leak detection periods (i.e., monitor for leaks once every year) for the valves subject to the requirements in subparagraph (h) of this paragraph.

   (iv) If the percentage of valves leaking is greater than 2 percent, the owner or operator shall monitor monthly in compliance with the requirements in subparagraph (h) of this paragraph, but may again elect to use this subparagraph after meeting the requirements of subpart (h)3(i) of this paragraph.

(n) Test Methods and Procedures [40 CFR 264.1063]

1. Each owner or operator subject to the provisions of this paragraph shall comply with the test methods and procedures requirements provided in this subparagraph.

2. Leak detection monitoring, as required in subparagraph (c) through (m) of this paragraph, shall comply with the following requirements:

   (i) Monitoring shall comply with Reference Method 21 in 40 CFR part 60.

   (ii) The detection instrument shall meet the performance criteria of Reference Method 21.

   (iii) The instrument shall be calibrated before use on each day of its use by the procedures specified in Reference Method 21.

   (iv) Calibration gases shall be:

      (I) Zero air (less than 10 ppm of hydrocarbon in air).

      (II) A mixture of methane or n-hexane and air at a concentration of approximately, but less than, 10,000 ppm methane or n-hexane.

   (v) The instrument probe shall be traversed around all potential leak interfaces as close to the interface as possible as described in Reference Method 21.

3. When equipment is tested for compliance with no detectable emissions. as required in part (c)5, part (d)9, subparagraph (e) and part (h)6 of this paragraph, the test shall comply with the following requirements:

   (i) The requirements of subparts 2(i) through (iv) of this subparagraph shall apply.

   (ii) The background level shall be determined as set forth in Reference Method 21.

(iii) The instrument probe shall be traversed around all potential leak interfaces as close to the interface as possible as described in Reference Method 21.

(iv) The arithmetic difference between the maximum concentration indicated by the instrument and the background level is compared with 500 ppm for determining compliance.

4. In accordance with the waste analysis plan required by part (2)(d)2 of this rule, an owner or operator of a facility must determine, for each piece of equipment, whether the equipment contains or contacts a hazardous waste with organic concentration that equals or exceeds 10 percent by weight using the following:

(i) Methods described in ASTM Methods D 2267-88, E 169-87, E 168-88, E 260-85 (see 40 CFR 260.11; Rule 0400-12-01-.01(2)(b)1);

(ii) Method 9060A (see 40 CFR 260.11; Rule 0400-12-01-.01(2)(b)1) of "Test Methods for Evaluating Solid Waste:, EPA Publication SW-846, for computing total organic concentration of the sample, or analyzed for its individual organic constituents; or

(iii) Application of the knowledge of the nature of the hazardous waste stream or the process by which it was produced. Documentation of a waste determination by knowledge is required. Examples of documentation that shall be used to support a determination under this provision include production process information documenting that no organic compounds are used, information that the waste is generated by a process that is identical to a process at the same or another facility that has previously been demonstrated by direct measurement to have a total organic content less than 10 percent, or prior speciation analysis results on the same waste stream where it can also be documented that no process changes have occurred since that analysis that could affect the waste total organic concentration.

5. If an owner or operator determines that a piece of equipment contains or contacts a hazardous waste with organic concentrations at least 10 percent by weight, the determination can be revised only after following the procedures in subparts 4(i) or (ii) of this subparagraph.

6. When an owner or operator and the Commissioner do not agree on whether a piece of equipment contains or contacts a hazardous waste with organic concentrations at least 10 percent by weight, the procedures in subparts 4(i) or (ii) of this subparagraph can be used to resolve the dispute.

7. Samples used in determining the percent organic content shall be representative of the highest total organic content hazardous waste that is expected to be contained in or contact the equipment.

8. To determine if pumps or valves are in light liquid service, the vapor pressures of constituents may be obtained from standard reference texts or may be determined by ASTM D-2879-86 (see 40 CFR 260.11; Rule 0400-12-01-.01(2)(b)1).

9. Performance tests to determine if a control device achieves 95 weight percent organic emission reduction shall comply with the procedures of subparts (30)(e)3(i) through (iv) of this rule.

10. The Reference Methods cited in preceding parts of this subparagraph are applicable as those methods exist on the effective date of these regulations.

(o) Recordkeeping Requirements [40 CFR 264.1064]

1. (i) Each owner or operator subject to the provisions of this paragraph shall comply with the recordkeeping requirements of this subparagraph.

(ii) An owner or operator of more than one hazardous waste management unit subject to the provisions of this paragraph may comply with the recordkeeping requirements for these hazardous waste management units in one recordkeeping system if the system identifies each record by each hazardous waste management unit.

2. Owners and operators must record the following information in the facility operating record:

(i) For each piece of equipment to which paragraph (31) of this rule applies:

(I) Equipment identification number and hazardous waste management unit identification.

(II) Approximate locations within the facility (e.g., identify the hazardous waste management unit on a facility plot plan).

(III) Type of equipment (e.g.. a pump or pipeline valve).

(IV) Percent-by-weight total organics in the hazardous waste stream at the equipment.

(V) Hazardous waste state at the equipment (e.g., gas/vapor or liquid).

(VI) Method of compliance with the standard (e.g., "monthly leak detection and repair" or "equipped with dual mechanical seals").

(ii) For facilities that comply with the provisions of subpart (30)(d)1(ii) of this rule, an implementation schedule as specified in subpart (30)(d)1(ii) of this rule.

(iii) Where an owner or operator chooses to use test data to demonstrate the organic removal efficiency or total organic compound concentration achieved by the control device, a performance test plan as specified in subpart (30)(f)2(iii) of this rule.

(iv) Documentation of compliance with subparagraph (k) of this paragraph, including the detailed design documentation or performance test results specified in subpart (30)(f)2(iv) of this rule.

3. When each leak is detected as specified in subparagraphs (c), (d), (h) and (i) of this paragraph, the following requirements apply:

(i) A weatherproof and readily visible identification, marked with the equipment identification number, the date evidence of a potential leak was found in accordance with part (i)1 of this paragraph, and the date the leak was detected, shall be attached to the leaking equipment.

(ii) The identification on equipment, except on a valve, may be removed after it has been repaired.

(iii) The identification on a valve may be removed after it has been monitored for 2 successive months as specified in part (h)3 of this paragraph and no leak has been detected during those 2 months.

4. When each leak is detected as specified in subparagraphs (c), (d), (h) and (i) of this paragraph, the following information shall be recorded in an inspection log and shall be kept in the facility operating record:

(i) The instrument and operator identification numbers and the equipment identification number.

(ii) The date evidence of a potential leak was found in accordance with part (i)1 of this paragraph.

(iii) The date the leak was detected and the dates of each attempt to repair the leak.

(iv) Repair methods applied in each attempt to repair the leak.

(v) "Above 10,000" if the maximum instrument reading measured by the methods specified in part (n)2 of this paragraph after each repair attempt is equal to or greater than 10,000 ppm.

(vi) "Repair delayed" and the reason for the delay if a leak is not repaired within 15 calendar days after discovery of the leak.

(vii) Documentation supporting the delay of repair of a valve in compliance with part (j)3 of this paragraph.

(viii) The signature of the owner or operator (or designate) whose decision it was that repair could not be effected without a hazardous waste management unit shutdown.

(ix) The expected date of successful repair of the leak if a leak is not repaired within 15 calendar days.

(x) The date of successful repair of the leak.

5. Design documentation and monitoring, operating, and inspection information for each closed-vent system and control device required to comply with the provisions of subparagraph (k) of this paragraph shall be recorded and kept up-to-date in the facility operating record as specified in part (30)(f)3 of this rule. Design documentation is specified in subparts (30(f)3(i) and (ii) of this rule and monitoring, operating, and inspection information in subparts (30)(f)3(iii) through (viii) of this rule.

6. For a control device other than a thermal vapor incinerator, catalytic vapor incinerator, flare, boiler, process heater, condenser, or carbon adsorption system, the Commissioner will specify the appropriate recordkeeping requirements.

7. The following information pertaining to all equipment subject to the requirements in subparagraphs (c) through (k) of this paragraph shall be recorded in a log that is kept in the facility operating record:

(i) A list of identification numbers for equipment (except welded fittings) subject to the requirements of this paragraph.

(ii) (I) A list of identification numbers for equipment that the owner or operator elects to designate for no detectable emissions, as indicated by an instrument reading of less than 500 ppm above background, under the provisions of parts (c)5, (d)9 and (h)6 of this paragraph.

(II) The designation of this equipment as subject to the requirements of parts (c)5, (d)9 and (h)6 of this paragraph shall be signed by the owner or operator.

(iii) A list of equipment identification numbers for pressure relief devices required to comply with part (e)1 of this paragraph.

(iv) (I) The dates of each compliance test required in part (c)5, part (d)9, subparagraph (e) and part (h)6 of this paragraph.

(II) The background level measured during each compliance test.

(III) The maximum instrument reading measured at the equipment during each compliance test.

(v) A list of identification numbers for equipment in vacuum service.

(vi) Identification, either by list or location (area or group) of equipment that contains or contacts hazardous waste with an organic concentration of at least 10 percent by weight for less than 300 hours per calendar year.

8. The following information pertaining to all valves subject to the requirements of parts (h)7 and 8 of this paragraph shall be recorded in a log that is kept in the facility operating record:

(i) A list of identification numbers for valves that are designated as unsafe to monitor, an explanation for each valve stating why the valve is unsafe to monitor, and the plan for monitoring each valve.

(ii) A list of identification numbers for valves that are designated as difficult to monitor, an explanation for each valve stating why the valve is difficult to monitor, and the planned schedule for monitoring each valve.

9. The following information shall be recorded in the facility operating record for valves complying with subparagraph (m) of this paragraph:

(i) A schedule of monitoring.

(ii) The percent of valves found leaking during each monitoring period.

10. The following information shall be recorded in a log that is kept in the facility operating record:

(i) Criteria required in item (c)4(v)(II) and subpart (d)5(ii) of this paragraph and an explanation of the design criteria.

(ii) Any changes to these criteria and the reasons for the changes.

11. The following information shall be recorded in a log that is kept in the facility operating record for use in determining exemptions as provided in the applicability subparagraph of this paragraph and other specific paragraphs:

(i) An analysis determining the design capacity of the hazardous waste management unit.

(ii) A statement listing the hazardous waste influent to and effluent from each hazardous waste management unit subject to the requirements in subparagraphs (c) through (k) of this paragraph and an analysis determining whether these hazardous wastes are heavy liquids.

(iii) An up-to-date analysis and the supporting information and data used to determine whether or not equipment is subject to the requirements in subparagraphs (c) through (k) of this paragraph. The record shall include supporting documentation as required by subpart (n)4(iii) of this paragraph when application of the knowledge of the nature of the hazardous waste stream or the process by which it was produced is used. If the owner or operator takes any action (e.g., changing the process that produced the waste) that could result in an increase in the total organic content of the waste contained in or contacted by equipment determined not to be subject to the requirements in subparagraphs (c) through (k) of this paragraph, then a new determination is required.

12. Records of the equipment leak information required by part 4 of this subparagraph and the operating information required by part 5 of this subparagraph need be kept only 3 years.

13. The owner or operator of a facility with equipment that is subject to this paragraph and to regulations at 40 CFR part 60, part 61, or part 63 may elect to determine compliance with this paragraph either by documentation pursuant to subparagraph (o) of this paragraph, or by documentation of compliance with the regulations at 40 CFR part 60, part 61, or part 63 pursuant to the relevant provisions of the regulations at 40 CFR part 60, part 61, or part 63. The documentation of compliance under regulations at 40 CFR part 60, part 61 or part 63 shall be kept with or made readily available with the facility operating record.

(p) Reporting Requirements [40 CFR 264.1065]

1. A semiannual report shall be submitted by owners and operators subject to the requirements of this paragraph to the Division Director by dates specified by the Commissioner. The report shall include the following information:

(i) The Environmental Protection Agency identification number, name, and address of the facility.

(ii) For each month during the semiannual reporting period:

(I) The equipment identification number of each valve for which a leak was not repaired as required in part (h)4 of this paragraph.

(II) The equipment identification number of each pump for which a leak was not repaired as required in part (c)3 and subpart (c)4(vi) of this paragraph.

(III) The equipment identification number of each compressor for which a leak was not repaired as required in part (d)7 of this paragraph.

(iii) Dates of hazardous waste management unit shutdowns that occurred within the semiannual reporting period.

(iv) For each month during the semiannual reporting period, dates when the control device installed as required by subparagraphs (c), (d), (e) or (f) of this paragraph exceeded or operated outside of the design specifications as defined in part (o)5 of this paragraph and as indicated by the control device monitoring required by subparagraph (k) of this paragraph and was not corrected within 24 hours, the duration and cause of each exceedance, and any corrective measures taken.

2. If, during the semiannual reporting period, leaks from valves, pumps, and compressors are repaired as required in part (h)4, part (c)3, subpart (c)4(vi) and part (d)7 of this paragraph, respectively, and the control device does not exceed or operate outside of the design specifications as defined in part (o)5 of this paragraph for more than 24 hours, a report to the Division Director is not required.

(q)-(dd) (RESERVED) [40 CFR 264.1066-264.1079]

(32) Air Emission Standards for Tanks, Surface Impoundments, and Containers [40 CFR 264 Subpart CC]

(a) Applicability [40 CFR 264.1080]

1. The requirements of this paragraph apply to owners and operators of all facilities that treat, store, or dispose of hazardous waste in tanks, surface impoundments, or containers subject to either paragraph (9), (10), or (11) of this rule except as subparagraph (1)(b) and part 2 of this subparagraph provide otherwise.

2. The requirements of this paragraph do not apply to the following waste management units at the facility:

(i) A waste management unit that holds hazardous waste placed in the unit before December 6, 1996, and in which no hazardous waste is added to the unit on or after December 6, 1996.

(ii) A container that has a design capacity less than or equal to 0.1 m^3.

(iii) A tank in which an owner or operator has stopped adding hazardous waste and the owner or operator has begun implementing or completed closure pursuant to an approved closure plan.

(iv) A surface impoundment in which an owner or operator has stopped adding hazardous waste (except to implement an approved closure plan) and the owner or operator has begun implementing or completed closure pursuant to an approved closure plan.

(v) A waste management unit that is used solely for on-site treatment or storage of hazardous waste that is placed in the unit as a result of implementing remedial activities required under the corrective action authorities of T.C.A. §§68-212-108(l), 68-212-111 or 68-212-201 et seq.

(vi) A waste management unit that is used solely for the management of radioactive mixed waste in accordance with all applicable regulations under the authority of the Atomic Energy Act and the Nuclear Waste Policy Act.

(vii) A hazardous waste management unit that the owner or operator certifies is equipped with and operating air emission controls in accordance with the requirements of an applicable Clean Air Act regulation codified under 40 CFR part 60, part 61, or part 63. For the purpose of complying with this subpart, a tank for which the air emission control includes an enclosure, as opposed to a cover, must be in compliance with the enclosure and control device requirements of part (e)9 of this paragraph, except as provided in subpart (c)3(v) of this paragraph.

(viii) A tank that has a process vent as defined in subparagraph (30)(b) of this rule.

(ix) Wastewater treatment units as defined in Rule 0400-12-01-.01(2)(a).

3. For the owner and operator of a facility subject to this paragraph who received a final permit under RCRA section 3005 and/or T.C.A. §68-212-108 prior to December 6, 1996, the requirements of this paragraph shall be incorporated into the permit when the permit is reissued in accordance with the requirements of Rule 0400-12-01-.07(7)(i) or reviewed in accordance with the requirements of Rule 0400-12-01-.07(8)(c)4. Until such date when the permit is reissued in accordance with the requirements of Rule 0400-12-01-.07(7)(i) or reviewed in accordance with the requirements of Rule 0400-12-01-.07(8)(c)4, the owner and operator are subject to the requirements of Rule 0400-12-01-.05(29).

4. The requirements of this paragraph, except for the recordkeeping requirements specified in part (j)9 of this paragraph, are administratively stayed for a tank or a container used for the management of hazardous waste generated by organic peroxide manufacturing and its associated laboratory operations when the owner or operator of the unit meets all of the following conditions:

(i) The owner or operator identifies that the tank or container receives hazardous waste generated by an organic peroxide manufacturing process producing more than one functional family of organic peroxides or multiple organic peroxides within one functional family, that one or more of these organic peroxides could potentially undergo self-accelerating thermal decomposition at or below ambient

temperatures, and that organic peroxides are the predominant products manufactured by the process. For the purpose of meeting the conditions of this subpart, "organic peroxide" means an organic compound that contains the bivalent -O-O- structure and which may be considered to be a structural derivative of hydrogen peroxide where one or both of the hydrogen atoms has been replaced by an organic radical.

(ii) The owner or operator prepares documentation, in accordance with the requirements of part (j)9 of this paragraph, explaining why an undue safety hazard would be created if air emission controls specified in subparagraphs (e) through (h) of this paragraph are installed and operated on the tanks and containers used at the facility to manage the hazardous waste generated by the organic peroxide manufacturing process or processes meeting the conditions of subpart 4(i) of this subparagraph.

(iii) The owner or operator notifies the Commissioner in writing that hazardous waste generated by an organic peroxide manufacturing process or processes meeting the conditions of subpart 4(i) of this subparagraph are managed at the facility in tanks or containers meeting the conditions of subpart 4(ii) of this subparagraph. The notification shall state the name and address of the facility, and be signed and dated by an authorized representative of the facility owner or operator.

5. (Reserved) [40 CFR 264.1080(e)]

(b) Definitions [40 CFR 264.1081]

As used in this paragraph, all terms shall have the meaning given to them in Rule 0400-12-01-.05(29)(b), the Act, and Rule 0400-12-01-.01 through .06 and .09.

(c) Standards: General [40 CFR 264.1082]

1. This subparagraph applies to the management of hazardous waste in tanks, surface impoundments, and containers subject to this paragraph.

2. The owner or operator shall control air pollutant emissions from each hazardous waste management unit in accordance with standards specified in subparagraphs (e) through (h) of this paragraph, as applicable to the hazardous waste management unit, except as provided for in part 3 of this subparagraph.

3. A tank, surface impoundment, or container is exempt from standards specified in subparagraph (32)(e) through (32)(h) of this paragraph, as applicable, provided that the waste management unit is one of the following:

(i) A tank, surface impoundment, or container for which all hazardous waste entering the unit has an average VO concentration at the point of waste origination of less than 500 parts per million by weight (ppmw). The average VO concentration shall be determined using the procedures specified in part (d)1 of this paragraph. The owner or operator shall review and update, as necessary, this determination at least once every 12 months following the date of the initial determination for the hazardous waste streams entering the unit.

(ii) A tank, surface impoundment, or container for which the organic content of all the hazardous waste entering the waste management unit has been reduced by an organic destruction or removal process that achieves any one of the following conditions:

(I) A process that removes or destroys the organics contained in the hazardous waste to a level such that the average VO concentration of the hazardous waste at the point of waste treatment is less than the exit concentration limit (C_t) established for the process. The average VO concentration of the hazardous waste at the point of waste treatment and

the exit concentration limit for the process shall be determined using the procedures specified in part (d)2 of this paragraph.

(II) A process that removes or destroys the organics contained in the hazardous waste to a level such that the organic reduction efficiency (R) for the process is equal to or greater than 95 percent, and the average VO concentration of the hazardous waste at the point of waste treatment is less than 100 ppmw. The organic reduction efficiency for the process and the average VO concentration of the hazardous waste at the point of waste treatment shall be determined using the procedures specified in part (d)2 of this paragraph.

(III) A process that removes or destroys the organics contained in the hazardous waste to a level such that the actual organic mass removal rate (MR) for the process is equal to or greater than the required organic mass removal rate (RMR) established for the process. The required organic mass removal rate and the actual organic mass removal rate for the process shall be determined using the procedures specified in part (d)2 of this paragraph.

(IV) A biological process that destroys or degrades the organics contained in the hazardous waste, such that either of the following conditions is met:

I. The organic reduction efficiency (R) for the process is equal to or greater than 95 percent, and the organic biodegradation efficiency (R_{bio}) for the process is equal to or greater than 95 percent. The organic reduction efficiency and the organic biodegradation efficiency for the process shall be determined using the procedures specified in part (d)2 of this paragraph.

II. The total actual organic mass biodegradation rate (MR_{bio}) for all hazardous waste treated by the process is equal to or greater than the required organic mass removal rate (RMR). The required organic mass removal rate and the actual organic mass biodegradation rate for the process shall be determined using the procedures specified in part (d)2 of this paragraph.

(V) A process that removes or destroys the organics contained in the hazardous waste and meets all of the following conditions:

I. From the point of waste origination through the point where the hazardous waste enters the treatment process, the hazardous waste is managed continuously in waste management units which use air emission controls in accordance with the standards specified in subparagraph (e) through (h) of this paragraph, as applicable to the waste management unit.

II. From the point of waste origination through the point where the hazardous waste enters the treatment process, any transfer of the hazardous waste is accomplished through continuous hard-piping or other closed system transfer that does not allow exposure of the waste to the atmosphere. The Department considers a drain system that meets the requirements of 40 CFR part 63, subpart RR--National Emission Standards for Individual Drain Systems to be a closed system.

III. The average VO concentration of the hazardous waste at the point of waste treatment is less than the lowest average VO concentration at the point of waste origination determined for each of the individual waste streams entering the process or 500 ppmw, whichever value is lower. The average VO concentration

of each individual waste stream at the point of waste origination shall be determined using the procedures specified in part (d)1 of this paragraph. The average VO concentration of the hazardous waste at the point of waste treatment shall be determined using the procedures specified in part (d)2 of this paragraph.

(VI) A process that removes or destroys the organics contained in the hazardous waste to a level such that the organic reduction efficiency (R) for the process is equal to or greater than 95 percent and the owner or operator certifies that the average VO concentration at the point of waste origination for each of the individual waste streams entering the process is less than 10,000 ppmw. The organic reduction efficiency for the process and the average VO concentration of the hazardous waste at the point of waste origination shall be determined using the procedures specified in part (d)2 and (d)1 of this paragraph, respectively.

(VII) A hazardous waste incinerator for which the owner or operator has either:

I. Been issued a final permit under Rule 0400-12-01-.07 which implements the requirements of paragraph (15) of this rule; or

II. Has designed and operates the incinerator in accordance with the interim status requirements of Rule 0400-12-01-.05(15).

(VIII) A boiler or industrial furnace for which the owner or operator has either:

I. Been issued a final permit under Rule 0400-12-01-.07 which implements the requirements of Rule 0400-12-01-.09(8), or

II. Has designed and operates the boiler or industrial furnace in accordance with the interim status requirements of Rule 0400-12-01-.09(8).

(IX) For the purpose of determining the performance of an organic destruction or removal process in accordance with the conditions in each of item 3(ii)(I) through 3(ii)(VI) of this subparagraph, the owner or operator shall account for VO concentrations determined to be below the limit of detection of the analytical method by using the following VO concentration:

I. If Method 25D in 40 CFR part 60, appendix A is used for the analysis, one-half the blank value determined in the method at section 4.4 of Method 25D in 40 CFR part 60, appendix A, or a value of 25 ppmw, whichever is less.

II. If any other analytical method is used, one-half the sum of the limits of detection established for each organic constituent in the waste that has a Henry's law constant value of at least 0.1 mole-fraction-in-the-gas-phase/mole-fraction-in-the-liquid-phase (0.1 Y/X) (which can also be expressed as 1.8×10^{-6} atmospheres/gram-mole/m^3) at 25 degrees Celsius.

(iii) A tank or surface impoundment used for biological treatment of hazardous waste in accordance with the requirements of item 3(ii)(IV) of this subparagraph.

(iv) A tank, surface impoundment, or container for which all hazardous waste placed in the unit either:

(I) Meets the numerical concentration limits for organic hazardous constituents, applicable to the hazardous waste, as specified in Rule

0400-12-01-.10--Land Disposal Restrictions under Table "Treatment Standards for Hazardous Waste" in Rule 0400-12-01-.10(3)(a); or

(II) The organic hazardous constituents in the waste have been treated by the treatment technology established by the Department for the waste in Rule 0400-12-01-.10(3)(c)1, or have been removed or destroyed by an equivalent method of treatment approved by the Department pursuant to Rule 0400-12-01-.10(3)(c)2.

(v) A tank used for bulk feed of hazardous waste to a waste incinerator and all of the following conditions are met:

(I) The tank is located inside an enclosure vented to a control device that is designed and operated in accordance with all applicable requirements specified under 40 CFR part 61, subpart FF--National Emission Standards for Benzene Waste Operations for a facility at which the total annual benzene quantity from the facility waste is equal to or greater than 10 megagrams per year;

(II) The enclosure and control device serving the tank were installed and began operation prior to November 25, 1996 and

(III) The enclosure is designed and operated in accordance with the criteria for a permanent total enclosure as specified in "Procedure T--Criteria for and Verification of a Permanent or Temporary Total Enclosure" under 40 CFR 52.741, appendix B. The enclosure may have permanent or temporary openings to allow worker access; passage of material into or out of the enclosure by conveyor, vehicles, or other mechanical or electrical equipment; or to direct air flow into the enclosure. The owner or operator shall perform the verification procedure for the enclosure as specified in Section 5.0 to "Procedure T--Criteria for and Verification of a Permanent or Temporary Total Enclosure" annually.

4. The Commissioner may at any time perform or request that the owner or operator perform a waste determination for a hazardous waste managed in a tank, surface impoundment, or container exempted from using air emission controls under the provisions of this subparagraph as follows:

(i) The waste determination for average VO concentration of a hazardous waste at the point of waste origination shall be performed using direct measurement in accordance with the applicable requirements of part (d)1 of this paragraph. The waste determination for a hazardous waste at the point of waste treatment shall be performed in accordance with the applicable requirements of part (d)2 of this paragraph.

(ii) In performing a waste determination pursuant to subpart 4(i) of this subparagraph, the sample preparation and analysis shall be conducted as follows:

(I) In accordance with the method used by the owner or operator to perform the waste analysis, except in the case specified in item 4(ii)(II) of this subparagraph.

(II) If the Commissioner determines that the method used by the owner or operator was not appropriate for the hazardous waste managed in the tank, surface impoundment, or container, then the Commissioner may choose an appropriate method.

(iii) In a case when the owner or operator is requested to perform the waste determination, the Commissioner may elect to have an authorized representative observe the collection of the hazardous waste samples used for the analysis.

(iv) In a case when the results of the waste determination performed or requested by the Commissioner do not agree with the results of a waste determination performed by the owner or operator using knowledge of the waste, then the results of the waste determination performed in accordance with the requirements of subpart 4(i) of this subparagraph shall be used to establish compliance with the requirements of this paragraph.

(v) In a case when the owner or operator has used an averaging period greater than 1 hour for determining the average VO concentration of a hazardous waste at the point of waste origination, the Commissioner may elect to establish compliance with this paragraph by performing or requesting that the owner or operator perform a waste determination using direct measurement based on waste samples collected within a 1-hour period as follows:

(I) The average VO concentration of the hazardous waste at the point of waste origination shall be determined by direct measurement in accordance with the requirements of part (d)1 of this paragraph.

(II) Results of the waste determination performed or requested by the Commissioner showing that the average VO concentration of the hazardous waste at the point of waste origination is equal to or greater than 500 ppmw shall constitute noncompliance with this paragraph except in a case as provided for in item 4(v)(III) of this subparagraph.

(III) For the case when the average VO concentration of the hazardous waste at the point of waste origination previously has been determined by the owner or operator using an averaging period greater than 1 hour to be less than 500 ppmw but because of normal operating process variations the VO concentration of the hazardous waste determined by direct measurement for any given 1-hour period may be equal to or greater than 500 ppmw, information that was used by the owner or operator to determine the average VO concentration of the hazardous waste (e.g., test results, measurements, calculations, and other documentation) and recorded in the facility records in accordance with the requirements of part (d)1 and subparagraph (j) of this paragraph shall be considered by the Commissioner together with the results of the waste determination performed or requested by the Commissioner in establishing compliance with this paragraph.

(d) Waste Determination Procedures [40 CFR 264.1083]

1. Waste determination procedure to determine average volatile organic (VO) concentration of a hazardous waste at the point of waste origination.

(i) An owner or operator shall determine the average VO concentration at the point of waste origination for each hazardous waste placed in a waste management unit exempted under the provisions of subpart (c)3(i) of this paragraph from using air emission controls in accordance with standards specified in subparagraph (e) through (h) of this paragraph, as applicable to the waste management unit.

(I) An initial determination of the average VO concentration of the waste stream shall be made before the first time any portion of the material in the hazardous waste stream is placed in a waste management unit exempted under the provisions of subpart (c)3(i) of this paragraph from using air emission controls, and thereafter an initial determination of the average VO concentration of the waste stream shall be made for each averaging period that a hazardous waste is managed in the unit; and

(II) Perform a new waste determination whenever changes to the source generating the waste stream are reasonably likely to cause the average

VO concentration of the hazardous waste to increase to a level that is equal to or greater than the applicable VO concentration limits specified in subparagraph (c) of this paragraph.

(ii) For a waste determination that is required by subpart 1(i) of this subparagraph, the average VO concentration of a hazardous waste at the point of waste origination shall be determined in accordance with the procedures specified in Rule 0400-12-01-.05(29)(e)1(ii) through 1(iv).

2. Waste determination procedures for treated hazardous waste.

(i) An owner or operator shall perform the applicable waste determinations for each treated hazardous waste placed in waste management units exempted under the provisions of items (c)3(ii)(I) through (VI) of this paragraph from using air emission controls in accordance with standards specified in subparagraphs (e) through (h) of this paragraph, as applicable to the waste management unit.

(I) An initial determination of the average VO concentration of the waste stream shall be made before the first time any portion of the material in the treated waste stream is placed in the exempt waste management unit, and thereafter update the information used for the waste determination at least once every 12 months following the date of the initial waste determination; and

(II) Perform a new waste determination whenever changes to the process generating or treating the waste stream are reasonably likely to cause the average VO concentration of the hazardous waste to increase to a level such that the applicable treatment conditions specified in subpart (c)3(ii) of this paragraph are not achieved.

(ii) The waste determination for a treated hazardous waste shall be performed in accordance with the procedures specified in Rule 0400-12-01-.05(29)(e)2(ii) through 2(ix), as applicable to the treated hazardous waste.

3. Procedure to determine the maximum organic vapor pressure of a hazardous waste in a tank.

(i) An owner or operator shall determine the maximum organic vapor pressure for each hazardous waste placed in a tank using Tank Level 1 controls in accordance with standards specified in part (e)3 of this paragraph.

(ii) The maximum organic vapor pressure of the hazardous waste may be determined in accordance with the procedures specified in Rule 0400-12-01-.05(29)(e)3(ii) through 3(iv).

4. The procedure for determining no detectable organic emissions for the purpose of complying with this paragraph shall be conducted in accordance with the procedures specified in Rule 0400-12-01-.05(29)(e)4.

(e) Standards: Tanks [40 CFR 264.1084]

1. The provisions of this subparagraph apply to the control of air pollutant emissions from tanks for which part (c)2 of this paragraph references the use of this subparagraph for such air emission control.

2. The owner or operator shall control air pollutant emissions from each tank subject to this subparagraph in accordance with the following requirements as applicable:

(i) For a tank that manages hazardous waste that meets all of the conditions specified in item 2(i)(I) through 2(i)(III) of this subparagraph, the owner or operator shall control air pollutant emissions from the tank in accordance with the

Tank Level 1 controls specified in part 3 of this subparagraph or the Tank Level 2 controls specified in part 4 of this subparagraph.

(I) The hazardous waste in the tank has a maximum organic vapor pressure which is less than the maximum organic vapor pressure limit for the tank's design capacity category as follows:

I. For a tank design capacity equal to or greater than 151 m^3 (40,000 gal.), the maximum organic vapor pressure limit for the tank is 5.2 kPa (0.75 psi).

II. For a tank design capacity equal to or greater than 75 m^3 (20,000 gal.) but less than 151 m^3 (40,000 gal.), the maximum organic vapor pressure limit for the tank is 27.6 kPa (4 psi).

III. For a tank design capacity less than 75 m^3 (20,000 gal.), the maximum organic vapor pressure limit for the tank is 76.6 kPa (11.1 psi).

(II) The hazardous waste in the tank is not heated by the owner or operator to a temperature that is greater than the temperature at which the maximum organic vapor pressure of the hazardous waste is determined for the purpose of complying with item 2(i)(I) of this subparagraph.

(III) The hazardous waste in the tank is not treated by the owner or operator using a waste stabilization process, as defined in Rule 0400-12-01-.05(29)(b).

(ii) For a tank that manages hazardous waste that does not meet all of the conditions specified in items 2(i)(I) through 2(i)(III) of this subparagraph, the owner or operator shall control air pollutant emissions from the tank by using Tank Level 2 controls in accordance with the requirements of part 4 of this subparagraph. Examples of tanks required to use Tank Level 2 controls include: A tank used for a waste stabilization process; and a tank for which the hazardous waste in the tank has a maximum organic vapor pressure that is equal to or greater than the maximum organic vapor pressure limit for the tank's design capacity category as specified in item 2(i)(I) of this subparagraph.

3. Owners and operators controlling air pollutant emissions from a tank using Tank Level 1 controls shall meet the requirements specified in subparts 3(i) through 3(iv) of this subparagraph:

(i) The owner or operator shall determine the maximum organic vapor pressure for a hazardous waste to be managed in the tank using Tank Level 1 controls before the first time the hazardous waste is placed in the tank. The maximum organic vapor pressure shall be determined using the procedures specified in part (d)3 of this paragraph. Thereafter, the owner or operator shall perform a new determination whenever changes to the hazardous waste managed in the tank could potentially cause the maximum organic vapor pressure to increase to a level that is equal to or greater than the maximum organic vapor pressure limit for the tank design capacity category specified in item 2(i)(I) of this subparagraph, as applicable to the tank.

(ii) The tank shall be equipped with a fixed roof designed to meet the following specifications:

(I) The fixed roof and its closure devices shall be designed to form a continuous barrier over the entire surface area of the hazardous waste in the tank. The fixed roof may be a separate cover installed on the tank (e.g., a removable cover mounted on an open-top tank) or may be an

integral part of the tank structural design (e.g., a horizontal cylindrical tank equipped with a hatch).

(II) The fixed roof shall be installed in a manner such that there are no visible cracks, holes, gaps, or other open spaces between roof section joints or between the interface of the roof edge and the tank wall.

(III) Each opening in the fixed roof, and any manifold system associated with the fixed roof, shall be either:

I. Equipped with a closure device designed to operate such that when the closure device is secured in the closed position there are no visible cracks, holes, gaps, or other open spaces in the closure device or between the perimeter of the opening and the closure device; or

II. Connected by a closed-vent system that is vented to a control device. The control device shall remove or destroy organics in the vent stream, and shall be operating whenever hazardous waste is managed in the tank, except as provided for in sections 3(ii)(III)IIA and B of this subparagraph.

A. During periods when it is necessary to provide access to the tank for performing the activities of section 3(ii)(III)IIB of this subparagraph, venting of the vapor headspace underneath the fixed roof to the control device is not required, opening of closure devices is allowed, and removal of the fixed roof is allowed. Following completion of the activity, the owner or operator shall promptly secure the closure device in the closed position or reinstall the cover, as applicable, and resume operation of the control device.

B. During periods of routine inspection, maintenance, or other activities needed for normal operations, and for removal of accumulated sludge or other residues from the bottom of the tank.

(IV) The fixed roof and its closure devices shall be made of suitable materials that will minimize exposure of the hazardous waste to the atmosphere, to the extent practical, and will maintain the integrity of the fixed roof and closure devices throughout their intended service life. Factors to be considered when selecting the materials for and designing the fixed roof and closure devices shall include: Organic vapor permeability, the effects of any contact with the hazardous waste or its vapors managed in the tank; the effects of outdoor exposure to wind, moisture, and sunlight; and the operating practices used for the tank on which the fixed roof is installed.

(iii) Whenever a hazardous waste is in the tank, the fixed roof shall be installed with each closure device secured in the closed position except as follows:

(I) Opening of closure devices or removal of the fixed roof is allowed at the following times:

I. To provide access to the tank for performing routine inspection, maintenance, or other activities needed for normal operations. Examples of such activities include those times when a worker needs to open a port to sample the liquid in the tank, or when a worker needs to open a hatch to maintain or repair equipment.

Following completion of the activity, the owner or operator shall promptly secure the closure device in the closed position or reinstall the cover, as applicable, to the tank.

II. To remove accumulated sludge or other residues from the bottom of tank.

(II) Opening of a spring-loaded pressure-vacuum relief valve, conservation vent, or similar type of pressure relief device which vents to the atmosphere is allowed during normal operations for the purpose of maintaining the tank internal pressure in accordance with the tank design specifications. The device shall be designed to operate with no detectable organic emissions when the device is secured in the closed position. The settings at which the device opens shall be established such that the device remains in the closed position whenever the tank internal pressure is within the internal pressure operating range determined by the owner or operator based on the tank manufacturer recommendations, applicable regulations, fire protection and prevention codes, standard engineering codes and practices, or other requirements for the safe handling of flammable, ignitable, explosive, reactive, or hazardous materials. Examples of normal operating conditions that may require these devices to open are during those times when the tank internal pressure exceeds the internal pressure operating range for the tank as a result of loading operations or diurnal ambient temperature fluctuations.

(III) Opening of a safety device, as defined in Rule 0400-12-01-.05(29)(b), is allowed at any time conditions require doing so to avoid an unsafe condition.

(iv) The owner or operator shall inspect the air emission control equipment in accordance with the following requirements.

(I) The fixed roof and its closure devices shall be visually inspected by the owner or operator to check for defects that could result in air pollutant emissions. Defects include, but are not limited to, visible cracks, holes, or gaps in the roof sections or between the roof and the tank wall; broken, cracked, or otherwise damaged seals or gaskets on closure devices; and broken or missing hatches, access covers, caps, or other closure devices.

(II) The owner or operator shall perform an initial inspection of the fixed roof and its closure devices on or before the date that the tank becomes subject to this subparagraph. Thereafter, the owner or operator shall perform the inspections at least once every year except under the special conditions provided for in part 12 of this subparagraph.

(III) In the event that a defect is detected, the owner or operator shall repair the defect in accordance with the requirements of part 11 of this subparagraph.

(IV) The owner or operator shall maintain a record of the inspection in accordance with the requirements specified in part (j)2 of this paragraph.

4. Owners and operators controlling air pollutant emissions from a tank using Tank Level 2 controls shall use one of the following tanks:

(i) A fixed-roof tank equipped with an internal floating roof in accordance with the requirements specified in part 5 of this subparagraph;

(ii) A tank equipped with an external floating roof in accordance with the requirements specified in part 6 of this subparagraph;

(iii) A tank vented through a closed-vent system to a control device in accordance with the requirements specified in part 7 of this subparagraph;

(iv) A pressure tank designed and operated in accordance with the requirements specified in part 8 of this subparagraph; or

(v) A tank located inside an enclosure that is vented through a closed-vent system to an enclosed combustion control device in accordance with the requirements specified in part 9 of this subparagraph.

5. The owner or operator who controls air pollutant emissions from a tank using a fixed roof with an internal floating roof shall meet the requirements specified in subparts 5(i) through 5(iii) of this subparagraph.

(i) The tank shall be equipped with a fixed roof and an internal floating roof in accordance with the following requirements:

(I) The internal floating roof shall be designed to float on the liquid surface except when the floating roof must be supported by the leg supports.

(II) The internal floating roof shall be equipped with a continuous seal between the wall of the tank and the floating roof edge that meets either of the following requirements:

I. A single continuous seal that is either a liquid-mounted seal or a metallic shoe seal, as defined in Rule 0400-12-01-.05(29)(b); or

II. Two continuous seals mounted one above the other. The lower seal may be a vapor-mounted seal.

(III) The internal floating roof shall meet the following specifications:

I. Each opening in a noncontact internal floating roof except for automatic bleeder vents (vacuum breaker vents) and the rim space vents is to provide a projection below the liquid surface.

II. Each opening in the internal floating roof shall be equipped with a gasketed cover or a gasketed lid except for leg sleeves, automatic bleeder vents, rim space vents, column wells, ladder wells, sample wells, and stub drains.

III. Each penetration of the internal floating roof for the purpose of sampling shall have a slit fabric cover that covers at least 90 percent of the opening.

IV. Each automatic bleeder vent and rim space vent shall be gasketed.

V. Each penetration of the internal floating roof that allows for passage of a ladder shall have a gasketed sliding cover.

VI. Each penetration of the internal floating roof that allows for passage of a column supporting the fixed roof shall have a flexible fabric sleeve seal or a gasketed sliding cover.

(ii) The owner or operator shall operate the tank in accordance with the following requirements:

(I) When the floating roof is resting on the leg supports, the process of filling, emptying, or refilling shall be continuous and shall be completed as soon as practical.

(II) Automatic bleeder vents are to be set closed at all times when the roof is floating, except when the roof is being floated off or is being landed on the leg supports.

(III) Prior to filling the tank, each cover, access hatch, gauge float well or lid on any opening in the internal floating roof shall be bolted or fastened closed (i.e., no visible gaps). Rim space vents are to be set to open only when the internal floating roof is not floating or when the pressure beneath the rim exceeds the manufacturer's recommended setting.

(iii) The owner or operator shall inspect the internal floating roof in accordance with the procedures specified as follows:

(I) The floating roof and its closure devices shall be visually inspected by the owner or operator to check for defects that could result in air pollutant emissions. Defects include, but are not limited to: The internal floating roof is not floating on the surface of the liquid inside the tank; liquid has accumulated on top of the internal floating roof; any portion of the roof seals have detached from the roof rim; holes, tears, or other openings are visible in the seal fabric; the gaskets no longer close off the hazardous waste surface from the atmosphere; or the slotted membrane has more than 10 percent open area.

(II) The owner or operator shall inspect the internal floating roof components as follows except as provided in item 5(iii)(III) of this subparagraph:

I. Visually inspect the internal floating roof components through openings on the fixed-roof (e.g., manholes and roof hatches) at least once every 12 months after initial fill, and

II. Visually inspect the internal floating roof, primary seal, secondary seal (if one is in service), gaskets, slotted membranes, and sleeve seals (if any) each time the tank is emptied and degassed and at least every 10 years.

(III) As an alternative to performing the inspections specified in item 5(iii)(II) of this subparagraph for an internal floating roof equipped with two continuous seals mounted one above the other, the owner or operator may visually inspect the internal floating roof, primary and secondary seals, gaskets, slotted membranes, and sleeve seals (if any) each time the tank is emptied and degassed and at least every 5 years.

(IV) Prior to each inspection required by item 5(iii)(II) or 5(iii)(III) of this subparagraph, the owner or operator shall notify the Commissioner in advance of each inspection to provide the Commissioner with the opportunity to have an observer present during the inspection. The owner or operator shall notify the Commissioner of the date and location of the inspection as follows:

I. Prior to each visual inspection of an internal floating roof in a tank that has been emptied and degassed, written notification shall be prepared and sent by the owner or operator so that it is received by the Commissioner at least 30 calendar days before refilling the tank except when an inspection is not planned as provided for in subitem 5(iii)(IV)II of this subparagraph.

II. When a visual inspection is not planned and the owner or operator could not have known about the inspection 30 calendar days before refilling the tank, the owner or operator shall notify the Commissioner as soon as possible, but no later than 7 calendar days before refilling of the tank. This notification may be made by telephone and immediately followed by a written explanation for why the inspection is unplanned. Alternatively, written notification, including the explanation for the unplanned inspection, may be sent so that it is received by the Commissioner at least 7 calendar days before refilling the tank.

(V) In the event that a defect is detected, the owner or operator shall repair the defect in accordance with the requirements of part 11 of this subparagraph.

(VI) The owner or operator shall maintain a record of the inspection in accordance with the requirements specified in part (j)2 of this paragraph.

(iv) Safety devices, as defined in Rule 0400-12-01-.05(29)(b), may be installed and operated as necessary on any tank complying with the requirements of part 5 of this subparagraph.

6. The owner or operator who controls air pollutant emissions from a tank using an external floating roof shall meet the requirements specified in subparts 6(i) through 6(iii) of this subparagraph.

(i) The owner or operator shall design the external floating roof in accordance with the following requirements:

(I) The external floating roof shall be designed to float on the liquid surface except when the floating roof must be supported by the leg supports.

(II) The floating roof shall be equipped with two continuous seals, one above the other, between the wall of the tank and the roof edge. The lower seal is referred to as the primary seal, and the upper seal is referred to as the secondary seal.

I. The primary seal shall be a liquid-mounted seal or a metallic shoe seal, as defined in Rule 0400-12-01-.05(29)(b). The total area of the gaps between the tank wall and the primary seal shall not exceed 212 square centimeters (cm^2) per meter of tank diameter, and the width of any portion of these gaps shall not exceed 3.8 centimeters (cm). If a metallic shoe seal is used for the primary seal, the metallic shoe seal shall be designed so that one end extends into the liquid in the tank and the other end extends a vertical distance of at least 61 centimeters above the liquid surface.

II. The secondary seal shall be mounted above the primary seal and cover the annular space between the floating roof and the wall of the tank. The total area of the gaps between the tank wall and the secondary seal shall not exceed 21.2 square centimeters (cm^2) per meter of tank diameter, and the width of any portion of these gaps shall not exceed 1.3 centimeters (cm).

(III) The external floating roof shall meet the following specifications:

I. Except for automatic bleeder vents (vacuum breaker vents) and rim space vents, each opening in a noncontact external floating roof shall provide a projection below the liquid surface.

II. Except for automatic bleeder vents, rim space vents, roof drains, and leg sleeves, each opening in the roof shall be equipped with a gasketed cover, seal, or lid.

III. Each access hatch and each gauge float well shall be equipped with a cover designed to be bolted or fastened when the cover is secured in the closed position.

IV. Each automatic bleeder vent and each rim space vent shall be equipped with a gasket.

V. Each roof drain that empties into the liquid managed in the tank shall be equipped with a slotted membrane fabric cover that covers at least 90 percent of the area of the opening.

VI. Each unslotted and slotted guide pole well shall be equipped with a gasketed sliding cover or a flexible fabric sleeve seal.

VII. Each unslotted guide pole shall be equipped with a gasketed cap on the end of the pole.

VIII. Each slotted guide pole shall be equipped with a gasketed float or other device which closes off the liquid surface from the atmosphere.

IX. Each gauge hatch and each sample well shall be equipped with a gasketed cover.

(ii) The owner or operator shall operate the tank in accordance with the following requirements:

(I) When the floating roof is resting on the leg supports, the process of filling, emptying, or refilling shall be continuous and shall be completed as soon as practical.

(II) Except for automatic bleeder vents, rim space vents, roof drains, and leg sleeves, each opening in the roof shall be secured and maintained in a closed position at all times except when the closure device must be open for access.

(III) Covers on each access hatch and each gauge float well shall be bolted or fastened when secured in the closed position.

(IV) Automatic bleeder vents shall be set closed at all times when the roof is floating, except when the roof is being floated off or is being landed on the leg supports.

(V) Rim space vents shall be set to open only at those times that the roof is being floated off the roof leg supports or when the pressure beneath the rim seal exceeds the manufacturer's recommended setting.

(VI) The cap on the end of each unslotted guide pole shall be secured in the closed position at all times except when measuring the level or collecting samples of the liquid in the tank.

(VII) The cover on each gauge hatch or sample well shall be secured in the closed position at all times except when the hatch or well must be opened for access.

(VIII) Both the primary seal and the secondary seal shall completely cover the annular space between the external floating roof and the wall of the tank in a continuous fashion except during inspections.

(iii) The owner or operator shall inspect the external floating roof in accordance with the procedures specified as follows:

(I) The owner or operator shall measure the external floating roof seal gaps in accordance with the following requirements:

I. The owner or operator shall perform measurements of gaps between the tank wall and the primary seal within 60 calendar days after initial operation of the tank following installation of the floating roof and, thereafter, at least once every 5 years.

II. The owner or operator shall perform measurements of gaps between the tank wall and the secondary seal within 60 calendar days after initial operation of the tank following installation of the floating roof and, thereafter, at least once every year.

III. If a tank ceases to hold hazardous waste for a period of 1 year or more, subsequent introduction of hazardous waste into the tank shall be considered an initial operation for the purposes of subitems 6(iii)(I)I and 6(iii)(I)II of this subparagraph.

IV. The owner or operator shall determine the total surface area of gaps in the primary seal and in the secondary seal individually using the following procedure:

A. The seal gap measurements shall be performed at one or more floating roof levels when the roof is floating off the roof supports.

B. Seal gaps, if any, shall be measured around the entire perimeter of the floating roof in each place where a 0.32-centimeter (cm) diameter uniform probe passes freely (without forcing or binding against the seal) between the seal and the wall of the tank and measure the circumferential distance of each such location.

C. For a seal gap measured under subpart 6(iii) of this subparagraph, the gap surface area shall be determined by using probes of various widths to measure accurately the actual distance from the tank wall to the seal and multiplying each such width by its respective circumferential distance.

D. The total gap area shall be calculated by adding the gap surface areas determined for each identified gap location for the primary seal and the secondary seal individually, and then dividing the sum for each seal type by the nominal diameter of the tank. These total gap areas for the primary seal and secondary seal are then compared to the respective standards for the seal type as specified in item 6(i)(II) of this subparagraph.

V. In the event that the seal gap measurements do not conform to the specifications in item 6(i)(II) of this subparagraph, the owner or operator shall repair the defect in accordance with the requirements of part 11 of this subparagraph.

VI. The owner or operator shall maintain a record of the inspection in accordance with the requirements specified in part (j)2 of this paragraph.

(II) The owner or operator shall visually inspect the external floating roof in accordance with the following requirements:

I. The floating roof and its closure devices shall be visually inspected by the owner or operator to check for defects that could result in air pollutant emissions. Defects include, but are not limited to: Holes, tears, or other openings in the rim seal or seal fabric of the floating roof; a rim seal detached from the floating roof; all or a portion of the floating roof deck being submerged below the surface of the liquid in the tank; broken, cracked, or otherwise damaged seals or gaskets on closure devices; and broken or missing hatches, access covers, caps, or other closure devices.

II. The owner or operator shall perform an initial inspection of the external floating roof and its closure devices on or before the date that the tank becomes subject to this paragraph. Thereafter, the owner or operator shall perform the inspections at least once every year except for the special conditions provided for in part 12 of this subparagraph.

III. In the event that a defect is detected, the owner or operator shall repair the defect in accordance with the requirements of part 11 of this subparagraph.

IV. The owner or operator shall maintain a record of the inspection in accordance with the requirements specified in part (j)2 of this paragraph.

(III) Prior to each inspection required by item 6(iii)(I) or 6(iii)(II) of this subparagraph, the owner or operator shall notify the Commissioner in advance of each inspection to provide the Commissioner with the opportunity to have an observer present during the inspection. The owner or operator shall notify the Commissioner of the date and location of the inspection as follows:

I. Prior to each inspection to measure external floating roof seal gaps as required under item 6(iii)(I) of this subparagraph, written notification shall be prepared and sent by the owner or operator so that it is received by the Commissioner at least 30 calendar days before the date the measurements are scheduled to be performed.

II. Prior to each visual inspection of an external floating roof in a tank that has been emptied and degassed, written notification shall be prepared and sent by the owner or operator so that it is received by the Commissioner at least 30 calendar days before refilling the tank except when an inspection is not planned as provided for in subitem 6(iii)(III)III of this subparagraph.

III. When a visual inspection is not planned and the owner or operator could not have known about the inspection 30 calendar days before refilling the tank, the owner or operator shall notify the Commissioner as soon as possible, but no later than 7 calendar days before refilling of the tank. This notification may be made by telephone and immediately followed by a written explanation for why the inspection is unplanned. Alternatively,

written notification, including the explanation for the unplanned inspection, may be sent so that it is received by the Commissioner at least 7 calendar days before refilling the tank.

(iv) Safety devices, as defined in Rule 0400-12-01-.05(29)(b), may be installed and operated as necessary on any tank complying with the requirements of part 6 of this subparagraph.

7. The owner or operator who controls air pollutant emissions from a tank by venting the tank to a control device shall meet the requirements specified in subparts 7(i) through 7(iii) of this subparagraph.

(i) The tank shall be covered by a fixed roof and vented directly through a closed-vent system to a control device in accordance with the following requirements:

(I) The fixed roof and its closure devices shall be designed to form a continuous barrier over the entire surface area of the liquid in the tank.

(II) Each opening in the fixed roof not vented to the control device shall be equipped with a closure device. If the pressure in the vapor headspace underneath the fixed roof is less than atmospheric pressure when the control device is operating, the closure devices shall be designed to operate such that when the closure device is secured in the closed position there are no visible cracks, holes, gaps, or other open spaces in the closure device or between the perimeter of the cover opening and the closure device. If the pressure in the vapor headspace underneath the fixed roof is equal to or greater than atmospheric pressure when the control device is operating, the closure device shall be designed to operate with no detectable organic emissions.

(III) The fixed roof and its closure devices shall be made of suitable materials that will minimize exposure of the hazardous waste to the atmosphere, to the extent practical, and will maintain the integrity of the fixed roof and closure devices throughout their intended service life. Factors to be considered when selecting the materials for and designing the fixed roof and closure devices shall include: Organic vapor permeability, the effects of any contact with the liquid and its vapor managed in the tank; the effects of outdoor exposure to wind, moisture, and sunlight; and the operating practices used for the tank on which the fixed roof is installed.

(IV) The closed-vent system and control device shall be designed and operated in accordance with the requirements of subparagraph (h) of this paragraph.

(ii) Whenever a hazardous waste is in the tank, the fixed roof shall be installed with each closure device secured in the closed position and the vapor headspace underneath the fixed roof vented to the control device except as follows:

(I) Venting to the control device is not required, and opening of closure devices or removal of the fixed roof is allowed at the following times:

I. To provide access to the tank for performing routine inspection, maintenance, or other activities needed for normal operations. Examples of such activities include those times when a worker needs to open a port to sample liquid in the tank, or when a worker needs to open a hatch to maintain or repair equipment. Following completion of the activity, the owner or operator shall promptly secure the closure device in the closed position or reinstall the cover, as applicable, to the tank.

II. To remove accumulated sludge or other residues from the bottom of a tank.

(II) Opening of a safety device, as defined in Rule 0400-12-01-.05(29)(b), is allowed at any time conditions require doing so to avoid an unsafe condition.

(iii) The owner or operator shall inspect and monitor the air emission control equipment in accordance with the following procedures:

(I) The fixed roof and its closure devices shall be visually inspected by the owner or operator to check for defects that could result in air pollutant emissions. Defects include, but are not limited to, visible cracks, holes, or gaps in the roof sections or between the roof and the tank wall; broken, cracked, or otherwise damaged seals or gaskets on closure devices; and broken or missing hatches, access covers, caps, or other closure devices.

(II) The closed-vent system and control device shall be inspected and monitored by the owner or operator in accordance with the procedures specified in subparagraph (h) of this paragraph.

(III) The owner or operator shall perform an initial inspection of the air emission control equipment on or before the date that the tank becomes subject to this subparagraph. Thereafter, the owner or operator shall perform the inspections at least once every year except for the special conditions provided for in part 12 of this subparagraph.

(IV) In the event that a defect is detected, the owner or operator shall repair the defect in accordance with the requirements of part 11 of this subparagraph.

(V) The owner or operator shall maintain a record of the inspection in accordance with the requirements specified in part (j)2 of this paragraph.

8. The owner or operator who controls air pollutant emissions by using a pressure tank shall meet the following requirements.

(i) The tank shall be designed not to vent to the atmosphere as a result of compression of the vapor headspace in the tank during filling of the tank to its design capacity.

(ii) All tank openings shall be equipped with closure devices designed to operate with no detectable organic emissions as determined using the procedure specified in part (d)4 of this paragraph.

(iii) Whenever a hazardous waste is in the tank, the tank shall be operated as a closed system that does not vent to the atmosphere except under either or the following conditions as specified in item (I) or (II) of this subpart:

(I) At those times when opening of a safety device, as defined in Rule 0400-12-01-.05(29)(b), is required to avoid an unsafe condition.

(II) At those times when purging of inerts from the tank is required and the purge stream is routed to a closed-vent system and control device designed and operated in accordance with the requirements of subparagraph (32)(h) of this rule.

9. The owner or operator who controls air pollutant emissions by using an enclosure vented through a closed-vent system to an enclosed combustion control device shall meet the requirements specified in subparts 9(i) through 9(iv) of this subparagraph.

(i) The tank shall be located inside an enclosure. The enclosure shall be designed and operated in accordance with the criteria for a permanent total enclosure as specified in "Procedure T--Criteria for and Verification of a Permanent or Temporary Total Enclosure" under 40 CFR 52.741, appendix B. The enclosure may have permanent or temporary openings to allow worker access; passage of material into or out of the enclosure by conveyor, vehicles, or other mechanical means; entry of permanent mechanical or electrical equipment; or direct airflow into the enclosure. The owner or operator shall perform the verification procedure for the enclosure as specified in Section 5.0 to "Procedure T--Criteria for and Verification of a Permanent or Temporary Total Enclosure" initially when the enclosure is first installed and, thereafter, annually.

(ii) The enclosure shall be vented through a closed-vent system to an enclosed combustion control device that is designed and operated in accordance with the standards for either a vapor incinerator, boiler, or process heater specified in subparagraph (h) of this paragraph.

(iii) Safety devices, as defined in Rule 0400-12-01-.05(29)(b), may be installed and operated as necessary on any enclosure, closed-vent system, or control device used to comply with the requirements of subparts 9(i) and 9(ii) of this subparagraph.

(iv) The owner or operator shall inspect and monitor the closed-vent system and control device as specified in subparagraph (h) of this paragraph.

10. The owner or operator shall transfer hazardous waste to a tank subject to this subparagraph in accordance with the following requirements:

(i) Transfer of hazardous waste, except as provided in subpart 10(ii) of this subparagraph, to the tank from another tank subject to this subparagraph or from a surface impoundment subject to subparagraph (f) of this paragraph shall be conducted using continuous hard-piping or another closed system that does not allow exposure of the hazardous waste to the atmosphere. For the purpose of complying with this provision, an individual drain system is considered to be a closed system when it meets the requirements of 40 CFR part 63, subpart RR--National Emission Standards for Individual Drain Systems.

(ii) The requirements of subpart 9(i) of this subparagraph do not apply when transferring a hazardous waste to the tank under any of the following conditions:

(I) The hazardous waste meets the average VO concentration conditions specified in subpart (c)3(i) of this paragraph at the point of waste origination.

(II) The hazardous waste has been treated by an organic destruction or removal process to meet the requirements in subpart (c)3(ii) of this paragraph.

(III) The hazardous waste meets the requirements of subpart (c)3(iv) of this paragraph.

11. The owner or operator shall repair each defect detected during an inspection performed in accordance with the requirements of subpart 3(iv), 5(iii), 6(iii), or 7(iii) of this subparagraph as follows:

(i) The owner or operator shall make first efforts at repair of the defect no later than 5 calendar days after detection, and repair shall be completed as soon as possible but no later than 45 calendar days after detection except as provided in subpart 11(ii) of this subparagraph.

(ii) Repair of a defect may be delayed beyond 45 calendar days if the owner or operator determines that repair of the defect requires emptying or temporary removal from service of the tank and no alternative tank capacity is available at the site to accept the hazardous waste normally managed in the tank. In this case, the owner or operator shall repair the defect the next time the process or unit that is generating the hazardous waste managed in the tank stops operation. Repair of the defect shall be completed before the process or unit resumes operation.

12. Following the initial inspection and monitoring of the cover as required by the applicable provisions of this subpart, subsequent inspection and monitoring may be performed at intervals longer than 1 year under the following special conditions:

(i) In the case when inspecting or monitoring the cover would expose a worker to dangerous, hazardous, or other unsafe conditions, then the owner or operator may designate a cover as an "unsafe to inspect and monitor cover" and comply with all of the following requirements:

(I) Prepare a written explanation for the cover stating the reasons why the cover is unsafe to visually inspect or to monitor, if required.

(II) Develop and implement a written plan and schedule to inspect and monitor the cover, using the procedures specified in the applicable subparagraph of this paragraph, as frequently as practicable during those times when a worker can safely access the cover.

(ii) In the case when a tank is buried partially or entirely underground, an owner or operator is required to inspect and monitor, as required by the applicable provisions of this subparagraph, only those portions of the tank cover and those connections to the tank (e.g., fill ports, access hatches, gauge wells, etc.) that are located on or above the ground surface.

(f) Standards: Surface Impoundments [40 CFR 264.1085]

1. The provisions of this subparagraph apply to the control of air pollutant emissions from surface impoundments for which part (c)2 of this paragraph references the use of this subparagraph for such air emission control.

2. The owner or operator shall control air pollutant emissions from the surface impoundment by installing and operating either of the following:

(i) A floating membrane cover in accordance with the provisions specified in part 3 of this subparagraph; or

(ii) A cover that is vented through a closed-vent system to a control device in accordance with the provisions specified in part 4 of this subparagraph.

3. The owner or operator who controls air pollutant emissions from a surface impoundment using a floating membrane cover shall meet the requirements specified in subparts 3(i) through 3(iii) of this subparagraph.

(i) The surface impoundment shall be equipped with a floating membrane cover designed to meet the following specifications:

(I) The floating membrane cover shall be designed to float on the liquid surface during normal operations and form a continuous barrier over the entire surface area of the liquid.

(II) The cover shall be fabricated from a synthetic membrane material that is either:

I. High density polyethylene (HDPE) with a thickness no less than 2.5 millimeters (mm); or

II. A material or a composite of different materials determined to have both organic permeability properties that are equivalent to those of the material listed in subitem 3(i)(II)I of this subparagraph and chemical and physical properties that maintain the material integrity for the intended service life of the material.

(III) The cover shall be installed in a manner such that there are no visible cracks, holes, gaps, or other open spaces between cover section seams or between the interface of the cover edge and its foundation mountings.

(IV) Except as provided for in item 3(i)(V) of this subparagraph, each opening in the floating membrane cover shall be equipped with a closure device designed to operate such that when the closure device is secured in the closed position there are no visible cracks, holes, gaps, or other open spaces in the closure device or between the perimeter of the cover opening and the closure device.

(V) The floating membrane cover may be equipped with one or more emergency cover drains for removal of stormwater. Each emergency cover drain shall be equipped with a slotted membrane fabric cover that covers at least 90 percent of the area of the opening or a flexible fabric sleeve seal.

(VI) The closure devices shall be made of suitable materials that will minimize exposure of the hazardous waste to the atmosphere, to the extent practical, and will maintain the integrity of the closure devices throughout their intended service life. Factors to be considered when selecting the materials of construction and designing the cover and closure devices shall include: Organic vapor permeability; the effects of any contact with the liquid and its vapor managed in the surface impoundment; the effects of outdoor exposure to wind, moisture, and sunlight; and the operating practices used for the surface impoundment on which the floating membrane cover is installed.

(ii) Whenever a hazardous waste is in the surface impoundment, the floating membrane cover shall float on the liquid and each closure device shall be secured in the closed position except as follows:

(I) Opening of closure devices or removal of the cover is allowed at the following times:

I. To provide access to the surface impoundment for performing routine inspection, maintenance, or other activities needed for normal operations. Examples of such activities include those times when a worker needs to open a port to sample the liquid in the surface impoundment, or when a worker needs to open a hatch to maintain or repair equipment. Following completion of the activity, the owner or operator shall promptly replace the cover and secure the closure device in the closed position, as applicable.

II. To remove accumulated sludge or other residues from the bottom of surface impoundment.

(II) Opening of a safety device, as defined in Rule 0400-12-01-.05(29)(b), is allowed at any time conditions require doing so to avoid an unsafe condition.

(iii) The owner or operator shall inspect the floating membrane cover in accordance with the following procedures:

(I) The floating membrane cover and its closure devices shall be visually inspected by the owner or operator to check for defects that could result in air pollutant emissions. Defects include, but are not limited to, visible cracks, holes, or gaps in the cover section seams or between the interface of the cover edge and its foundation mountings; broken, cracked, or otherwise damaged seals or gaskets on closure devices; and broken or missing hatches, access covers, caps, or other closure devices.

(II) The owner or operator shall perform an initial inspection of the floating membrane cover and its closure devices on or before the date that the surface impoundment becomes subject to this subparagraph. Thereafter, the owner or operator shall perform the inspections at least once every year except for the special conditions provided for in part 7 of this subparagraph.

(III) In the event that a defect is detected, the owner or operator shall repair the defect in accordance with the requirements of part 6 of subparagraph.

(IV) The owner or operator shall maintain a record of the inspection in accordance with the requirements specified in part (j)3 of this paragraph.

4. The owner or operator who controls air pollutant emissions from a surface impoundment using a cover vented to a control device shall meet the requirements specified in subparts 4(i) through 4(iii) of this subparagraph.

(i) The surface impoundment shall be covered by a cover and vented directly through a closed-vent system to a control device in accordance with the following requirements:

(I) The cover and its closure devices shall be designed to form a continuous barrier over the entire surface area of the liquid in the surface impoundment.

(II) Each opening in the cover not vented to the control device shall be equipped with a closure device. If the pressure in the vapor headspace underneath the cover is less than atmospheric pressure when the control device is operating, the closure devices shall be designed to operate such that when the closure device is secured in the closed position there are no visible cracks, holes, gaps, or other open spaces in the closure device or between the perimeter of the cover opening and the closure device. If the pressure in the vapor headspace underneath the cover is equal to or greater than atmospheric pressure when the control device is operating, the closure device shall be designed to operate with no detectable organic emissions using the procedure specified in part (d)4 of this paragraph.

(III) The cover and its closure devices shall be made of suitable materials that will minimize exposure of the hazardous waste to the atmosphere, to the extent practical, and will maintain the integrity of the cover and closure devices throughout their intended service life. Factors to be considered when selecting the materials of construction and designing the cover and closure devices shall include: Organic vapor permeability; the effects of any contact with the liquid or its vapors managed in the surface impoundment; the effects of outdoor exposure to wind, moisture,

and sunlight; and the operating practices used for the surface impoundment on which the cover is installed.

(IV) The closed-vent system and control device shall be designed and operated in accordance with the requirements of subparagraph (h) of this paragraph.

(ii) Whenever a hazardous waste is in the surface impoundment, the cover shall be installed with each closure device secured in the closed position and the vapor headspace underneath the cover vented to the control device except as follows:

(I) Venting to the control device is not required, and opening of closure devices or removal of the cover is allowed at the following times:

I. To provide access to the surface impoundment for performing routine inspection, maintenance, or other activities needed for normal operations. Examples of such activities include those times when a worker needs to open a port to sample liquid in the surface impoundment, or when a worker needs to open a hatch to maintain or repair equipment. Following completion of the activity, the owner or operator shall promptly secure the closure device in the closed position or reinstall the cover, as applicable, to the surface impoundment.

II. To remove accumulated sludge or other residues from the bottom of the surface impoundment.

(II) Opening of a safety device, as defined in Rule 0400-12-01-.05(29)(b), is allowed at any time conditions require doing so to avoid an unsafe condition.

(iii) The owner or operator shall inspect and monitor the air emission control equipment in accordance with the following procedures:

(I) The surface impoundment cover and its closure devices shall be visually inspected by the owner or operator to check for defects that could result in air pollutant emissions. Defects include, but are not limited to, visible cracks, holes, or gaps in the cover section seams or between the interface of the cover edge and its foundation mountings; broken, cracked, or otherwise damaged seals or gaskets on closure devices; and broken or missing hatches, access covers, caps, or other closure devices.

(II) The closed-vent system and control device shall be inspected and monitored by the owner or operator in accordance with the procedures specified in subparagraph (h) of this paragraph.

(III) The owner or operator shall perform an initial inspection of the air emission control equipment on or before the date that the surface impoundment becomes subject to this subparagraph. Thereafter, the owner or operator shall perform the inspections at least once every year except for the special conditions provided for in part 7 of this subparagraph.

(IV) In the event that a defect is detected, the owner or operator shall repair the defect in accordance with the requirements of part 6 of this subparagraph.

(V) The owner or operator shall maintain a record of the inspection in accordance with the requirements specified in part (j)3 of this paragraph.

5. The owner or operator shall transfer hazardous waste to a surface impoundment subject to this paragraph in accordance with the following requirements:

(i) Transfer of hazardous waste, except as provided in subpart 5(ii) of this subparagraph, to the surface impoundment from another surface impoundment subject to this subparagraph or from a tank subject to subparagraph (e) of this paragraph shall be conducted using continuous hard- piping or another closed system that does not allow exposure of the waste to the atmosphere. For the purpose of complying with this provision, an individual drain system is considered to be a closed system when it meets the requirements of 40 CFR part 63, subpart RR--National Emission Standards for Individual Drain Systems.

(ii) The requirements of subpart 5(i) of this subparagraph do not apply when transferring a hazardous waste to the surface impoundment under either of the following conditions:

(I) The hazardous waste meets the average VO concentration conditions specified in subpart (c)3(i) of this paragraph at the point of waste origination.

(II) The hazardous waste has been treated by an organic destruction or removal process to meet the requirements in subpart (c)3(ii) of this paragraph.

(III) The hazardous waste meets the requirements of subpart (c)3(iv) of this paragraph.

6. The owner or operator shall repair each defect detected during an inspection performed in accordance with the requirements of subpart 3(iii) or 4(iii) of this subparagraph as follows:

(i) The owner or operator shall make first efforts at repair of the defect no later than 5 calendar days after detection and repair shall be completed as soon as possible but no later than 45 calendar days after detection except as provided in subpart 6(ii) of this subparagraph.

(ii) Repair of a defect may be delayed beyond 45 calendar days if the owner or operator determines that repair of the defect requires emptying or temporary removal from service of the surface impoundment and no alternative capacity is available at the site to accept the hazardous waste normally managed in the surface impoundment. In this case, the owner or operator shall repair the defect the next time the process or unit that is generating the hazardous waste managed in the surface impoundment stops operation. Repair of the defect shall be completed before the process or unit resumes operation.

7. Following the initial inspection and monitoring of the cover as required by the applicable provisions of this paragraph, subsequent inspection and monitoring may be performed at intervals longer than 1 year in the case when inspecting or monitoring the cover would expose a worker to dangerous, hazardous, or other unsafe conditions. In this case, the owner or operator may designate the cover as an "unsafe to inspect and monitor cover'" and comply with all of the following requirements:

(i) Prepare a written explanation for the cover stating the reasons why the cover is unsafe to visually inspect or to monitor, if required.

(ii) Develop and implement a written plan and schedule to inspect and monitor the cover using the procedures specified in the applicable subparagraph of this paragraph as frequently as practicable during those times when a worker can safely access the cover.

(g) Standards: Containers [40 CFR 264.1086]

1. The provisions of this subparagraph apply to the control of air pollutant emissions from containers for which part (c)2 of this paragraph references the use of this subparagraph for such air emission control.

2. General requirements.

(i) The owner or operator shall control air pollutant emissions from each container subject to this subparagraph in accordance with the following requirements, as applicable to the container, except when the special provisions for waste stabilization processes specified in subpart 2(ii) of this subparagraph apply to the container.

(I) For a container having a design capacity greater than 0.1 m^3 (26 gal.) and less than or equal to 0.46 m^3 (119 gal.), the owner or operator shall control air pollutant emissions from the container in accordance with the Container Level 1 standards specified in part 3 of this subparagraph.

(II) For a container having a design capacity greater than 0.46 m^3 (119 gal.) that is not in light material service, the owner or operator shall control air pollutant emissions from the container in accordance with the Container Level 1 standards specified in part 3 of this subparagraph.

(III) For a container having a design capacity greater than 0.46 m^3 (119 gal.) that is in light material service, the owner or operator shall control air pollutant emissions from the container in accordance with the Container Level 2 standards specified in part 4 of this subparagraph.

(ii) When a container having a design capacity greater than 0.1 m^3 (26 gal.) is used for treatment of a hazardous waste by a waste stabilization process, the owner or operator shall control air pollutant emissions from the container in accordance with the Container Level 3 standards specified in part 5 of this subparagraph at those times during the waste stabilization process when the hazardous waste in the container is exposed to the atmosphere.

3. Container Level 1 standards.

(i) A container using Container Level 1 controls is one of the following:

(I) A container that meets the applicable U.S. Department of Transportation (DOT) regulations on packaging hazardous materials for transportation as specified in part 6 of this subparagraph.

(II) A container equipped with a cover and closure devices that form a continuous barrier over the container openings such that when the cover and closure devices are secured in the closed position there are no visible holes, gaps, or other open spaces into the interior of the container. The cover may be a separate cover installed on the container (e.g., a lid on a drum or a suitably secured tarp on a roll- off box) or may be an integral part of the container structural design (e.g., a "portable tank" or bulk cargo container equipped with a screw-type cap).

(III) An open-top container in which an organic-vapor suppressing barrier is placed on or over the hazardous waste in the container such that no hazardous waste is exposed to the atmosphere. One example of such a barrier is application of a suitable organic-vapor suppressing foam.

(ii) A container used to meet the requirements of item 3(i)(II) or 3(i)(III) of this subparagraph shall be equipped with covers and closure devices, as applicable to the container, that are composed of suitable materials to minimize exposure of the hazardous waste to the atmosphere and to maintain the equipment integrity,

for as long as the container is in service. Factors to be considered in selecting the materials of construction and designing the cover and closure devices shall include: Organic vapor permeability; the effects of contact with the hazardous waste or its vapor managed in the container; the effects of outdoor exposure of the closure device or cover material to wind, moisture, and sunlight; and the operating practices for which the container is intended to be used.

(iii) Whenever a hazardous waste is in a container using Container Level 1 controls, the owner or operator shall install all covers and closure devices for the container, as applicable to the container, and secure and maintain each closure device in the closed position except as follows:

(I) Opening of a closure device or cover is allowed for the purpose of adding hazardous waste or other material to the container as follows:

I. In the case when the container is filled to the intended final level in one continuous operation, the owner or operator shall promptly secure the closure devices in the closed position and install the covers, as applicable to the container, upon conclusion of the filling operation.

II. In the case when discrete quantities or batches of material intermittently are added to the container over a period of time, the owner or operator shall promptly secure the closure devices in the closed position and install covers, as applicable to the container, upon either the container being filled to the intended final level; the completion of a batch loading after which no additional material will be added to the container within 15 minutes; the person performing the loading operation leaving the immediate vicinity of the container; or the shutdown of the process generating the material being added to the container, whichever condition occurs first.

(II) Opening of a closure device or cover is allowed for the purpose of removing hazardous waste from the container as follows:

I. For the purpose of meeting the requirements of this subparagraph, an empty container as defined in Rule 0400-12-01-.02(1)(g)2 may be open to the atmosphere at any time (i.e., covers and closure devices are not required to be secured in the closed position on an empty container).

II. In the case when discrete quantities or batches of material are removed from the container but the container does not meet the conditions to be an empty container as defined in Rule 0400-12-01-.02(1)(g)2, the owner or operator shall promptly secure the closure devices in the closed position and install covers, as applicable to the container, upon the completion of a batch removal after which no additional material will be removed from the container within 15 minutes or the person performing the unloading operation leaves the immediate vicinity of the container, whichever condition occurs first.

(III) Opening of a closure device or cover is allowed when access inside the container is needed to perform routine activities other than transfer of hazardous waste. Examples of such activities include those times when a worker needs to open a port to measure the depth of or sample the material in the container, or when a worker needs to open a manhole hatch to access equipment inside the container. Following completion of the activity, the owner or operator shall promptly secure the closure

device in the closed position or reinstall the cover, as applicable to the container.

(IV) Opening of a spring-loaded pressure-vacuum relief valve, conservation vent, or similar type of pressure relief device which vents to the atmosphere is allowed during normal operations for the purpose of maintaining the internal pressure of the container in accordance with the container design specifications. The device shall be designed to operate with no detectable organic emissions when the device is secured in the closed position. The settings at which the device opens shall be established such that the device remains in the closed position whenever the internal pressure of the container is within the internal pressure operating range determined by the owner or operator based on container manufacturer recommendations, applicable regulations, fire protection and prevention codes, standard engineering codes and practices, or other requirements for the safe handling of flammable, ignitable, explosive, reactive, or hazardous materials. Examples of normal operating conditions that may require these devices to open are during those times when the internal pressure of the container exceeds the internal pressure operating range for the container as a result of loading operations or diurnal ambient temperature fluctuations.

(V) Opening of a safety device, as defined in Rule 0400-12-01-.05(29)(b), is allowed at any time conditions require doing so to avoid an unsafe condition.

(iv) The owner or operator of containers using Container Level 1 controls shall inspect the containers and their covers and closure devices as follows:

(I) In the case when a hazardous waste already is in the container at the time the owner or operator first accepts possession of the container at the facility and the container is not emptied within 24 hours after the container is accepted at the facility (i.e., does not meet the conditions for an empty container as specified in Rule 0400-12-01-.02(1)(g)2), the owner or operator shall visually inspect the container and its cover and closure devices to check for visible cracks, holes, gaps, or other open spaces into the interior of the container when the cover and closure devices are secured in the closed position. The container visual inspection shall be conducted on or before the date that the container is accepted at the facility (i.e., the date the container becomes subject to the container standards in paragraph (32) of this rule). For purposes of this requirement, the date of acceptance is the date of signature that the facility owner or operator enters on Item 20 of the Uniform Hazardous Waste Manifest in the appendix to Rule 0400-12-01-.03 (EPA Forms 8700-22 and 8700-22A), as required under subparagraph (5)(b) of this rule. If a defect is detected, the owner or operator shall repair the defect in accordance with the requirements of item 3(iv)(III) of this subparagraph.

(II) In the case when a container used for managing hazardous waste remains at the facility for a period of 1 year or more, the owner or operator shall visually inspect the container and its cover and closure devices initially and thereafter, at least once every 12 months, to check for visible cracks, holes, gaps, or other open spaces into the interior of the container when the cover and closure devices are secured in the closed position. If a defect is detected, the owner or operator shall repair the defect in accordance with the requirements of item 3(iv)(III) of this subparagraph.

(III) When a defect is detected for the container, cover, or closure devices, the owner or operator shall make first efforts at repair of the defect no

later than 24 hours after detection and repair shall be completed as soon as possible but no later than 5 calendar days after detection. If repair of a defect cannot be completed within 5 calendar days, then the hazardous waste shall be removed from the container and the container shall not be used to manage hazardous waste until the defect is repaired.

(v) The owner or operator shall maintain at the facility a copy of the procedure used to determine that containers with capacity of 0.46 m^3 or greater, which do not meet applicable DOT regulations as specified in part 6 of this subparagraph, are not managing hazardous waste in light material service.

4. Container Level 2 standards.

(i) A container using Container Level 2 controls is one of the following:

(I) A container that meets the applicable U.S. Department of Transportation (DOT) regulations on packaging hazardous materials for transportation as specified in part 6 of this subparagraph.

(II) A container that operates with no detectable organic emissions as defined in Rule 0400-12-01-.05(29)(b) and determined in accordance with the procedure specified in part 7 of this subparagraph.

(III) A container that has been demonstrated within the preceding 12 months to be vapor-tight by using 40 CFR part 60, appendix A, Method 27 in accordance with the procedure specified in part 8 of this subparagraph.

(ii) Transfer of hazardous waste in or out of a container using Container Level 2 controls shall be conducted in such a manner as to minimize exposure of the hazardous waste to the atmosphere, to the extent practical, considering the physical properties of the hazardous waste and good engineering and safety practices for handling flammable, ignitable, explosive, reactive, or other hazardous materials. Examples of container loading procedures that the Department considers to meet the requirements of this subpart include using any one of the following: A submerged-fill pipe or other submerged-fill method to load liquids into the container; a vapor-balancing system or a vapor-recovery system to collect and control the vapors displaced from the container during filling operations; or a fitted opening in the top of a container through which the hazardous waste is filled and subsequently purging the transfer line before removing it from the container opening.

(iii) Whenever a hazardous waste is in a container using Container Level 2 controls, the owner or operator shall install all covers and closure devices for the container, and secure and maintain each closure device in the closed position except as follows:

(I) Opening of a closure device or cover is allowed for the purpose of adding hazardous waste or other material to the container as follows:

I. In the case when the container is filled to the intended final level in one continuous operation, the owner or operator shall promptly secure the closure devices in the closed position and install the covers, as applicable to the container, upon conclusion of the filling operation.

II. In the case when discrete quantities or batches of material intermittently are added to the container over a period of time, the owner or operator shall promptly secure the closure devices in the closed position and install covers, as applicable to the container, upon either the container being filled to the intended final level; the completion of a batch loading after which no

additional material will be added to the container within 15 minutes; the person performing the loading operation leaving the immediate vicinity of the container; or the shutdown of the process generating the material being added to the container, whichever condition occurs first.

(II) Opening of a closure device or cover is allowed for the purpose of removing hazardous waste from the container as follows:

I. For the purpose of meeting the requirements of this subparagraph, an empty container as defined in Rule 0400-12-01-.02(1)(g)2 may be open to the atmosphere at any time (i.e., covers and closure devices are not required to be secured in the closed position on an empty container).

II. In the case when discrete quantities or batches of material are removed from the container but the container does not meet the conditions to be an empty container as defined in Rule 0400-12-01-.02(1)(g)2, the owner or operator shall promptly secure the closure devices in the closed position and install covers, as applicable to the container, upon the completion of a batch removal after which no additional material will be removed from the container within 15 minutes or the person performing the unloading operation leaves the immediate vicinity of the container, whichever condition occurs first.

(III) Opening of a closure device or cover is allowed when access inside the container is needed to perform routine activities other than transfer of hazardous waste. Examples of such activities include those times when a worker need to open a port to measure the depth of or sample the material in the container, or when a worker needs to open a manhole hatch to access equipment inside the container. Following completion of the activity, the owner or operator shall promptly secure the closure device in the closed position or reinstall the cover, as applicable to the container.

(IV) Opening of a spring-loaded, pressure-vacuum relief valve, conservation vent, or similar type of pressure relief device which vents to the atmosphere is allowed during normal operations for the purpose of maintaining the internal pressure of the container in accordance with the container design specifications. The device shall be designed to operate with no detectable organic emission when the device is secured in the closed position. The settings at which the device opens shall be established such that the device remains in the closed position whenever the internal pressure of the container is within the internal pressure operating range determined by the owner or operator based on container manufacturer recommendations, applicable regulations, fire protection and prevention codes, standard engineering codes and practices, or other requirements for the safe handling of flammable, ignitable, explosive, reactive, or hazardous materials. Examples of normal operating conditions that may require these devices to open are during those times when the internal pressure of the container exceeds the internal pressure operating range for the container as a result of loading operations or diurnal ambient temperature fluctuations.

(V) Opening of a safety device, as defined in Rule 0400-12-01-.05(29)(b), is allowed at any time conditions require doing so to avoid an unsafe condition.

(iv) The owner or operator of containers using Container Level 2 controls shall inspect the containers and their covers and closure devices as follows:

(I) In the case when a hazardous waste already is in the container at the time the owner or operator first accepts possession of the container at the facility and the container is not emptied within 24 hours after the container accepted at the facility (i.e., does not meet the conditions for an empty container as specified in Rule 0400-12-01-.02(1)(g)2), the owner or operator shall visually inspect the container and its cover and closure devices to check for visible cracks, holes, gaps, or other open spaces into the interior of the container when the cover and closure devices are secured in the closed position. The container visual inspection shall be conducted on or before the date that the container is accepted at the facility (i.e., the date the container becomes subject to the paragraph (32) of this rule container standards). For purposes of this requirement, the date of acceptance is the date of signature that the facility owner or operator enters on Item 20 of the Uniform Hazardous Waste Manifest in the appendix to Rule 0400-12-01-.03 (EPA Forms 8700-22 and 8700-22A), as required under subparagraph (5)(b) of this rule. If a defect is detected, the owner or operator shall repair the defect in accordance with the requirements of item 4(iv)(III) of this subparagraph.

(II) In the case when a container used for managing hazardous waste remains at the facility for a period of 1 year or more, the owner or operator shall visually inspect the container and its cover and closure devices initially and thereafter, at least once every 12 months, to check for visible cracks, holes, gaps, or other open spaces into the interior of the container when the cover and closure devices are secured in the closed position. If a defect is detected, the owner or operator shall repair the defect in accordance with the requirements of item 4(iv)(III) of this subparagraph.

(III) When a defect is detected for the container, cover, or closure devices, the owner or operator shall make first efforts at repair of the defect no later than 24 hours after detection, and repair shall be completed as soon as possible but no later than 5 calendar days after detection. If repair of a defect cannot be completed within 5 calendar days, then the hazardous waste shall be removed from the container and the container shall not be used to manage hazardous waste until the defect is repaired.

5. Container Level 3 standards.

(i) A container using Container Level 3 controls is one of the following:

(I) A container that is vented directly through a closed-vent system to a control device in accordance with the requirements of item 5(ii)(II) of this subparagraph.

(II) A container that is vented inside an enclosure which is exhausted through a closed-vent system to a control device in accordance with the requirements of item 5(ii)(I) and 5(ii)(II) of this subparagraph.

(ii) The owner or operator shall meet the following requirements, as applicable to the type of air emission control equipment selected by the owner or operator:

(I) The container enclosure shall be designed and operated in accordance with the criteria for a permanent total enclosure as specified in "Procedure T--Criteria for and Verification of a Permanent or Temporary Total Enclosure" under 40 CFR 52.741, appendix B. The enclosure may have permanent or temporary openings to allow worker access; passage of containers through the enclosure by conveyor or other mechanical

means; entry of permanent mechanical or electrical equipment; or direct airflow into the enclosure. The owner or operator shall perform the verification procedure for the enclosure as specified in Section 5.0 to "Procedure T--Criteria for and Verification of a Permanent or Temporary Total Enclosure" initially when the enclosure is first installed and, thereafter, annually.

(II) The closed-vent system and control device shall be designed and operated in accordance with the requirements of subparagraph (h) of this paragraph.

(iii) Safety devices, as defined in Rule 0400-12-01-.05(29)(b), may be installed and operated as necessary on any container, enclosure, closed-vent system, or control device used to comply with the requirements of subpart 5(i) of this subparagraph.

(iv) Owners and operators using Container Level 3 controls in accordance with the provisions of this subpart shall inspect and monitor the closed-vent systems and control devices as specified in subparagraph (h) of this paragraph.

(v) Owners and operators that use Container Level 3 controls in accordance with the provisions of this subpart shall prepare and maintain the records specified in part (j)4 of this paragraph.

(vi) Transfer of hazardous waste in or out of a container using Container Level 3 controls shall be conducted in such a manner as to minimize exposure of the hazardous waste to the atmosphere, to the extent practical, considering the physical properties of the hazardous waste and good engineering and safety practices for handling flammable, ignitable, explosive, reactive, or other hazardous materials. Examples of container loading procedures that the Department considers to meet the requirements of this subpart include using any one of the following: A submerged-fill pipe or other submerged-fill method to load liquids into the container; a vapor-balancing system or a vapor-recovery system to collect and control the vapors displaced from the container during filling operation; or a fitted opening in the top of a container through which the hazardous waste is filled and subsequently purging the transfer line before removing it from the container opening.

6. For the purpose of compliance with item 3(i)(I) or 4(i)(I) of this subparagraph, containers shall be used that meet the applicable U.S. Department of Transportation (DOT) regulations on packaging hazardous materials for transportation as follows:

(i) The container meets the applicable requirements specified in 49 CFR part 178--Specifications for Packaging or 49 CFR part 179--Specifications for Tank Cars.

(ii) Hazardous waste is managed in the container in accordance with the applicable requirements specified in 49 CFR part 107, subpart B--Exemptions; 49 CFR part 172--Hazardous Materials Table, Special Provisions, Hazardous Materials Communications, Emergency Response Information, and Training Requirements; 49 CFR part 173--Shippers--General Requirements for Shipments and Packages; and 49 CFR part 180--Continuing Qualification and Maintenance of Packagings.

(iii) For the purpose of complying with this paragraph, no exceptions to the 49 CFR part 178 or part 179 regulations are allowed except as provided for in subpart 6(iv) of this subparagraph.

(iv) For a lab pack that is managed in accordance with the requirements of 49 CFR part 178 for the purpose of complying with this paragraph, an owner or operator may comply with the exceptions for combination packagings specified in 49 CFR 173.12(b).

7. To determine compliance with the no detectable organic emissions requirement of item 4(i)(II) of this subparagraph, the procedure specified in part (d)4 of this paragraph shall be used.

(i) Each potential leak interface (i.e., a location where organic vapor leakage could occur) on the container, its cover, and associated closure devices, as applicable to the container, shall be checked. Potential leak interfaces that are associated with containers include, but are not limited to: The interface of the cover rim and the container wall; the periphery of any opening on the container or container cover and its associated closure device; and the sealing seat interface on a spring-loaded pressure-relief valve.

(ii) The test shall be performed when the container is filled with a material having a volatile organic concentration representative of the range of volatile organic concentrations for the hazardous wastes expected to be managed in this type of container. During the test, the container cover and closure devices shall be secured in the closed position.

8. Procedure for determining a container to be vapor-tight using Method 27 of 40 CFR part 60, appendix A for the purpose of complying with item 4(i)(III) of this subparagraph.

(i) The test shall be performed in accordance with Method 27 of 40 CFR part 60, Appendix A.

(ii) A pressure measurement device shall be used that has a precision of $\pm$ 2.5 mm water and that is capable of measuring above the pressure at which the container is to be tested for vapor tightness.

(iii) If the test results determined by Method 27 indicate that the container sustains a pressure change less than or equal to 750 Pascals within 5 minutes after it is pressurized to a minimum of 4,500 Pascals, then the container is determined to be vapor-tight.

(h) Standards: Closed-vent Systems and Control Devices [40 CFR 264.1087]

1. This subparagraph applies to each closed-vent system and control device installed and operated by the owner or operator to control air emissions in accordance with standards of this paragraph.

2. The closed-vent system shall meet the following requirements:

(i) The closed-vent system shall route the gases, vapors, and fumes emitted from the hazardous waste in the waste management unit to a control device that meets the requirements specified in part 3 of this subparagraph.

(ii) The closed-vent system shall be designed and operated in accordance with the requirements specified in subparagraph (30)(d) of this rule.

(iii) In the case when the closed-vent system includes bypass devices that could be used to divert the gas or vapor stream to the atmosphere before entering the control device, each bypass device shall be equipped with either a flow indicator as specified in item 2(iii)(I) of this subparagraph or a seal or locking device as specified in item 2(iii)(II) of this subparagraph. For the purpose of complying with this subpart, low leg drains, high point bleeds, analyzer vents, open-ended valves or lines, spring loaded pressure relief valves, and other fittings used for safety purposes are not considered to be bypass devices.

(I) If a flow indicator is used to comply with subpart 2(iii) of this subparagraph, the indicator shall be installed at the inlet to the bypass line used to divert gases and vapors from the closed-vent system to the

atmosphere at a point upstream of the control device inlet. For this item, a flow indicator means a device which indicates the presence of either gas or vapor flow in the bypass line.

(II) If a seal or locking device is used to comply with subpart 2(iii) of this subparagraph, the device shall be placed on the mechanism by which the bypass device position is controlled (e.g., valve handle, damper lever) when the bypass device is in the closed position such that the bypass device cannot be opened without breaking the seal or removing the lock. Examples of such devices include, but are not limited to, a car-seal or a lock-and-key configuration valve. The owner or operator shall visually inspect the seal or closure mechanism at least once every month to verify that the bypass mechanism is maintained in the closed position.

(iv) The closed-vent system shall be inspected and monitored by the owner or operator in accordance with the procedure specified in part (30)(d)12 of this rule.

3. The control device shall meet the following requirements:

(i) The control device shall be one of the following devices:

(I) A control device designed and operated to reduce the total organic content of the inlet vapor stream vented to the control device by at least 95 percent by weight;

(II) An enclosed combustion device designed and operated in accordance with the requirements of part (30)(d)3 of this rule; or

(III) A flare designed and operated in accordance with the requirements of part (30)(d)4 of this rule.

(ii) The owner or operator who elects to use a closed-vent system and control device to comply with the requirements of this subparagraph shall comply with the requirements specified in item 3(ii)(I) through 3(ii)(VI) of this subparagraph.

(I) Periods of planned routine maintenance of the control device, during which the control device does not meet the specifications of items 3(i)(I), 3(i)(II), or 3(i)(III) of this subparagraph, as applicable, shall not exceed 240 hours per year.

(II) The specifications and requirements in items 3(i)(I), 3(i)(II), and 3(i)(III) of this subparagraph for control devices do not apply during periods of planned routine maintenance.

(III) The specifications and requirements in items 3(i)(I), 3(i)(II), and 3(i)(III) of this subparagraph for control devices do not apply during a control device system malfunction.

(IV) The owner or operator shall demonstrate compliance with the requirements of item 3(ii)(I) of this subparagraph (i.e., planned routine maintenance of a control device, during which the control device does not meet the specifications of items 3(i)(I), 3(i)(II), or 3(i)(III) of this subparagraph, as applicable, shall not exceed 240 hours per year) by recording the information specified in item (j)5(i)(V) of this paragraph.

(V) The owner or operator shall correct control device system malfunctions as soon as practicable after their occurrence in order to minimize excess emissions of air pollutants.

(VI) The owner or operator shall operate the closed-vent system such that gases, vapors, or fumes are not actively vented to the control device

during periods of planned maintenance or control device system malfunction (i.e., periods when the control device is not operating or not operating normally) except in cases when it is necessary to vent the gases, vapors, and/or fumes to avoid an unsafe condition or to implement malfunction corrective actions or planned maintenance actions.

(iii) The owner or operator using a carbon adsorption system to comply with subpart 3(i) of this subparagraph shall operate and maintain the control device in accordance with the following requirements:

(I) Following the initial startup of the control device, all activated carbon in the control device shall be replaced with fresh carbon on a regular basis in accordance with the requirements of part (30)(d)7 or 8 of this rule.

(II) All carbon that is a hazardous waste and that is removed from the control device shall be managed in accordance with the requirements of part (30)(d)14 of this rule, regardless of the average volatile organic concentration of the carbon.

(iv) An owner or operator using a control device other than a thermal vapor incinerator, flare, boiler, process heater, condenser, or carbon adsorption system to comply with subpart 3(i) of this subparagraph shall operate and maintain the control device in accordance with the requirements of part (30)(d)10 of this rule.

(v) The owner or operator shall demonstrate that a control device achieves the performance requirements of subpart 3(i) of this subparagraph as follows:

(I) An owner or operator shall demonstrate using either a performance test as specified in item 3(v)(III) of this subparagraph or a design analysis as specified in item 3(v)(IV) of this subparagraph the performance of each control device except for the following:

I. A flare;

II. A boiler or process heater with a design heat input capacity of 44 megawatts or greater;

III. A boiler or process heater into which the vent stream is introduced with the primary fuel;

IV. A boiler or industrial furnace burning hazardous waste for which the owner or operator has been issued a final permit under Rule 0400-12-01-.07 and has designed and operates the unit in accordance with the requirements of Rule 0400-12-01-.09(8); or

V. A boiler or industrial furnace burning hazardous waste for which the owner or operator has designed and operates in accordance with the interim status requirements of Rule 0400-12-01-.09(8).

(II) An owner or operator shall demonstrate the performance of each flare in accordance with the requirements specified in part (30)(d)5.

(III) For a performance test conducted to meet the requirements of item 3(v)(I) of this subparagraph, the owner or operator shall use the test methods and procedures specified in subpart (30)(e)3(i) through (3)(iv).

(IV) For a design analysis conducted to meet the requirements of item 3(v)(I) of this subparagraph, the design analysis shall meet the requirements specified in item (3)(f)2(iv)(III) of this rule.

(V) The owner or operator shall demonstrate that a carbon adsorption system achieves the performance requirements of subpart 3(i) of this subparagraph based on the total quantity of organics vented to the atmosphere from all carbon adsorption system equipment that is used for organic adsorption, organic desorption or carbon regeneration, organic recovery, and carbon disposal.

(vi) If the owner or operator and the Commissioner do not agree on a demonstration of control device performance using a design analysis then the disagreement shall be resolved using the results of a performance test performed by the owner or operator in accordance with the requirements of item 3(v)(III) of this subparagraph. The Commissioner may choose to have an authorized representative observe the performance test.

(vii) The closed-vent system and control device shall be inspected and monitored by the owner or operator in accordance with the procedures specified in subpart (30)(d)6(ii) and part (30)(d)12 of this rule. The readings from each monitoring device required by subpart (30)(d)6(ii) of this rule shall be inspected at least once each operating day to check control device operation. Any necessary corrective measures shall be immediately implemented to ensure the control device is operated in compliance with the requirements of this subparagraph.

(i) Inspection and Monitoring Requirements [40 CFR 264.1088]

1. The owner or operator shall inspect and monitor air emission control equipment used to comply with this paragraph in accordance with the applicable requirements specified in subparagraph (e) through (h) of this paragraph.

2. The owner or operator shall develop and implement a written plan and schedule to perform the inspections and monitoring required by part 1 of this subparagraph. The owner or operator shall incorporate this plan and schedule into the facility inspection plan required under subparagraph (2)(f) of this rule.

(j) Recordkeeping Requirements [40 CFR 264.1089]

1. Each owner or operator of a facility subject to requirements of this paragraph shall record and maintain the information specified in parts 2 through 10 of this subparagraph, as applicable to the facility. Except for air emission control equipment design documentation and information required by parts 9 and 10 of this subparagraph, records required by this subparagraph shall be maintained in the operating record for a minimum of 3 years. Air emission control equipment design documentation shall be maintained in the operating record until the air emission control equipment is replaced or otherwise no longer in service. Information required by parts 9 and 10 of this subparagraph shall be maintained in the operating record for as long as the waste management unit is not using air emission controls specified in subparagraphs (e) through (h) of this paragraph in accordance with the conditions specified in part (a)4 or subpart (a)2(vii) of this paragraph.

2. The owner or operator of a tank using air emission controls in accordance with the requirements of subparagraph (e) of this paragraph shall prepare and maintain records for the tank that include the following information:

(i) For each tank using air emission controls in accordance with the requirements of subparagraph (e) of this paragraph, the owner or operator shall record:

(I) A tank identification number (or other unique identification description as selected by the owner or operator).

(II) A record for each inspection required by subparagraph (e) of this paragraph that includes the following information:

I. Date inspection was conducted.

II. For each defect detected during the inspection: The location of the defect, a description of the defect, the date of detection, and corrective action taken to repair the defect. In the event that repair of the defect is delayed in accordance with the requirements of subparagraph (e) of this paragraph, the owner or operator shall also record the reason for the delay and the date that completion of repair of the defect is expected.

(ii) In addition to the information required by subpart 2(i) of this subparagraph, the owner or operator shall record the following information, as applicable to the tank:

(I) The owner or operator using a fixed roof to comply with the Tank Level 1 control requirements specified in part (e)3 of this paragraph shall prepare and maintain records for each determination for the maximum organic vapor pressure of the hazardous waste in the tank performed in accordance with the requirements of part (e)3 of this paragraph. The records shall include the date and time the samples were collected, the analysis method used, and the analysis results.

(II) The owner or operator using an internal floating roof to comply with the Tank Level 2 control requirements specified in part (e)4 of this paragraph shall prepare and maintain documentation describing the floating roof design.

(III) Owners and operators using an external floating roof to comply with the Tank Level 2 control requirements specified in part (e)6 of this paragraph shall prepare and maintain the following records:

I. Documentation describing the floating roof design and the dimensions of the tank.

II. Records for each seal gap inspection required by subpart (e)6(iii) of this paragraph describing the results of the seal gap measurements. The records shall include the date that the measurements were performed, the raw data obtained for the measurements, and the calculations of the total gap surface area. In the event that the seal gap measurements do not conform to the specifications in subpart (e)6(i) of this paragraph, the records shall include a description of the repairs that were made, the date the repairs were made, and the date the tank was emptied, if necessary.

(IV) Each owner or operator using an enclosure to comply with the Tank Level 2 control requirements specified in part (e)9 of this paragraph shall prepare and maintain the following records:

I. Records for the most recent set of calculations and measurements performed by the owner or operator to verify that the enclosure meets the criteria of a permanent total enclosure as specified in "Procedure T--Criteria for and Verification of a Permanent or Temporary Total Enclosure" under 40 CFR 52.741, appendix B.

II. Records required for the closed-vent system and control device in accordance with the requirements of part 5 of this subparagraph.

3. The owner or operator of a surface impoundment using air emission controls in accordance with the requirements of subparagraph (f) of this paragraph shall prepare and maintain records for the surface impoundment that include the following information:

(i) A surface impoundment identification number (or other unique identification description as selected by the owner or operator).

(ii) Documentation describing the floating membrane cover or cover design, as applicable to the surface impoundment, that includes information prepared by the owner or operator or provided by the cover manufacturer or vendor describing the cover design, and certification by the owner or operator that the cover meets the specifications listed in part (f)3 of this paragraph.

(iii) A record for each inspection required by subparagraph (f) of this paragraph that includes the following information:

(I) Date inspection was conducted.

(II) For each defect detected during the inspection the following information: The location of the defect, a description of the defect, the date of detection, and corrective action taken to repair the defect. In the event that repair of the defect is delayed in accordance with the provisions of part (f)6 of this paragraph, the owner or operator shall also record the reason for the delay and the date that completion of repair of the defect is expected.

(iv) For a surface impoundment equipped with a cover and vented through a closed-vent system to a control device, the owner or operator shall prepare and maintain the records specified in part 5 of this subparagraph.

4. The owner or operator of containers using Container Level 3 air emission controls in accordance with the requirements of subparagraph (g) of this paragraph shall prepare and maintain records that include the following information:

(i) Records for the most recent set of calculations and measurements performed by the owner or operator to verify that the enclosure meets the criteria of a permanent total enclosure as specified in "Procedure T--Criteria for and Verification of a Permanent or Temporary Total Enclosure" under 40 CFR 52.741, appendix B.

(ii) Records required for the closed-vent system and control device in accordance with the requirements of part 5 of this subparagraph.

5. The owner or operator using a closed-vent system and control device in accordance with the requirements of subparagraph (h) of this paragraph shall prepare and maintain records that include the following information:

(i) Documentation for the closed-vent system and control device that includes:

(I) Certification that is signed and dated by the owner or operator stating that the control device is designed to operate at the performance level documented by a design analysis as specified in item 5(i)(II) of this subparagraph or by performance tests as specified in item 5(i)(III) of this subparagraph when the tank, surface impoundment, or container is or would be operating at capacity or the highest level reasonably expected to occur.

(II) If a design analysis is used, then design documentation as specified in subpart (30)(f)2(iv) of this rule. The documentation shall include information prepared by the owner or operator or provided by the control device manufacturer or vendor that describes the control device design

in accordance with item (30)(f)2(iv)(III) of this rule and certification by the owner or operator that the control equipment meets the applicable specifications.

(III) If performance tests are used, then a performance test plan as specified in subpart (30)(f)2(iii) and all test results.

(IV) Information as required by subpart (30)(f)3(i) and (ii) of this rule, as applicable.

(V) An owner or operator shall record, on a semiannual basis, the information specified in subitems 5(i)(V)I and 5(i)(V)II of this subparagraph for those planned routine maintenance operations that would require the control device not to meet the requirements of item (h)3(i)(I), 3(i)(II), or 3(i)(III) of this paragraph, as applicable.

I. A description of the planned routine maintenance that is anticipated to be performed for the control device during the next 6- month period. This description shall include the type of maintenance necessary, planned frequency of maintenance, and lengths of maintenance periods.

II. A description of the planned routine maintenance that was performed for the control device during the previous 6-month period. This description shall include the type of maintenance performed and the total number of hours during those 6 months that the control device did not meet the requirements of item (h)3(i)(I), 3(i)(II), or 3(i)(III) of this paragraph, as applicable, due to planned routine maintenance.

(VI) An owner or operator shall record the information specified in subitems 5(i)(VI)I through 5(i)(VI)III of this subparagraph for those unexpected control device system malfunctions that would require the control device not to meet the requirements of item (h)3(i)(I), 3(i)(II), or 3(i)(III) of this paragraph, as applicable.

I. The occurrence and duration of each malfunction of the control device system.

II. The duration of each period during a malfunction when gases, vapors, or fumes are vented from the waste management unit through the closed-vent system to the control device while the control device is not properly functioning.

III. Actions taken during periods of malfunction to restore a malfunctioning control device to its normal or usual manner of operation.

(VII) Records of the management of carbon removed from a carbon adsorption system conducted in accordance with item (h)3(iii)(II) of this paragraph.

6. The owner or operator of a tank, surface impoundment, or container exempted from standards in accordance with the provisions of part (c)3 of this paragraph shall prepare and maintain the following records, as applicable:

(i) For tanks, surface impoundments, and containers exempted under the hazardous waste organic concentration conditions specified in subpart (c)3(i) or items (c)(ii)(I) through (VI) of this paragraph, the owner or operator shall record the information used for each waste determination (e.g., test results, measurements, calculations, and other documentation) in the facility operating

log. If analysis results for waste samples are used for the waste determination, then the owner or operator shall record the date, time, and location that each waste sample is collected in accordance with applicable requirements of subparagraph (d) of this paragraph.

(ii) For tanks, surface impoundments, or containers exempted under the provisions of item (c)3(ii)(VII) or (c)3(ii)(VIII) of this paragraph, the owner or operator shall record the identification number for the incinerator, boiler, or industrial furnace in which the hazardous waste is treated.

7. An owner or operator designating a cover as "unsafe to inspect and monitor" pursuant to part (e)12 or (f)7 of this paragraph shall record in a log that is kept in the facility operating record the following information: The identification numbers for waste management units with covers that are designated as "unsafe to inspect and monitor," the explanation for each cover stating why the cover is unsafe to inspect and monitor, and the plan and schedule for inspecting and monitoring each cover.

8. The owner or operator of a facility that is subject to this paragraph and to the control device standards in 40 CFR part 60, subpart VV, or 40 CFR part 61, subpart V, may elect to demonstrate compliance with the applicable subparagraphs of this paragraph by documentation either pursuant to this paragraph, or pursuant to the provisions of 40 CFR part 60, subpart VV or 40 CFR part 61, subpart V, to the extent that the documentation required by 40 CFR parts 60 or 61 duplicates the documentation required by this subparagraph.

9. For each tank or container not using air emission controls specified in subparagraphs (e) through (h) of this paragraph in accordance with the conditions specified in part (a)4 of this paragraph, the owner or operator shall record and maintain the following information:

(i) A list of the individual organic peroxide compounds manufactured at the facility that meet the conditions specified in subpart (a)4(i) of this paragraph.

(ii) A description of how the hazardous waste containing the organic peroxide compounds identified in subpart 9(i) of this subparagraph are managed at the facility in tanks and containers. This description shall include:

(I) For the tanks used at the facility to manage this hazardous waste, sufficient information shall be provided to describe for each tank: A facility identification number for the tank; the purpose and placement of this tank in the management train of this hazardous waste; and the procedures used to ultimately dispose of the hazardous waste managed in the tanks.

(II) For containers used at the facility to manage these hazardous wastes, sufficient information shall be provided to describe: A facility identification number for the container or group of containers; the purpose and placement of this container, or group of containers, in the management train of this hazardous waste; and the procedures used to ultimately dispose of the hazardous waste handled in the containers.

(iii) An explanation of why managing the hazardous waste containing the organic peroxide compounds identified in subpart 9(i) of this subparagraph in the tanks and containers as described in subpart 9(ii) of this subparagraph would create an undue safety hazard if the air emission controls, as required under subparagraph (e) through (h) of this paragraph, are installed and operated on these waste management units. This explanation shall include the following information:

(I) For tanks used at the facility to manage these hazardous wastes, sufficient information shall be provided to explain: How use of the required air emission controls on the tanks would affect the tank design features and facility operating procedures currently used to prevent an

undue safety hazard during the management of this hazardous waste in the tanks; and why installation of safety devices on the required air emission controls, as allowed under this paragraph, will not address those situations in which evacuation of tanks equipped with these air emission controls is necessary and consistent with good engineering and safety practices for handling organic peroxides.

(II) For containers used at the facility to manage these hazardous wastes, sufficient information shall be provided to explain: How use of the required air emission controls on the containers would affect the container design features and handling procedures currently used to prevent an undue safety hazard during the management of this hazardous waste in the containers; and why installation of safety devices on the required air emission controls, as allowed under this subpart, will not address those situations in which evacuation of containers equipped with these air emission controls is necessary and consistent with good engineering and safety practices for handling organic peroxides.

10. For each hazardous waste management unit not using air emission controls specified in subparagraph (e) through (h) of this paragraph in accordance with the requirements of subpart (a)2(vii) of this paragraph, the owner or operator shall record and maintain the following information:

(i) Certification that the waste management unit is equipped with and operating air emission controls in accordance with the requirements of an applicable Clean Air Act regulation codified under 40 CFR part, 60, part 61, or part 63.

(ii) Identification of the specific requirements codified under 40 CFR part 60, part 61, or part 63 with which the waste management unit is in compliance.

(k) Reporting Requirements [40 CFR 264.1090]

1. Each owner or operator managing hazardous waste in a tank, surface impoundment, or container exempted from using air emission controls under the provisions of part (c)3 of this paragraph shall report to the Commissioner each occurrence when hazardous waste is placed in the waste management unit in noncompliance with the conditions specified in subpart (c)3(i) or 3(ii) of this paragraph, as applicable. Examples of such occurrences include placing in the waste management unit a hazardous waste having an average VO concentration equal to or greater than 500 ppmw at the point of waste origination; or placing in the waste management unit a treated hazardous waste of which the organic content has been reduced by an organic destruction or removal process that fails to achieve the applicable conditions specified in items (c)3(ii)(I) through 3(ii)(VI) of this paragraph. The owner or operator shall submit a written report within 15 calendar days of the time that the owner or operator becomes aware of the occurrence. The written report shall contain the Installation Identification Number, facility name and address, a description of the noncompliance event and the cause, the dates of the noncompliance, and the actions taken to correct the noncompliance and prevent recurrence of the noncompliance. The report shall be signed and dated by an authorized representative of the owner or operator.

2. Each owner or operator using air emission controls on a tank in accordance with the requirements of part (e)3 of this paragraph shall report to the Commissioner each occurrence when hazardous waste is managed in the tank in noncompliance with the conditions specified in part (e)2 of this paragraph. The owner or operator shall submit a written report within 15 calendar days of the time that the owner or operator becomes aware of the occurrence. The written report shall contain the Installation Identification Number, facility name and address, a description of the noncompliance event and the cause, the dates of the noncompliance, and the actions taken to correct the noncompliance and prevent recurrence of the noncompliance. The report shall be signed and dated by an authorized representative of the owner or operator.

3. Each owner or operator using a control device in accordance with the requirements of subparagraph (h) of this paragraph shall submit a semiannual written report to the Commissioner except as provided for in part 4 of this subparagraph. The report shall describe each occurrence during the previous 6 - month period when either:

(i) A control device is operated continuously for 24 hours or longer in noncompliance with the applicable operating values defined in subpart (30)(f)3(iv) of this rule; or

(ii) A flare is operated with visible emissions for 5 minutes or longer in a two hour period, as defined in part (30)(d)4 of this rule.

The written report shall include the Installation Identification Number, facility name and address, and an explanation why the control device could not be returned to compliance within 24 hours, and actions taken to correct the noncompliance. The report shall be signed and dated by an authorized representative of the owner or operator.

4. A report to the Commissioner in accordance with the requirements of part 3 of this subparagraph is not required for a 6-month period during which all control devices subject to this paragraph are operated by the owner or operator such that;

(i) During no period of 24 hours or longer did a control device operate continuously in noncompliance with the applicable operating values defined in subpart (30)(f)3(iv) of this rule; and

(ii) No flare was operated with visible emissions for 5 minutes or longer in a two hour period as defined in part (30)(d)4 of this rule.

(l) (RESERVED) [40 CFR 264.1091]

(33) Containment Buildings [40 CFR 264 Subpart DD]

(a) Applicability [40 CFR 264.1100]

The requirements of this paragraph apply to owners or operators who store or treat hazardous waste in units designed and operated under subparagraph (b) of this paragraph. The owner or operator is not subject to the definition of land disposal in Rule 0400-12-01-.01(2)(a) provided that the unit:

1. Is a completely enclosed, self-supporting structure that is designed and constructed of manmade materials of sufficient strength and thickness to support themselves, the waste contents, and any personnel and heavy equipment that operate within the unit, and to prevent failure due to pressure gradients, settlement, compression, or uplift, physical contact with the hazardous wastes to which they are exposed; climatic conditions; and the stresses of daily operation, including the movement of heavy equipment within the unit and contact of such equipment with containment walls;

2. Has a primary barrier that is designed to be sufficiently durable to withstand the movement of personnel, wastes, and handling equipment within the unit;

3. If the unit is used to manage liquids, has:

(i) A primary barrier designed and constructed of materials to prevent migration of hazardous constituents into the barrier;

(ii) A liquid collection system designed and constructed of materials to minimize the accumulation of liquid on the primary barrier; and

(iii) A secondary containment system designed and constructed of materials to prevent migration of hazardous constituents into the barrier, with a leak detection and liquid collection system capable of detecting, collecting, and removing leaks

of hazardous constituents at the earliest practicable time, unless the unit has been granted a variance from the secondary containment system requirements under subpart (b)2(iv) of this paragraph;

4. Has controls sufficient to prevent fugitive dust emissions to meet the no visible emission standard in item (b)3(i)(IV) of this paragraph; and

5. Is designed and operated to ensure containment and prevent the tracking of materials from the unit by personnel or equipment.

(b) Design and Operating Standards [40 CFR 264.1101]

1. All containment buildings must comply with the following design standards:

(i) The containment building must be completely enclosed with a floor, walls, and a roof to prevent exposure to the elements, (e.g., precipitation, wind, run-on), and to assure containment of managed wastes.

(ii) The floor and containment walls of the unit, including the secondary containment system if required under part 2 of this subparagraph, must be designed and constructed of materials of sufficient strength and thickness to support themselves, the waste contents, and any personnel and heavy equipment that operate within the unit, and to prevent failure due to pressure gradients, settlement, compression, or uplift, physical contact with the hazardous wastes to which they are exposed; climatic conditions; and the stresses of daily operation, including the movement of heavy equipment within the unit and contact of such equipment with containment walls. The unit must be designed so that it has sufficient structural strength to prevent collapse or other failure. All surfaces to be in contact with hazardous wastes must be chemically compatible with those wastes. The Commissioner will consider standards established by professional organizations generally recognized by the industry such as the American Concrete Institute (ACI) and the American Society of Testing Materials (ASTM) in judging the structural integrity requirements of this paragraph. If appropriate to the nature of the waste management operation to take place in the unit, an exception to the structural strength requirement may be made for light-weight doors and windows that meet these criteria:

(I) They provide an effective barrier against fugitive dust emissions under item (b)3(i)(IV) of this paragraph; and

(II) The unit is designed and operated in a fashion that assures that wastes will not actually come in contact with these openings.

(iii) Incompatible hazardous wastes or treatment reagents must not be placed in the unit or its secondary containment system if they could cause the unit or secondary containment system to leak, corrode, or otherwise fail.

(iv) A containment building must have a primary barrier designed to withstand the movement of personnel, waste, and handling equipment in the unit during the operating life of the unit and appropriate for the physical and chemical characteristics of the waste to be managed.

2. For a containment building used to manage hazardous wastes containing free liquids or treated with free liquids (the presence of which is determined by the paint filter test, a visual examination, or other appropriate means), the owner or operator must include:

(i) A primary barrier designed and constructed of materials to prevent the migration of hazardous constituents into the barrier (e.g., a geomembrane covered by a concrete wear surface).

(ii) A liquid collection and removal system to minimize the accumulation of liquid on the primary barrier of the containment building:

(I) The primary barrier must be sloped to drain liquids to the associated collection system; and

(II) Liquids and waste must be collected and removed to minimize hydraulic head on the containment system at the earliest practicable time.

(iii) A secondary containment system including a secondary barrier designed and constructed to prevent migration of hazardous constituents into the barrier, and a leak detection system that is capable of detecting failure of the primary barrier and collecting accumulated hazardous wastes and liquids at the earliest practicable time.

(I) The requirements of the leak detection component of the secondary containment system are satisfied by installation of a system that is, at a minimum:

I. Constructed with a bottom slope of 1 percent or more; and

II. Constructed of a granular drainage material with a hydraulic conductivity of 1×10^{-2} cm/sec or more and a thickness of 12 inches (30.5 cm) or more, or constructed of synthetic or geonet drainage materials with a transmissivity of 3×10^{-5} m^2/sec or more.

(II) If treatment is to be conducted in the building, an area in which such treatment will be conducted must be designed to prevent the release of liquids, wet materials, or liquid aerosols to other portions of the building.

(III) The secondary containment system must be constructed of materials that are chemically resistant to the waste and liquids managed in the containment building and of sufficient strength and thickness to prevent collapse under the pressure exerted by overlaying materials and by any equipment used in the containment building. (Containment buildings can serve as secondary containment systems for tanks placed within the building under certain conditions. A containment building can serve as an external liner system for a tank, provided it meets the requirements of subpart (10)(d)5(i) of this rule. In addition, the containment building must meet the requirements of part (10)(d)2 and subparts (10)(d)3(i) and (ii) of this rule to be considered an acceptable secondary containment system for a tank.)

(iv) For existing units other than 90-day generator units, the Commissioner may delay the secondary containment requirement for up to two years, based on a demonstration by the owner or operator that the unit substantially meets the standards of this paragraph. In making this demonstration, the owner or operator must:

(I) Provide written notice to the Commissioner of their request by November 16, 1992. This notification must describe the unit and its operating practices with specific reference to the performance of existing containment systems, and specific plans for retrofitting the unit with secondary containment;

(II) Respond to any comments from the Commissioner on these plans within 30 days; and

(III) Fulfill the terms of the revised plans, if such plans are approved by the Commissioner.

3. Owners or operators of all containment buildings must:

(i) Use controls and practices to ensure containment of the hazardous waste within the unit; and, at a minimum:

(I) Maintain the primary barrier to be free of significant cracks, gaps, corrosion, or other deterioration that could cause hazardous waste to be released from the primary barrier;

(II) Maintain the level of the stored/treated hazardous waste within the containment walls of the unit so that the height of any containment wall is not exceeded;

(III) Take measures to prevent the tracking of hazardous waste out of the unit by personnel or by equipment used in handling the waste. An area must be designated to decontaminate equipment and any rinsate must be collected and properly managed; and

(IV) Take measures to control fugitive dust emissions such that any openings (doors, windows, vents, cracks, etc.) exhibit no visible emissions (see 40 CFR part 60, appendix A, Method 22-Visual Determination of Fugitive Emissions from Material Sources and Smoke Emissions from Flares). In addition, all associated particulate collection devices (e.g., fabric filter, electrostatic precipitator) must be operated and maintained with sound air pollution control practices (see 40 CFR part 60 subpart 292 for guidance). This state of no visible emissions must be maintained effectively at all times during routine operating and maintenance conditions, including when vehicles and personnel are entering and exiting the unit.

(ii) Obtain and keep on-site a certification by a qualified Professional Engineer that the containment building design meets the requirements of parts 1 through 3 of this subparagraph.

(iii) Throughout the active life of the containment building, if the owner or operator detects a condition that could lead to or has caused a release of hazardous waste, the owner or operator must repair the condition promptly, in accordance with the following procedures.

(I) Upon detection of a condition that has led to a release of hazardous waste (e.g., upon detection of leakage from the primary barrier) the owner or operator must:

I. Enter a record of the discovery in the facility operating record;

II. Immediately remove the portion of the containment building affected by the condition from service;

III. Determine what steps must be taken to repair the containment building, remove any leakage from the secondary collection system, and establish a schedule for accomplishing the cleanup and repairs; and

IV. Within 7 days after the discovery of the condition, notify the Commissioner of the condition, and within 14 working days, provide a written notice to the Commissioner with a description of the steps taken to repair the containment building, and the schedule for accomplishing the work.

(II) The Commissioner will review the information submitted, make a determination regarding whether the containment building must be removed from service completely or partially until repairs and cleanup are complete, and notify the owner or operator of the determination and the underlying rationale in writing.

(III) Upon completing all repairs and cleanup the owner or operator must notify the Commissioner in writing and provide a verification, signed by a qualified, registered professional engineer, that the repairs and cleanup have been completed according to the written plan submitted in accordance with subitem (I)IV of this subpart.

(iv) Inspect and record in the facility's operating record, at least once every seven days, except for Performance Track member facilities that must inspect at least once each month, upon approval by the Regional Administrator data gathered from monitoring equipment and leak detection equipment as well as the containment building and the area immediately surrounding the containment building to detect signs of releases of hazardous waste. To apply for reduced inspection frequency, the Performance Track member facility must follow the procedures described in subpart (2)(f)2(v) of this rule.

4. For a containment building that contains both areas with and without secondary containment, the owner or operator must:

(i) Design and operate each area in accordance with the requirements enumerated in parts 1 through 3 of this subparagraph;

(ii) Take measures to prevent the release of liquids or wet materials into areas without secondary containment; and

(iii) Maintain in the facility's operating log a written description of the operating procedures used to maintain the integrity of areas without secondary containment.

5. Notwithstanding any other provision of this paragraph the Commissioner may waive requirements for secondary containment for a permitted containment building where the owner operator demonstrates that the only free liquids in the unit are limited amounts of dust suppression liquids required to meet occupational health and safety requirements, and where containment of managed wastes and liquids can be assured without a secondary containment system.

(c) Closure and Post-closure Care [40 CFR 264.1102]

1. At closure of a containment building, 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 0400-12-01-.02(1)(c)4 applies. The closure plan, closure activities, cost estimates for closure, and financial responsibility for containment buildings must meet all of the requirements specified in paragraphs (7) and (8) of this rule.

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)(k) of this rule). In addition, for the purposes of closure, post-closure, and financial responsibility, such a containment building is then considered to be a landfill, and the owner or operator must meet all of the requirements for landfills specified in paragraphs (7) and (8) of this rule.

(d)-(k) (RESERVED) [40 CFR 264.1103-264.1110]

(34) Hazardous Waste Munitions and Explosives Storage [40 CFR 264 Subpart EE]

(a) Applicability [40 CFR 264.1200]

The requirements of this paragraph apply to owners or operators who store munitions and explosive hazardous wastes, except as subparagraph (1)(b) of this rule provides otherwise. (NOTE: Depending on explosive hazards, hazardous waste munitions and explosives may also be managed in other types of storage units, including containment buildings (paragraph (33) of this rule), tanks (paragraph (10) of this rule), or containers (paragraph (9) of this rule); see Rule 0400-12-01-.09(13)(f) for storage of waste military munitions.)

(b) Design and Operating Standards [40 CFR 264.1201]

1. Hazardous waste munitions and explosives storage units must be designed and operated with containment systems, controls, and monitoring that:

(i) Minimize the potential for detonation or other means of release of hazardous waste, hazardous constituents, hazardous decomposition products, or contaminated run-off to the soil, ground water, surface water, and atmosphere;

(ii) Provide a primary barrier, which may be a container (including a shell) or tank, designed to contain the hazardous waste;

(iii) For wastes stored outdoors, provide that the waste and containers will not be in standing precipitation;

(iv) For liquid wastes, provide a secondary containment system that assures that any released liquids are contained and promptly detected and removed from the waste area or vapor detection system that assures that any released liquids or vapors are promptly detected and an appropriate response taken (e.g., additional containment, such as overpacking, or removal from the waste area); and

(v) Provide monitoring and inspection procedures that assure the controls and containment systems are working as designed and that releases that may adversely impact human health or the environment are not escaping from the unit.

2. Hazardous waste munitions and explosives stored under this paragraph may be stored in one of the following:

(i) Earth-covered magazines. Earth-covered magazines must be:

(I) Constructed of waterproofed, reinforced concrete or structural steel arches, with steel doors that are kept closed when not being accessed;

(II) Designed and constructed:

I. To be of sufficient strength and thickness to support the weight of any explosives or munitions stored and any equipment used in the unit;

II. To provide working space for personnel and equipment in the unit; and

III. To withstand movement activities that occur in the unit; and

(III) Located and designed, with walls and earthen covers that direct an explosion in the unit in a safe direction, so as to minimize the

propagation of an explosion to adjacent units and to minimize other effects of any explosion.

(ii) Above-ground magazines. Above-ground magazines must be located and designed so as to minimize the propagation of an explosion to adjacent units and to minimize other effects of any explosion.

(iii) Outdoor or open storage areas. Outdoor or open storage areas must be located and designed so as to minimize the propagation of an explosion to adjacent units and to minimize other effects of any explosion.

3. Hazardous waste munitions and explosives must be stored in accordance with a Standard Operating Procedure specifying procedures to ensure safety, security, and environmental protection. If these procedures serve the same purpose as the security and inspection requirements of subparagraph (2)(e) of this rule, the preparedness and prevention procedures of paragraph (3) of this rule, and the contingency plan and emergency procedures requirements of paragraph (4) of this rule, then these procedures will be used to fulfill those requirements.

4. Hazardous waste munitions and explosives must be packaged to ensure safety in handling and storage.

5. Hazardous waste munitions and explosives must be inventoried at least annually.

6. Hazardous waste munitions and explosives and their storage units must be inspected and monitored as necessary to ensure explosives safety and to ensure that there is no migration of contaminants out of the unit.

(c) Closure and Post-closure Care [40 CFR 264.1202]

1. At closure of a magazine or unit which stored hazardous waste under this paragraph, the owner or operator must remove or decontaminate all waste residues, contaminated containment system components, contaminated subsoils, and structures and equipment contaminated with waste and manage them as hazardous waste unless Rule 0400-12-01-.02(1)(c)4 applies. The closure plan, closure activities, cost estimates for closure, and financial responsibility for magazines or units must meet all of the requirements specified in paragraph (7) and (8) of this rule, except that the owner or operator may defer closure of the unit as long as it remains in service as a munitions or explosives magazine or storage unit.

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 or she must close the facility and perform post-closure care in accordance with the closure and post-closure requirements that apply to landfills (subparagraph (14)(k) of this rule).

(35)-(56) (RESERVED)

(57) Appendices to Rule 0400-12-01-.06 [40 CFR 264 Appendices]

(a) Appendix I -- 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 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:

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 Hazardous Waste Code(s) from Rule 0400-12-01-.02 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 0400-12-01-.02(4), the description also must include the process that produced it (for example, solid filter cake from production of ----, Hazardous Waste Code W051).

   Each hazardous waste listed in Rule 0400-12-01-.02(4), and each hazardous waste characteristic defined in Rule 0400-12-01-.02(3), has a four-digit Hazardous Waste Code assigned to it. This number must be used for recordkeeping and reporting purposes. Where a hazardous waste contains more than one listed hazardous waste, or where more than one hazardous waste characteristic applies to the waste, the waste description must include all applicable Hazardous Waste Codes.

2. The estimated or manifest-reported weight, or volume and density, where applicable, in one of the units of measure specified in Table 1;

Table 1

Unit of Measure	Code[1]
Gallons	G
Gallons per Hour	E
Gallons per Day	U
Liters	L
Liters per Hour	H
Liters per Day	V
Tons	M
Short Tons	T
Short Tons per Hour	D
Metric Tons per Hour	W
Short Tons per Day	N
Metric Tons per Day	S
Pounds	P
Pounds per Hour	J
Kilograms	K
Kilograms per Hour	R
Cubic Yards	Y
Cubic Meters	C
Acres	B
Acre-feet	A
Hectares	Q
Hectare-meter	F
Btu's per Hour	I

FOOTNOTE: [1]Single digit symbols are used here for data processing purposes.

3. The method(s) (by handling code(s) as specified in Table 2) and date(s) of treatment, storage, or disposal.

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.

(i) Storage

S01 Container (barrel, drum, etc.)

S02 Tank

S03 Waste Pile

S04 Surface Impoundment

S05 Drip Pad

S06 Containment Building (Storage)

S99 Other Storage (specify)

(ii) Treatment

(I) 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

T18 Other (specify)

(II) 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)

(III) Physical Treatment

I. 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)

II. Removal of Specific Components

T48 Absorption-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)

(IV) Biological Treatment
Activated sludge

T68 Aerobic lagoon

T69 Aerobic tank

T70 Anaerobic tank

T71 Composting

T72 Septic tank

T73 Spray irrigation

T74 Thickening filter

T75 Trickling filter

T76 Waste stabilization pond

T77 Other (specify)

T78 [Reserved]

T79 [Reserved]

(V) Boilers and Industrial Furnaces

T80 Boiler

T81 Cement Kiln

T82 Lime Kiln

T83 Aggregate Kiln

T84 Phosphate Kiln

T85 Coke Oven

T86 Blast Furnace

T87 Smelting, Melting, or Refining Furnace

T88 Titanium Dioxide Chloride Process Oxidation Reactor

T89 Methane Reforming Furnace

T90 Pulping Liquor Recovery Furnace

T91 Combustion Device Used in the Recovery of Sulfur Values From Spent Sulfuric Acid

T92 Halogen Acid Furnaces

T93 Other Industrial Furnaces Listed in 40 CFR 260.10 (specify)

(VI) Other Treatment

T94 Containment Building (Treatment)

(iii) Disposal

D79 Underground Injection

D80 Landfill

D81 Land Treatment

D82 Ocean Disposal

D83 Surface Impoundment (to be closed as a landfill)

D99 Other Disposal (specify)

(iv) Miscellaneous (Subpart X)

X01 Open Burning/Open Detonation

X02 Mechanical Processing

X03 Thermal Unit

X04 Geologic Repository

X99 Other Subpart X (specify)

(b) Appendices II -- (RESERVED)

(c) Appendices III -- (RESERVED)

(d) Appendix IV -- 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, . . ., X_n,) the mean is calculated by:

$$\overline{X} = \frac{X_1 + X_2 \ldots + X_n}{n}$$

and the variance is calculated by:

$$s^2 = \frac{(X_1 - \overline{X})^2 + (X_2 - \overline{X})^2 \ldots + (X_n - \overline{X})^2}{n-1}$$

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:

$$t^* = \frac{X_m - \overline{X}_s}{\sqrt{\frac{S_m^2}{n_m} + \frac{S_b^2}{n_b}}}$$

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:

$$W_B = \frac{s_b^2}{n_b} \quad and \quad W_m = \frac{s_m^2}{n_m}$$

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 t^* is equal to or larger than t_c, then conclude that there most likely has been a significant increase in this specific parameter.

If t^* is less than t_c, then conclude that most likely there has not been a change 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 t_c for pH and similar monitoring parameters.

If t^* is equal to or larger than t_c, then conclude that there most likely has been a significant increase (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 Statistical Methods (6th Edition, Section 4.14) by G. W. Snedecor and W. G. Cochran, or Principles and Procedures of Statistics (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

Footnote: Adopted from Table III of "Statistical Tables for Biological, Agricultural, and Medical Research" (1947, R. A. Fisher and F. Yates).

(e) Appendix V -- 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

Acetylene sludge
Alkaline caustic liquids
Alkaline cleaner
Alkaline corrosive liquids
Alkaline corrosive battery fluid
Caustic wastewater
Lime sludge and other corrosive alkalies
Lime wastewater
Lime and water
Spent caustic

Group 1-B

Acid sludge
Acid and water
Battery acid
Chemical cleaners
Electrolyte, acid
Etching acid liquid or solvent
Pickling liquor and other corrosive acids
Spent acid
Spent mixed acid
Spent sulfuric acid

Potential consequences: Heat generation; violent reaction.

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Group 2-A

Aluminum
Beryllium
Calcium
Lithium
Magnesium
Potassium
Sodium
Zinc powder
Other reactive metals and metal hydrides

Group 2-B

Any waste in Group 1-A or 1-B

Potential consequences: Fire or explosion; generation of flammable hydrogen gas.

* * * * * * * * * *

Group 3-A

Alcohols
Water

Group 3-B

Any concentrated waste in Groups 1-A or 1-B
Calcium
Lithium
Metal hydrides
Potassium
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

Alcohols
Aldehydes
Halogenated hydrocarbons
Nitrated hydrocarbons
Unsaturated hydrocarbons
Other reactive organic compounds and solvents

Group 4-B

Concentrated Group 1-A or 1-B wastes
Group 2-A wastes

Potential consequences: Fire, explosion, or violent reaction.

Group 5-A

Spent cyanide and sulfide solutions

Group 5-B

Group 1-B wastes

Potential consequences: Generation of toxic hydrogen cyanide or hydrogen sulfide gas.

* * * * * * * * * *

Group 6-A

Chlorates
Chlorine

Chlorites
Chromic acid
Hypochlorites
Nitrates
Nitric acid, fuming
Perchlorates
Permanganates
Peroxides
Other strong oxidizers

Group 6-B

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.

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(f) Appendix VI - (RESERVED)

(g) Appendix VII - (RESERVED)

(h) Appendix VIII - (RESERVED)

(i) Appendix IX - Ground-Water Monitoring List

Common Name[1]	CAS RN[2]	Chemical Abstracts Service Index Name[3]
Acenaphthene	83-32-9	Acenaphthylene, 1,2-dihydro-
Acenaphthylene	208-96-8	Acenaphthylene
Acetone	67-64-1	2-Propanone
Acetophenone	98-86-2	Ethanone, 1-phenyl-
Acetonitrile; Methyl cyanide	75-05-8	Acetonitrile
2-Acetylaminofluorene; 2-AAF	53-96-3	Acetamide, N-9H-fluoren-2-yl-
Acrolein	107-02-8	2-Propenal
Acrylonitrile	107-13-1	2-Propenenitrile
Aldrin	309-00-2	1,4:5,8-Dimethanonaphthalene, 1,2,3,4,10,10-hexachloro- 1,4,4a,5,8,8a-hexahydro- (1α,4α,4aβ,5α, 8α,8aβ)-
Allyl chloride	107-05-1	1-Propene, 3-chloro-
4-Aminobiphenyl	92-67-1	[1,1'-Biphenyl]-4-amine
Aniline	62-53-3	Benzenamine
Anthracene	120-12-7	Anthracene
Antimony	(Total)	Antimony

Aramite	140-57-8	Sulfurous acid, 2-chloroethyl 2-[4-(1,1-dimethylethyl)phenoxy]-1-methylethyl ester
Arsenic	(Total)	Arsenic
Barium	(Total)	Barium
Benzene	71-43-2	Benzene
Benzo[a]anthracene; Benzanthracene	56-55-3	Benz[a]anthracene
Benzo[b]fluoranthene	205-99-2	Benz[e]acephenanthrylene
Benzo[k]fluoranthene	207-08-9	Benzo[k]fluoranthene
Benzo[ghi]perylene	191-24-2	Benzo[ghi]perylene
Benzo[a]pyrene	50-32-8	Benzo[a]pyrene
Benzyl alcohol	100-51-6	Benzenemethanol
Beryllium	(Total)	Beryllium
alpha-BHC	319-84-6	Cyclohexane, 1,2,3,4,5,6-hexachloro-(1α,-2α,3β,4β,5β,6β)-
beta-BHC	319-85-7	Cyclohexane, 1,2,3,4,5,6-hexachloro-(1α,2β,3α,4β,5α,6β)-
delta-BHC	319-86-8	Cyclohexane, 1,2,3,4,5,6-hexachloro-(1α,2α, 3α,4β,5α,6β)-
gamma-BHC; Lindane	58-89-9	Cyclohexane, 1,2,3,4,5,6-hexachloro-(1α,2α,3β,4α,5α,6β)-
Bis(2-chloroethoxy)methane	111-91-1	Ethane, 1,1'-[methylenebis (oxy)]bis[2-chloro-
Bis(2-chloroethyl)ether	111-44-4	Ethane, 1,1'-oxybis[2-chloro-
Bis(2-chloro-1-methylethyl) ether; 2,2'-Di-chlorodiisopropyl ether	108-60-1	Propane, 2,2'-oxybis[1-chloro-
Bis(2-ethylhexyl) phthalate	117-81-7	1,2-Benzenedicarboxylic acid, bis(2-ethylhexyl)ester
Bromodichloromethane	75-27-4	Methane, bromodichloro-
Bromoform; Tribromomethane	75-25-2	Methane, tribromo-
4-Bromophenyl phenyl ether	101-55-3	Benzene, 1-bromo-4-phenoxy-
Butyl benzyl phthalate; Benzyl butyl phthalate	85-68-7	1,2-Benzenedicarboxylic acid, butyl phenylmethyl ester
Cadmium	(Total)	Cadmium
Carbon disulfide	75-15-0	Carbon disulfide
Carbon tetrachloride	56-23-5	Methane, tetrachloro-
Chlordane	57-74-9	4,7-Methano-1H-indene, 1,2,4,5,6,7,8,8-octachloro-2,3,3a,4,7,7a-hexahydro-
p-Chloroaniline	106-47-8	Benzenamine, 4-chloro-
Chlorobenzene	108-90-7	Benzene, chloro-

Chlorobenzilate	510-15-6	Benzeneacetic acid, 4-chloro-α-(4-chlorophenyl)-α-hydroxy-, ethyl ester
p-Chloro-m-cresol	59-50-7	Phenol, 4-chloro-3-methyl-
Chloroethane; Ethyl chloride	75-00-3	Ethane, chloro-
Chloroform	67-66-3	Methane, trichloro-
2-Chloronaphthalene	91-58-7	Naphthalene, 2-chloro-
2-Chlorophenol	95-57-8	Phenol, 2-chloro-
4-Chlorophenyl phenyl ether	7005-72-3	Benzene, 1-chloro-4-phenoxy-
Chloroprene	126-99-8	1,3-Butadiene, 2-chloro-
Chromium	(Total)	Chromium
Chrysene	218-01-9	Chrysene
Cobalt	(Total)	Cobalt
Copper	(Total)	Copper
m-Cresol	108-39-4	Phenol, 3-methyl-
o-Cresol	95-48-7	Phenol, 2-methyl-
p-Cresol	106-44-5	Phenol, 4-methyl-
Cyanide	57-12-5	Cyanide
2,4-D; 2,4-Dichlorophenoxyacetic acid	94-75-7	Acetic acid, (2,4-dichlorophenoxy)-
4,4'-DDD	72-54-8	Benzene 1,1'-(2,2-dichloroethylidene)bis[4-chloro-
4,4'-DDE	72-55-9	Benzene, 1,1'-(dichloroethenylidene)bis[4-chloro-
4,4'-DDT	50-29-3	Benzene, 1,1'-(2,2,2-trichloroethylidene)bis[4-chloro-
Diallate	2303-16-4	Carbamothioic acid, bis(1-methylethyl)- , S- (2,3-dichloro-2-propenyl) ester
Dibenz[a,h]anthracene	53-70-3	Dibenz[a,h]anthracene
Dibenzofuran	132-64-9	Dibenzofuran
Dibromochloromethane; Chlorodibromomethane	124-48-1	Methane, dibromochloro-
1,2-Dibromo-3-chloropropane; DBCP	96-12-8	Propane, 1,2-dibromo-3-chloro-
1,2-Dibromoethane; Ethylene dibromide	106-93-4	Ethane, 1,2-dibromo-
Di-n-butyl phthalate	84-74-2	1,2-Benzenedicarboxylic acid, dibutyl ester
o-Dichlorobenzene	95-50-1	Benzene, 1,2-dichloro-
m-Dichlorobenzene	541-73-1	Benzene, 1,3-dichloro-
p-Dichlorobenzene	106-46-7	Benzene, 1,4-dichloro-
3,3'-Dichlorobenzidine	91-94-1	[1,1'-Biphenyl]-4,4'-diamine, 3,3'-dichloro-
trans-1,4-Dichloro-2-butene	110-57-6	2-Butene, 1,4-dichloro-, (E)-
Dichlorodifluoromethane	75-71-8	Methane, dichlorodifluoro-

1,1-Dichloroethane	75-34-3	Ethane, 1,1-dichloro-
1,2-Dichloroethane; Ethylene dichloride	107-06-2	Ethane, 1,2-dichloro-
1,1-Dichloroethylene; Vinylidene chloride	75-35-4	Ethene, 1,1-dichloro-
trans-1,2-Dichloroethylene	156-60-5	Ethene, 1,2-dichloro-, (E)-
2,4-Dichlorophenol	120-83-2	Phenol, 2,4-dichloro-
2,6-Dichlorophenol	87-65-0	Phenol, 2,6-dichloro-
1,2-Dichloropropane	78-87-5	Propane, 1,2-dichloro-
cis-1,3-Dichloropropene	10061-01-5	1-Propene, 1,3-dichloro-, (Z)-
trans-1,3-Dichloropropene	10061-02-6	1-Propene, 1,3-dichloro-, (E)-
Dieldrin	60-57-1	2,7:3,6-Dimethanonaphth[2,3-b]oxirene, 3,4,5,6,9,9-hexachloro-1a,2,2a,3,6,6a,7,7a-octahydro-, (1aα,2β,2aα,3β,6β,6aα,7β,7aα)-
Diethyl phthalate	84-66-2	1,2-Benzenedicarboxylic acid, diethyl ester
O,O-Diethyl O-2-pyrazinyl phosphorothioate; Thionazin	297-97-2	Phosphorothioic acid, O,O-diethyl O-pyrazinyl ester
Dimethoate	60-51-5	Phosphorodithioic acid, O,O-dimethyl S-[2-(methylamino)-2-oxoethyl] ester
p-(Dimethylamino)azo-benzene	60-11-7	Benzenamine, N,N-dimethyl-4-(phenylazo)-
7,12-Dimethylbenz[a]anthracene	57-97-6	Benz[a]anthracene, 7,12-dimethyl-
3,3'Dimethylbenzidine	119-93-7	[1,1'-Biphenyl]-4,4'-diamine, 3,3'-dimethyl-
alpha, alpha-Dimethylphenethylamine	122-09-8	Benzeneethanamine, α,α-dimethyl-
2,4-Dimethylphenol	105-67-9	Phenol, 2,4-dimethyl-
Dimethyl phthalate	131-11-3	1,2-Benzenedicarboxylic acid, dimethyl ester
m-Dinitrobenzene	99-65-0	Benzene, 1,3-dinitro-
4,6-Dinitro-o-cresol	534-52-1	Phenol, 2-methyl-4,6-dinitro-
2,4-Dinitrophenol	51-28-5	Phenol, 2,4-dinitro-
2,4-Dinitrotoluene	121-14-2	Benzene, 1-methyl-2,4-dinitro-
2,6-Dinitrotoluene	606-20-2	Benzene, 2-methyl-1,3-dinitro-
Dinoseb; DNBP; 2-sec-Butyl-4,6-dinitrophenol	88-85-7	Phenol, 2-(1-methylpropyl)-4,6-dinitro-
Di-n-octyl phthalate	117-84-0	1,2-Benzenedicarboxylic acid, dioctyl ester
1,4-Dioxane	123-91-1	1,4-Dioxane
Diphenylamine	122-39-4	Benzenamine, N-phenyl-
Disulfoton	298-04-4	Phosphorodithioic acid, O,O-diethyl S-[2-(ethylthio)ethyl]ester

Endosulfan I	959-98-8	6,9-Methano-2,4,3-benzodioxathiepin, 6,7,8,9,10,10-hexachloro-1,5,5a,6,9,9a-hexahydro-, 3-oxide, (3α,5 αβ,6α,9α,9aβ)-
Endosulfan II	33213-65-9	6,9-Methano-2,4,3-benzodioxathiepin, 6,7,8,9,10,10-hexachloro- 1,5,5a,6,9,9a-hexahydro-, 3-oxide, (3α,5aα,6β,9β,9aα)-
Endosulfan sulfate	1031-07-8	6,9-Methano-2,4,3-benzodioxathiepin, 6,7,8,9,10,10-hexachloro- 1,5,5a,6,9,9a-hexahydro-, 3,3-dioxide
Endrin	72-20-8	2,7:3,6-Dimethanonaphth[2,3-b]oxirene, 3,4,5,6,9,9-hexachloro-1a,2,2a,3,6,6a,7,7a-octahydro-, (1aα, 2β,2aβ,3α,6α, 6aβ,7β,7aα)-
Endrin aldehyde	7421-93-4	1,2,4-Methenocyclopenta[cd]pentalene-5-carboxaldehyde, 2,2a,3,3,4,7-hexachlorodecahydro-, (1α,2β,2aβ,4β,4aβ,-5β,6aβ,6bβ,7R*)-
Ethylbenzene	100-41-4	Benzene, ethyl-
Ethyl methacrylate	97-63-2	2-Propenoic acid, 2-methyl-, ethyl ester
Ethyl methanesulfonate	62-50-0	Methanesulfonic acid, ethyl ester
Famphur	52-85-7	Phosphorothioic acid, O-[4-[(dimethylamino)sulfonyl]phenyl]-O,O-dimethyl ester
Fluoranthene	206-44-0	Fluoranthene
Fluorene	86-73-7	9H-Fluorene
Heptachlor	76-44-8	4,7-Methano-1H-indene, 1,4,5,6,7,8,8-heptachloro-3a,4,7,7a-tetrahydro-
Heptachlor epoxide	1024-57-3	2,5-Methano-2H-indeno[1,2-b]oxirene, 2,3,4,5,6,7,7-heptachloro-1a,1b,5,5a,6,6a,-hexahydro-,(1aα,1bβ, 2α,5α,5aβ,6β,6aα)
Hexachlorobenzene	118-74-1	Benzene, hexachloro-
Hexachlorobutadiene	87-68-3	1,3-Butadiene, 1,1,2,3,4,4-hexachloro-
Hexachlorocyclopentadiene	77-47-4	1,3-Cyclopentadiene, 1,2,3,4,5,5-hexachloro-
Hexachloroethane	67-72-1	Ethane, hexachloro-
Hexachlorophene	70-30-4	Phenol, 2,2'-methylenebis[3,4,6-trichloro-
Hexachloropropene	1888-71-7	1-Propene, 1,1,2,3,3,3-hexachloro-
2-Hexanone	591-78-6	2-Hexanone
Indeno(1,2,-3-cd)pyrene	193-39-5	Indeno[1,2,3-cd]pyrene
Isobutyl alcohol	78-83-1	1-Propanol, 2-methyl-
Isodrin	465-73-6	1,4,5,8-Dimethanonaphthalene, 1,2,3,4,10,10-hexachloro-1,4,4a,5,8,8a hexahydro-(1α,4α,4aβ,5β, 8β,8aβ)-
Isophorone	78-59-1	2-Cyclohexen-1-one, 3,5,5-trimethyl-
Isosafrole	120-58-1	1,3-Benzodioxole, 5-(1-propenyl)-

Kepone	143-50-0	1,3,4-Metheno-2H-cyclobuta-[cd]pentalen-2-one, 1,1a,3,3a,4,5,5,5a,5b,6-decachloro-octahydro-
Lead	(Total)	Lead
Mercury	(Total)	Mercury
Methacrylonitrile	126-98-7	2-Propenenitrile, 2-methyl-
Methapyrilene	91-80-5	1,2,Ethanediamine, N,N-dimethyl-N'-2-pyridinyl-N'- (2-thienylmethyl)-
Methoxychlor	72-43-5	Benzene, 1,1'-(2,2,2,trichloroethylidene)bis [4-methoxy-
Methyl bromide; Bromomethane	74-83-9	Methane, bromo-
Methyl chloride; Chloromethane	74-87-3	Methane, chloro-
3-Methylcholanthrene	56-49-5	Benz[j]aceanthrylene, 1,2-dihydro-3-methyl-
Methylene bromide; Dibromomethane	74-95-3	Methane, dibromo-
Methylene chloride; Dichloromethane	75-09-2	Methane, dichloro-
Methyl ethyl ketone; MEK	78-93-3	2-Butanone
Methyl iodide; Iodomethane	74-88-4	Methane, iodo-
Methyl methacrylate	80-62-6	2-Propenoic acid, 2-methyl-, methyl ester
Methyl methanesulfonate	66-27-3	Methanesulfonic acid, methyl ester
2-Methylnaphthalene	91-57-6	Naphthalene, 2-methyl-
Methyl parathion; Parathion methyl	298-00-0	Phosphorothioic acid, O,O-dimethyl O-(4-nitrophenyl) ester
4-Methyl-2-pentanone; Methyl isobutyl ketone	108-10-1	2-Pentanone, 4-methyl-
Naphthalene	91-20-3	Naphthalene
1,4-Naphthoquinone	130-15-4	1,4-Naphthalenedione
1-Naphthylamine	134-32-7	1-Naphthalenamine
2-Naphthylamine	91-59-8	2-Naphthalenamine
Nickel	(Total)	Nickel
o-Nitroaniline	88-74-4	Benzenamine, 2-nitro-
m-Nitroaniline	99-09-2	Benzenamine, 3-nitro-
p-Nitroaniline	100-01-6	Benzenamine, 4-nitro-
Nitrobenzene	98-95-3	Benzene, nitro-
o-Nitrophenol	88-75-5	Phenol, 2-nitro-
p-Nitrophenol	100-02-7	Phenol, 4-nitro-
4-Nitroquinoline-1-oxide	56-57-5	Quinoline, 4-nitro-, 1-oxide
N-Nitrosodi-n-butylamine	924-16-3	1-Butanamine, N-butyl-N-nitroso-
N-Nitrosodiethylamine	55-18-5	Ethanamine, N-ethyl-N-nitroso-
N-Nitrosodimethylamine	62-75-9	Methanamine, N-methyl-N-nitroso-

N-Nitrosodiphenylamine	86-30-6	Benzenamine, N-nitroso-N-phenyl-
N-Nitrosodipropylamine; Di-n-propyl-nitrosamine	621-64-7	1-Propanamine, N-nitroso-N-propyl-
N-Nitrosomethylethylamine	10595-95-6	Ethanamine, N-methyl-N-nitroso-
N-Nitrosomorpholine	59-89-2	Morpholine, 4-nitroso-
N-Nitrosopiperidine	100-75-4	Piperidine, 1-nitroso-
N-Nitrosopyrrolidine	930-55-2	Pyrrolidine, 1-nitroso-
5-Nitro-o-toluidine	99-55-8	Benzenamine, 2-methyl-5-nitro-
Parathion	56-38-2	Phosphorothioic acid, O,O-diethyl-O-(4-nitrophenyl) ester
Polychlorinated biphenyls; PCBs	See Note 4	1,1'-Biphenyl, chloro derivatives
Polychlorinated dibenzo-p-dioxins; PCDDs	See Note 5	Dibenzo[b,e][1,4]dioxin, chloro derivatives
Polychlorinated dibenzofurans; PCDFs	See Note 6	Dibenzofuran, chloro derivatives
Pentachlorobenzene	608-93-5	Benzene, pentachloro-
Pentachloroethane	76-01-7	Ethane, pentachloro-
Pentachloronitrobenzene	82-68-8	Benzene, pentachloronitro-
Pentachlorophenol	87-86-5	Phenol, pentachloro-
Phenacetin	62-44-2	Acetamide, N-(4-ethoxyphenyl)
Phenanthrene	85-01-8	Phenanthrene
Phenol	108-95-2	Phenol
p-Phenylenediamine	106-50-3	1,4-Benzenediamine
Phorate	298-02-2	Phosphorodithioic acid, O,O-diethyl S-[(ethylthio)methyl] ester
2-Picoline	109-06-8	Pyridine, 2-methyl-
Pronamide	23950-58-5	Benzamide, 3,5-dichloro-N-(1,1-dimethyl-2-propynyl)-
Propionitrile; Ethyl cyanide	107-12-0	Propanenitrile
Pyrene	129-00-0	Pyrene
Pyridine	110-86-1	Pyridine
Safrole	94-59-7	1,3-Benzodioxole, 5-(2-propenyl)-
Selenium	(Total)	Selenium
Silver	(Total)	Silver
Silvex; 2,4,5-TP	93-72-1	Propanoic acid, 2-(2,4,5-trichlorophenoxy)-
Styrene	100-42-5	Benzene, ethenyl-
Sulfide	18496-25-8	Sulfide
2,4,5-T; 2,4,5-Tri-chlorophenoxyacetic acid	93-76-5	Acetic acid, (2,4,5-trichlorophenoxy)-
2,3,7,8-TCDD; 2,3,7,8-T-Tetrachlorodibenzo-p-dioxin	1746-01-6	Dibenzo[b,e][1,4]dioxin, 2,3,7,8-tetrachloro-
1,2,4,5-Tetrachlorobenzene	95-94-3	Benzene, 1,2,4,5-tetrachloro-

1,1,1,2-Tetrachloroethane	630-20-6	Ethane, 1,1,1,2-tetrachloro-
1,1,2,2-Tetrachloroethane	79-34-5	Ethane, 1,1,2,2-tetrachloro-
Tetrachloroethylene; Perchloroethylene; Tetrachloroethene	127-18-4	Ethene, tetrachloro-
2,3,4,6-Tetrachlorophenol	58-90-2	Phenol, 2,3,4,6-tetrachloro-
Tetraethyl dithiopyrophosphate; Sulfotepp	3689-24-5	Thiodiphosphoric acid ($[(HO)_2P(S)]_2O$), tetraethyl ester
Thallium	(Total)	Thallium
Tin	(Total)	Tin
Toluene	108-88-3	Benzene, methyl-
o-Toluidine	95-53-4	Benzenamine, 2-methyl-
Toxaphene	8001-35-2	Toxaphene
1,2,4-Trichlorobenzene	120-82-1	Benzene, 1,2,4-trichloro-
1,1,1-Trichloroethane; Methylchloroform	71-55-6	Ethane, 1,1,1-trichloro-
1,1,2-Trichloroethane	79-00-5	Ethane, 1,1,2-trichloro-
Trichloroethylene; Trichloroethene	79-01-6	Ethene, trichloro-
Trichlorofluoromethane	75-69-4	Methane, trichlorofluoro-
2,4,5-Trichlorophenol	95-95-4	Phenol, 2,4,5-trichloro-
2,4,6-Trichlorophenol	88-06-2	Phenol, 2,4,6-trichloro-
1,2,3-Trichloropropane	96-18-4	Propane, 1,2,3-trichloro-
O,O,O-Triethyl phosphorothioate	126-68-1	Phosphorothioic acid, O,O,O-triethyl ester
sym-Trinitrobenzene	99-35-4	Benzene, 1,3,5-trinitro-
Vanadium	(Total)	Vanadium
Vinyl acetate	108-05-4	Acetic acid, ethenyl ester
Vinyl chloride	75-01-4	Ethene, chloro-
Xylene (total)	1330-20-7	Benzene, dimethyl-
Zinc	(Total)	Zinc

FOOTNOTE:[1] Common names are those widely used in government regulations, scientific publications, and commerce; synonyms exist for many chemicals.
FOOTNOTE:[2] Chemical Abstracts Service registry number. Where "Total" is entered, all species in the ground water that contain this element are included.
FOOTNOTE:[3] CAS index names are those used in the 9th Cumulative Index.
FOOTNOTE:[4] Polychlorinated biphenyls (CAS RN 1336-36-3); this category contains congener chemicals, including constituents of Aroclor-1016 (CAS RN 12674-11-2), Aroclor-1221 (CAS RN 11104-28-2), Aroclor-1232 (CAS RN 11141-16-5), Aroclor-1242 (CAS RN 53469-21-9), Aroclor-1248 (CAS RN 12672-29-6), Aroclor-1254 (CAS RN 11097-69-1), and Aroclor-1260 (CAS RN 11096-82-5).
FOOTNOTE:[5] This category contains congener chemicals, including tetrachlorodibenzo-p-dioxins (see also 2,3,7,8-TCDD), pentachlorodibenzo-p-dioxins, and hexachlorodibenzo-p-dioxins.
FOOTNOTE: [6]This category contains congener chemicals, including tetrachlorodibenzofurans, pentachlorodibenzofurans, and hexachlorodibenzofurans.

Authority: T.C.A. §§ 68-212-101 et seq. and 4-5-201 et seq.

I certify that the information included in this filing is an accurate and complete representation of the intent and scope of rulemaking proposed by the agency.

Date: June 2, 2011

Signature: JMApple

Name of Officer: Mike Apple

Title of Officer: Director, Division of Solid Waste Management

MARY EVANS STATE OF TENNESSEE NOTARY PUBLIC DAVIDSON COUNTY

Subscribed and sworn to before me on: June 2, 2011

Notary Public Signature: Mary Evans

My commission expires on: January 6, 2014

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Tre Hargett

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Secretary of State

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