R315. Environmental Quality, Solid and Hazardous Waste.
R315-8. Standards for Owners and Operators of Hazardous Waste Treatment, Storage, and Disposal Facilities.
R315-8-1. Purpose, Scope and Applicability.

(a) The purpose of R315-8 is to establish minimum State of Utah standards which define the acceptable management of hazardous waste.

(b) The standards in R315-8 apply to owners and operators of all facilities which treat, store, or dispose of hazardous waste, except as specifically provided otherwise in R315-8 or R315-2.

(c) The requirements of R315-8 apply to a person disposing of hazardous waste by means of underground injection subject to a permit issued under the Underground Injection Control (UIC) program approved or promulgated under the Safe Drinking Water Act only to the extent they are required by R315-3. R315-8 applies to the above-ground treatment or storage of hazardous waste before it is injected underground.

(d) The requirements of R315-8 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 RCRA permit by rule granted to such a person under R315-3.

(e) The requirements of R315-8 do not apply to:

(1) The owner or operator of a state approved facility managing municipal or industrial solid waste, if the only hazardous waste the facility treats, stores, or disposes of is excluded from regulation under R315-2-5, conditionally exempt small quantity generator exemption;

(2) A generator accumulating waste on-site in compliance with R315-5-3.34, which incorporates by reference 40 CFR 262.34;

(3) A farmer disposing of waste pesticides from his own use in compliance with R315-5-7;

(4) The owner or operator of a totally enclosed treatment facility. A totally enclosed treatment facility is a facility for the treatment of hazardous waste which is directly connected to an industrial production process and which is constructed and operated in a manner which prevents the release of any hazardous waste or any constituent thereof into the environment during treatment;

(5) A transporter storing manifested shipments of hazardous waste in containers meeting the requirements of R315-5-3.30 at a transfer facility for a period of ten days or less;

(6)(i) Except as provided in R315-8-1(e)(6)(ii), a person engaged in treatment or containment activities during immediate response to any of the following situations:

(A) A discharge of a hazardous waste;

(B) An imminent and substantial threat of a discharge of hazardous waste; and

(C) A discharge of a material which, when discharged, becomes a hazardous waste.

(ii) An owner or operator of a facility otherwise regulated by R315-8 shall comply with all applicable requirements of R315-8-3 and R315-8-4.

(iii) Any person who is covered by R315-8-1(e)(6)(i), and who continues or initiates hazardous waste treatment or containment activities after the immediate response is over is subject to all applicable requirements of R315-8 and R315-3 for those activities.

(iv) In the case of an explosives or munitions emergency response, if a State 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 EPA 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 shall 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.

(7) The owner or operator of an elementary neutralization unit or a wastewater treatment unit as defined in R315-1-1(b), which incorporates by reference 40 CFR 260.10, provided that if the owner or operator is diluting hazardous ignitable (D001) wastes, other than the D001 High TOC Subcategory defined in R315-13, which incorporates by reference 40 CFR 268.40, or reactive (D003) waste, to remove the characteristic before land disposal, the owner/operator shall comply with the requirements set out in R315-8-2.8(b);

(8) The addition of absorbent material to waste in a container, as defined in R315-1, 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 R315-8-2.8(b), R315-8-9.2, and R315-8-9.3 are complied with;

(9) The owner or operator of a facility managing recyclable materials described in R315-2-6, which incorporates by reference 40 CFR 261.6, except to the extent that they are referred to in R315-15 or R315-14-2, which incorporates by reference 40 CFR 266 subpart C, R315-14-5, which incorporates by reference 40 CFR 266 subpart F, R315-14-6, which incorporates by reference 40 CFR 266 subpart G, and R315-14-7, which incorporates by reference 40 CFR 266 subpart H; and

(10) Universal waste handlers and universal waste transporters (as defined in R315-16-1.9), handling the wastes listed below. These handlers are subject to regulation under R315-16, when handling the below listed universal wastes:

(i) Batteries as described in R315-16-1.2;

(ii) Pesticides as described in R315-16-1.3;

(iii) Mercury thermostats as described in R315-16-1.4; and

(iv) Mercury lamps as described in R315-16-1.5.

(f) The requirements of this rule apply to owners or

operators of all facilities which treat, store, or dispose of hazardous waste referred to in R315-13, which incorporates by reference 40 CFR 268.

(g) The requirements of R315-8-2 through 8-4 and R315-8-6.12 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 hazardous waste permit because the facility is also treating, storing or disposing of hazardous wastes that are not remediation wastes. In these cases, R315-8-2 through 8-4 and R315-8-6.12 do apply to the facility subject to the traditional hazardous waste permit). Instead of the requirements of R315-8-2 through 8-4, owners or operators of remediation waste management sites must:

(1) Obtain an EPA identification number by applying to the Division of Solid and Hazardous Waste using EPA Form 8700-12;

(2) Obtain a detailed chemical and physical analysis of a representative sample of the hazardous remediation waste 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 R315-13, which incorporates by reference 40 CFR 268, and R315-8, and must be kept accurate and up to date;

(3) 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 Executive Secretary 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 R315-8;

(4) 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;

(5) 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 R315-8, and on how to respond effectively to emergencies;

(6) 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;

(7) For remediation waste management sites subject to regulation under R315-8-9 through 8-15, and R315-8-16, which incorporates by reference 40 CFR 264.600 - 603, 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 R315-8-2.9(b);

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

(9) Develop and maintain a construction quality assurance program for all surface impoundments, waste piles and landfill units that are required to comply with R315-8-11.2(c) and (d), R315-8-12.2(c) and (d), and R315-8-14.2(c) and (d) at the remediation waste management site, according to the requirements of R315-8-2.10;

(10) 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;

(11) 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;

(12) Develop, maintain and implement a plan to meet the requirements in R315-8-1(g)(2) through (g)(6) and R315-8-1(g)(9) through (g)(10); and

(13) Maintain records documenting compliance with R315-8-1(g)(1) through (g)(12).

1.1 RELATIONSHIP TO INTERIM STATUS STANDARDS

A facility owner or operator who has fully complied with the requirements for interim status--as defined in section 3005(e) of the Federal RCRA Act and regulations under R315-3-7.1 shall comply with the regulations specified in

R315-7 in lieu of R315-8, until final administrative disposition of his permit application is made, except as provided under R315-8-21, which incorporates by reference 40 CFR 264.552 and 264.553.

R315-8-2. General Facility Standards.

2.1 APPLICABILITY

(a) The rules in this section apply to the owners or operators of all hazardous waste management facilities, except as provided otherwise in R315-8-1(e).

(b) R315-8-2.9(b) applies only to facilities subject to regulation under R315-8-9 through R315-8-15 and R315-8-16, which incorporates by reference 40 CFR 264.600 - 264.603.

2.2 IDENTIFICATION NUMBER

Every facility owner or operator shall obtain an EPA identification number by applying to the Executive Secretary using EPA form 8700-12. Information on obtaining this number can be acquired by contacting the Utah Division of Solid and Hazardous Waste.

2.3 REQUIRED NOTICES

(a)(1) An owner or operator of a facility that has arranged to receive hazardous waste from a foreign source shall notify the Board in writing at least four weeks in advance of the expected date of arrival of these shipments at the facility. A notice of subsequent shipments of the same waste from the same foreign source is not required.

(2) The owner or operator of a recovery facility that has arranged to receive hazardous waste subject to R315-5-8, which incorporates by reference 40 CFR 262, subpart H, shall provide a copy of the tracking document bearing all required signatures to the notifier, to the Division of Solid and Hazardous Waste, P.O. Box 144880, Salt Lake City, Utah, 84114-4880; Office of Enforcement and Compliance Assurance, Office of Compliance, Enforcement Planning, Targeting and Data Division (2222A), Environmental Protection Agency, 401 M St., SW., Washington, DC 20460; and to the competent authorities of all other concerned countries within three working days of receipt of the shipment. The original of the signed tracking document shall be maintained at the facility for at least three years.

(b) An owner or operator of a facility that receives hazardous waste from off-site, except when the owner or operator is also the generator, shall inform the generator in writing that he has the appropriate permit(s) for, and will accept, the waste the generator is shipping. A copy of this written notice shall be retained by the owner or operator as part of the operating record of waste received.

(c) 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 shall notify the new owner or operator in writing of the requirements of R315-8 and R315-3. An owner's or operator's failure to notify the new owner or operator of the requirements of R315-8 in no way relieves the new owner or operator of his obligation to comply with all applicable requirements.

2.4 GENERAL WASTE ANALYSIS

The requirements as found in 40 CFR 264.13, 1996 ed., are adopted and incorporated by reference.

2.5 SECURITY

(a) A facility owner or operator shall 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 Board that:

(1) 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

(2) 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 R315-8-2.5.

An owner or operator who wishes to make the demonstration referred to above shall do so with the part B permit application.

(b) Unless the owner or operator has made a successful demonstration under R315-8-2.5(a)(1) and (a)(2), a facility shall have:

(1) 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

(2)(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 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. The requirements of R315-8-2.5(b) 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 R315-8-2.5(b)(1) or (2).

(c) Unless the owner or operator has made a successful demonstration under R315-8-2.5(a)(1) and (a)(2), a sign with the legend, "Danger - Unauthorized Personnel Keep Out", shall 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 the active portion. The legend shall be written in English and in any other language predominant in the area surrounding the facility and shall 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 is potentially dangerous. Owners or operators are encouraged to also describe in the sign the type of hazard, e.g., hazardous waste, flammable wastes, etc. contained within the active portion of the facility. See R315-8-7, which incorporates by reference 40 CFR 264.110 -

264.120, for discussion of security requirements during the post-closure care period.

2.6 GENERAL INSPECTION REQUIREMENTS

(a) Facility owners or operators shall inspect their facilities for malfunctions and deterioration, operator errors, and discharges, which may be causing or may lead to release of hazardous waste constituents to the environment or pose a threat to human health. These inspections shall be conducted frequently enough to identify problems in time to take corrective action before they harm human health or the environment.

(b)(1) Facility owners or operators shall 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.

(2) The schedule shall be kept at the facility.

(3) The schedule shall identify the types of problems, e.g., malfunctions or deterioration, which are to be looked for during the inspection, for example, inoperative sump pump, leaking fitting, eroding dike, etc.

(4) The frequency of the 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 any operator error goes undetected between inspections. Areas subject to spills, such as loading and unloading areas, shall be inspected daily when they are in use. At a minimum, the inspection schedule shall include the items and frequencies called for in R315-8-9.5, R315-8-10, which incorporates by reference 40 CFR 264.190 - 264.199, R315-8-11.3, R315-8-12.3, R315-8-13.6, R315-8-14.3, R315-8-15.7, R315-8-16, which incorporates by reference 40 CFR 264.600 - 264.603, R315-8-17, which incorporates by reference 40 CFR 264.1030 - 264.1036, R315-8-18, which incorporates by reference 40 CFR 264.1050 - 264.1065, and R315-8-22, which incorporates by reference 40 CFR 264.1083 through 264.1089.

(c) The owner or operator shall make any repairs, or take other remedial action, on a time schedule which ensures that any deterioration or malfunction discovered does not lead to an environmental or human health hazard. Where a hazard is imminent or has already occurred, remedial action shall be taken immediately.

(d) The owner or operator shall keep records of inspections in an inspection log or summary. These records shall be retained for at least three years. At a minimum, these records shall 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 made or remedial actions taken.

2.7 PERSONNEL TRAINING

(a)(1) Facility personnel shall 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 section and that includes all the elements described in the document required under R315-8-2.7(d)(3).

(2) This program shall be directed by a person trained in hazardous waste management procedures, and shall include instruction which teaches facility personnel hazardous waste management procedures, including contingency plan implementation relevant to the position in which they are employed.

(3) At a minimum, the training program shall 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, but not necessarily limited to, the following, where applicable:

(i) Procedures for inspection, use, repair, and replacement of facility emergency and monitoring equipment;

(ii) Communications or alarm systems;

(iii) Key parameters for automatic waste feed cut-off systems;

(iv) Response to fires or explosions;

(v) Response to groundwater contamination incidents; and

(vi) Shutdown of operations.

(b) Facility personnel shall successfully complete the program required in R315-8-2.7(a) within six months after the effective date of these rules or six months after the date of employment or assignment to a facility, or to a new position at a facility, whichever is later. Employees hired after the effective date of these rules shall not work in unsupervised positions until they have completed the training requirements of R315-8-2.7(a).

(c) Facility personnel shall take part in an annual review of their initial training in both contingency procedures and the hazardous waste management procedures relevant to the positions in which they are employed.

(d) Owners or operators of facilities shall maintain the following documents and records and make them available upon request:

(1) The job title for each position at the facility related to hazardous waste management, and the name of the employee filling each job;

(2) A written job description for each position listed under R315-8-2.7(d)(1). 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 shall include the requisite skill, education, or other qualifications and duties of employees assigned to each position;

(3) 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 R315-8-2.7(d)(1);

(4) Records that document that the training or job experience required under R315-8-2.7(a), (b), and (c) has been given to, and completed by, facility personnel.

(e) Training records on current employees shall be maintained until closure of the facility; training records on former employees shall be retained for at least three years from the date the employee last worked at the facility. Employee training records may accompany personnel transferred within the same company.

2.8 GENERAL REQUIREMENTS FOR IGNITABLE, REACTIVE, OR INCOMPATIBLE WASTES

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

(b) Where specifically required by other sections of R315-8, 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, shall take precautions to prevent reactions which:

(1) Generate extreme heat or pressure, fire or explosion, or violent reactions;

(2) Produce uncontrolled toxic mists, fumes, dusts, or gases in sufficient quantities to threaten human health or the environment;

(3) Produce uncontrolled flammable fumes or gases in sufficient quantities to pose a risk of fire or explosions;

(4) Damage the structural integrity of the device or facility;

(5) Through other like means threaten human health or the environment.

(c) When required to comply with R315-8-2.8, the owner or operator shall document that compliance. This documentation may be based on references to published scientific or engineering literature, date from trial tests, e.g., bench scale or pilot scale tests, waste analyses as specified in R315-8-2.4, which incorporates by reference 40 CFR 264.13, or the results of the treatment of similar wastes by similar treatment processes and under similar operating conditions.

2.9 LOCATION STANDARDS

(a) Seismic considerations.

(1) Portions of new facilities where treatment, storage, or disposal of hazardous waste will be conducted shall not be located within 61 meters (200 feet) of a fault which has had displacement in Holocene time. For definition of terms used in this section see R315-1. Procedures for demonstrating compliance with this standard in part B of the permit application are specified in R315-3 specifically in R315-3-2.5. Facilities which are located in political jurisdictions other than those listed in R315-50-11 are assumed to be in compliance with this requirement.

(b) Floodplains.

(1) A facility located in a 100-year floodplain shall be designed, constructed, operated and maintained to prevent washout of any hazardous waste by a 100-year flood, unless the owner or operator can demonstrate to the Executive Secretary'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:

(A) The volume and physical and chemical characteristics of the waste in the facility;

(B) The concentration of hazardous constituents that would potentially affect surface waters as a result of washout;

(C) The impact of such concentrations on the current or potential uses of and water quality standards established for the affected surface waters; and

(D) 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. The location where wastes are moved shall be a facility which is either permitted by EPA or has a permit in accordance with R315-3.

(2) As used in R315-8-2.9(b)(1):

(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.

(c) Salt dome formations, salt bed formations, underground mines and caves.

The placement of any non-containerized or bulk liquid hazardous wastes in any salt dome formation, salt bed formation, underground mine or cave is prohibited, except for the Department of Energy Waste Isolation Pilot Project in New Mexico.

2.10 CONSTRUCTION QUALITY ASSURANCE PROGRAM

(a) CQA program. (1) A construction quality assurance (CQA) program is required for all surface impoundment, waste pile, and landfill units that are required to comply with R315-8-11.2(c) and (d), R315-8-12.2(c) and (d), and R315-8-14.2(c) and (d). The program shall ensure that the constructed unit meets or exceeds all design criteria and specifications in the permit. The program shall be developed and implemented under the direction of a CQA officer who is a registered professional engineer.

(2) The CQA program shall 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.

(b) Written CQA plan. The owner or operator of units subject to the CQA program under R315-8-2.10(a) shall 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 shall include:

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

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

(3) A description of inspection and sampling activities for all unit components identified in R315-8-2.10(a)(2), 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 shall 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 R315-8-5.3.

(c) Contents of program. (1) The CQA program shall include observations, inspections, tests, and measurements sufficient to ensure:

(i) Structural stability and integrity of all components of the unit identified in R315-8-2.10(a)(2);

(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 R315-8-11.2, R315-8-12.2, and R315-8-14.2.

(2) 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 R315-8-11.2(c)(1)(i)(B), R315-8-12.2(c)(1)(i)(B), and R315-8-14.2(c)(1)(i)(B) in the field. Compliance with the hydraulic conductivity requirements shall be verified by using in-situ testing on the constructed test fill. The Executive Secretary 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 R315-8-11.2(c)(1)(i)(B), R315-8-12.2(c)(1)(i)(B), and R315-8-14.2(c)(1)(i)(B) in the field.

(d) Certification. Waste shall not be received in a unit subject to R315-8-2.10 until the owner or operator has submitted to the Executive Secretary 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 R315-8-11.2(c) or (d), R315-8-12.2(c) or (d), or R315-8-14.2(c) or (d); and the procedure in R315-3-3.1(l)(2)(ii) has been completed. Documentation supporting the CQA officer's certification shall be furnished to the Executive Secretary upon request.

R315-8-3. Preparedness and Prevention.

3.1 APPLICABILITY

The regulations in this section apply to the owners or operators of all hazardous waste management facilities, except as provided otherwise in R315-8-1.

3.2 DESIGN AND OPERATION OF FACILITY

Facilities shall be designed, constructed, maintained, and operated to minimize the possibility of a fire, explosion, or any unplanned sudden or non-sudden discharge of hazardous waste or hazardous waste constituents to air, soil, groundwater, or surface water which could threaten the environment or human health.

3.3 REQUIRED EQUIPMENT

All facilities shall be equipped with the following, unless it can be demonstrated to the Board that there are no hazards at the facility which could require a particular kind of equipment specified below:

(a) An internal communications or alarm system capable of providing immediate emergency instruction, voice or signal, to facility employees;

(b) A device capable of summoning external emergency assistance from local law enforcement agencies, fire departments, or State or local emergency response teams, such as a telephone, immediately available at the scene of operations, or a hand-held two-way radio;

(c) Portable fire extinguishers, fire control equipment, including special extinguishing equipment, such as that using foam, inert gas, or dry chemicals, discharge control equipment, and decontamination equipment; and

(d) Water at adequate volume and pressure to supply water hose streams, or foam producing equipment, or automatic sprinklers, or water spray systems. This demonstration shall be made with the part B permit application.

3.4 TESTING AND MAINTENANCE OF EQUIPMENT

All facility communications or alarm systems, fire protection equipment, safety equipment, discharge control equipment, and decontamination equipment, where required, shall be tested and maintained as necessary to assure its proper operation in time of emergency.

3.5 ACCESS TO COMMUNICATIONS OR ALARM SYSTEM

(a) Whenever hazardous waste is being poured, mixed, spread, or otherwise handled, all employees involved in the

operation shall have immediate access to an internal alarm or emergency communication device, either directly or through visual or voice contact with another employee, unless the Board has ruled that this type of a device is not required under R315-8-3.3.

(b) If there is just one employee on the premises while the facility is operating, he shall have immediate access to a device capable of summoning external emergency assistance, such as a telephone, immediately available at the scene of operation, or a hand-held two-way radio, unless the Board has ruled that this type of a device is not required under R315-8-3.3.

3.6 REQUIRED AISLE SPACE

The facility owner or operator shall maintain aisle space to allow the unobstructed movement of personnel, fire protection equipment, discharge control equipment, and decontamination equipment to any area of facility operation in an emergency, unless it can be demonstrated to the Board that aisle space is not needed for any of these purposes. This demonstration shall be made with the part B permit application.

3.7 ARRANGEMENTS WITH LOCAL AUTHORITIES

(a) The owner or operator shall 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:

(1) Arrangements to familiarize law enforcement agencies, 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;

(2) Where more than one law enforcement agency and fire department might respond to an emergency, agreements designating primary emergency authority to a specific law enforcement agency and a specific fire department, and agreements with any others to provide support to the primary emergency authority;

(3) Agreements with State emergency response teams, emergency response contractors, and equipment suppliers; and

(4) 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.

(b) Where State or local authorities decline to enter into these arrangements, the owner or operator shall document the refusal in the operating record.

R315-8-4. Contingency Plan and Emergency Procedures.

4.1 APPLICABILITY

The regulations in this section apply to the owners and operators of all hazardous waste management facilities, except as provided otherwise in R315-8-1(e).

4.2 PURPOSE AND IMPLEMENTATION OF CONTINGENCY PLAN

(a) Each owner or operator shall have a contingency plan for his facility. The contingency plan shall be designed to minimize hazards to human health or the environment from fires, explosions, or any unplanned sudden or non-sudden discharge of hazardous waste or hazardous waste constituents to air, soil, groundwater, or surface water.

(b) The provisions of the plan shall be carried out immediately whenever there is a fire, explosion, or discharge of hazardous waste or hazardous waste constituents which could threaten the environment or human health.

4.3 CONTENT OF CONTINGENCY PLAN

(a) The plan shall describe the actions facility personnel shall take to comply with R315-8-4.2 and R315-8-4.7 in response to fires, explosions or any unplanned sudden or non-sudden discharge of hazardous waste or hazardous waste constituents to air, soil, or surface water at the facility. If a facility owner or operator already has 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 sufficient to comply with the requirements of this section.

(b) The plan shall describe arrangements agreed to by local law enforcement agencies, fire departments, hospitals, contractors, and State and local emergency response teams to coordinate emergency services pursuant to R315-8-3.7.

(c) The plan shall list names, addresses and phone numbers, office and home, of all persons qualified to act as facility emergency coordinator, see R315-8-4.6, and this list shall be kept up-to-date. Where more than one person is listed, one shall be named as primary emergency coordinator and others shall be listed in the order in which they assume responsibility as alternates. For new facilities, this information shall be supplied to the Board before operations begin rather than at the time of submission of the plan.

(d) The plan shall include a list of all emergency equipment at the facility, such as fire extinguishing systems, discharge control equipment, communications and alarm systems, internal and external, and decontamination equipment, where this equipment is required. This list shall be kept up-to-date. In addition, the plan shall include the location and a physical description of each item on the list, and a brief outline of its capabilities.

(e) The plan shall include an evacuation plan for facility personnel where there is a possibility that evacuation could be necessary. This plan shall 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 discharges of hazardous waste or fires.

4.4 COPIES OF A CONTINGENCY PLAN

A copy of the contingency plan and all revisions to the plan shall be:

(a) Maintained at the facility;

(b) Made available upon request; and

(c) Submitted to all local law enforcement agencies, fire departments, hospitals, and State and local emergency

response teams that may be called upon to provide emergency services.

The contingency plan shall be submitted to the Board with part B of the permit application under R315-3 and after modification or approval will become a condition of any permit issued.

4.5 AMENDMENT OF CONTINGENCY PLAN

The contingency plan shall be reviewed, and immediately amended, if necessary, under any of the following circumstances:

(a) Revisions to the facility permit;

(b) Failure of the plan in an emergency;

(c) Changes in the facility design, construction, operation, maintenance, or other circumstances that materially increase the potential for fires, explosions, or discharges of hazardous waste or hazardous waste constituents, or changes the response necessary in an emergency;

(d) Changes in the list of emergency coordinators; or

(e) Changes in the list of emergency equipment.

4.6 EMERGENCY COORDINATOR

At all times there shall be at least one employee either present on the facility premises or on call, i.e., available to respond to an emergency by reaching the facility within a short time period, with the responsibility for coordinating all emergency response measures. This facility emergency coordinator shall 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 manifests and all other records within the facility, and the facility layout. In addition, this person shall have the authority to commit the resources needed to carry out the contingency plan. The emergency coordinator's responsibilities are more fully spelled out in R315-8-4.7. 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.

4.7 EMERGENCY PROCEDURES

(a) Whenever there is an imminent or actual emergency situation, the facility's emergency coordinator, or his designee when the emergency coordinator is on call, shall immediately:

(1) Activate internal facility alarms or communication systems, where applicable, to notify all facility personnel; and

(2) Notify appropriate State or local agencies with designated response roles whenever their assistance is needed.

(b) In the event of a discharge, fire, or explosion, the facility's emergency coordinator shall immediately identify the character, exact source, amount, and areal extent of any discharged materials. He may do this by observation or review of facility records or manifests, and, if necessary, by chemical analysis.

(c) Concurrently, the facility's emergency coordinator shall assess possible hazards to the environment or human health that may result from the discharge, fire, or explosion. This assessment shall consider both direct and indirect effects of the discharge, 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 or hazardous groundwater infiltration from water or chemical agents used to control fire and heat-induced explosions.

(d) The facility's emergency coordinator shall immediately report his assessment that the facility has had a discharge, fire, or explosion which could threaten human health, or the environment, outside the facility, as follows:

(1) If his assessment indicates that evacuation of local areas may be advisable, he shall immediately notify appropriate local authorities. He shall be available to assist appropriate officials in making the decision whether local areas should be evacuated; and

(2) He shall immediately notify both the Utah State Department of Environmental Quality as specified in R315-9 and the government official designated as the on-scene coordinator for that geographical area, in the applicable regional contingency plan, or the National Response Center (800/424-8802). The report shall include:

(i) Name and telephone number of reporter;

(ii) Name and address of facility;

(iii) Time and type of incident, e.g., discharge, fire;

(iv) Name and quantity of material(s) involved, to the extent available;

(v) The extent of injuries, if any; and

(vi) The possible hazards to human health, or the environment, outside the facility.

(e) During an emergency, the facility's emergency coordinator shall take all reasonable measures necessary to ensure that fires, explosions, and discharges do not occur, recur, or spread to other hazardous waste at the facility. These measures shall include, where applicable, stopping processes and operations, collecting and containing discharged waste, and removing or isolating containers.

(f) If the facility stops operations in response to a discharge, fire, or explosion, the facility's emergency coordinator shall monitor for leaks, pressure buildup, gas generation, or ruptures in valves, pipes, or other equipment, wherever this is appropriate.

(g) Immediately after an emergency, the emergency coordinator shall provide for treating, storing, or disposing of recovered waste, contaminated soil or surface water, or any other material that results from a discharge, fire, or explosion at the facility. The recovered material shall be handled and managed as a hazardous waste unless it is analyzed and determined not to be, using the procedures specified in R315-2.

(h) The facility's emergency coordinator shall ensure that, in the affected area(s) of the facility:

(1) No waste that may be incompatible with the released material is treated, stored, or disposed of until cleanup procedures are completed; and

(2) All emergency equipment listed in the contingency plan is cleaned and fit for its intended use before operations are resumed.

(i) The facility owner or operator shall notify the Executive Secretary and other appropriate State and local authorities, that the facility is in compliance with R315-8-4.7(h) before operations are resumed in the affected area(s) of the facility.

(j) The facility owner or operator shall record in the operating record the time, date, and nature of any incident that requires implementing the contingency plan. Within 15 days after the incident, he shall submit a written report on the emergency to the Executive Secretary. The report shall include:

(1) Name, address, and telephone number of the owner or operator;

(2) Name, address, and telephone number of the facility;

(3) Date, time, and type of incident, e.g., fire, discharge;

(4) Name and quantity of material(s) involved;

(5) The extent of injuries, if any;

(6) An assessment of actual or potential hazards to the environment or human health, where this is applicable; and

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

R315-8-5. Manifest System, Recordkeeping, and Reporting.

5.1 APPLICABILITY

(a) The rules in R315-8-5 apply to owners and operators of both on-site and off-site facilities, except as provided otherwise in R315-8-1. R315-8-5.2, R315-8-5.4, and R315-8-5.7 do not apply to owners and operators of on-site facilities that do not receive 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 40 CFR 266.203(a). R315-8-5.3, which incorporates by reference 40 CFR 264.73(b) only applies to permittees who treat, store, or dispose of hazardous wastes on-site where such wastes were generated.

(b) The revised Manifest form and procedures in R315-1-1, which incorporates by reference 40 CFR 260.10, R315-2-7, R315-8-5.1, R315-8-5.2, R315-8-5.4, and R315-8-5.7, contained in R315-1 to R315-8, edition revised as of September 15, 2004, shall be applicable until September 5, 2006.

5.2 USE OF MANIFEST SYSTEM

(a)(1) If a facility receives hazardous waste accompanied by a manifest, the owner or operator, or his agent, shall sign and date the manifes as indicated in R315-8-5.2(a)(2) 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 manifes, or that the hazardous waste was rejected as noted in the manifest discrepancy space.

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

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

(ii) Note any discrepancies in the manifest, as defined in R315-8-5.4(a), on each copy of the manifest;

(iii) Immediately give the transporter at least one copy of the signed manifest;

(iv) Within 30 days of the delivery, send a copy of the manifest to the generator; and

(v) Retain at the facility a copy of each manifest for at least three years from the date of delivery.

(3) If a faciity receives hazardous waste imported from a foreign source, the receiving facility shall mail a cop of the manifest to the following addresses within 30 days of delivery: International Compliance Assurance Division, OFA/OECA (2254A), U.S. Environmental Protection Agency, Ariel Rios Building, 1200 Pennsylvania Avenue, NW., Washington DC 20460 and Utah Division of Solid and Hazardous Waste, P O Box 144880, Salt Lake City, Utah 84114-4880.

(b) 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 EPA identification numbers, generator's certification, and signatures), the owner or operator, or his agent, shall:

(1) 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;

(2) Note any significant discrepancies, as defined in R315-8-5.4(a), 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 R315-8-2.4, which incorporates by reference 40 CFR 264.13(c), include waste analysis shall perform that analysis before signing the shipping paper and giving it to the transporter. R315-8-5.4(b), however, requires reporting an unreconciled discrepancy discovered during later analysis.

(3) 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);

(4) Within 30 days after the delivery, send a copy of the signed and dated manifest or a signed and dated copy of the shipping papaer (if the manifest has not been received within 30 days after delivery) to the generator; and

Comment: R315-5-2.23(c) requires the generator to send three copies of the manifest to the facility when hazardous waste is sent by rail or water (bulk shipment).

(5) 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.

(c) Whenever a shipment of hazardous waste is initiated from a facility, the owner or operator of that facility shall comply with the requirements of R315-5.

Comment: The provisions of R315-5-3.34, which incorporates by reference 40 CFR 262.34, are applicable to the

on-site accumulation of hazardous wastes by generators. Therefore, the provisions of R315-5-3.34, which incorporates by reference 40 CFR 262.34, only apply to owners or operators who are shipping hazardous waste which they generated at that facility.

(d) Within three working days of the receipt of a shipment subject to R315 -5-8, which incorporates by reference 40 CFR 262, subpart H, the owner or operator of the facility shall provide a copy of the tracking document bearing all required signatures to the notifier, to the Office of Enforcement and Compliance Assurance, Office of Compliance, Enforcement Planning, Targeting and Data Division (2222A), Environmental Protection Agency, 401 M St., SW., Washington, DC 20460, and to competent authorities of all other concerned countries. The original copy of the tracking document shall be maintained at the facility for at least three years from the date of signature.

(e) A facility shall 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 shall also determine whether the consignment state or generator state requires the facility to submit any copies of the manifest to these states.

5.3 OPERATING RECORD

The requirements as found in 40 CFR 264.73, 2000 ed., are adopted and incorporated by reference.

5.4 MANIFEST DISCREPANCIES

(a) Manifest discrepancies are:

(1) Significant differences (as defined by R315-8-5.4(b)) 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;

(2) Rejected wastes, which may be a full or partial shipment of hazardous waste that the treatment, storage, or disposal facility cannot accept; or

(3) Container residues, which are residues that exceed the quantity limits for "empty" containers set forth in R315-2-7(b).

(b) Significant discrepancies in quantity are: for batch waste, any variation in piece count, such as a discrepancy of one drum in a truckload; for bulk waste, variations greater than 10 percent in weight. Significant discrepancies in type are obvious differences which can be discovered by inspection or waste analysis, such as waste solvent substituted for waste acid, or toxic constituents not reported on the manifest or shipping paper.

(c) Upon discovering a significant discrepancy, the owner or operator shall 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 shall immediately submit to the Executive Secretary a letter describing the discrepancy and attempts to reconcile it, and a copy of the manifest or shipping paper at issue.

(d)(1) Upon rejecting waste or identifying a container residue that exceeds the quantity limits for "empty" containers set forth in R315-2-7(b), the facility shall 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 shall send the waste to the alternative facility or to the generator within 60 days of the rejection or the container residue identification.

(2) While the facility is making arrangements for forwarding rejected wastes or residues to another facility under R315-8-5.4, it must ensure that either the delivering transporter retains custody of the waste, pending delivery of the waste to the first transporter designated on the manifest prepared under R315-8-5.4(e) or (f).

(e) Except as provided in R315-8-5.4(e)(7), 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 R315-5-2.20(a) and the following instructions:

(1) Write the generator's U.S. EPA ID 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.

(2) Write the name of the alternate designated facility and the facility's U.S. EPA ID number in the designated facility block (Item 8) of the new manifest.

(3) 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.

(4) 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) of R315.

(5) 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.

(6) 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.

(7) 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 shall 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 shall use a new manifest and comply with R315-8-5.4(e)(1), (2), (3), (4), (5), and (6).

(f) Except as provided in R315-8-5.4(f)(7), for rejected

wastes and residues that shall be sent back to the generator, the facility is required to prepare a new manifest in accordance with R315-5-2.20(a) and the following instructions:

(1) Write the facility's U.S. EPA ID 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.

(2) Write the name of the initial generator and the generator's U.S. EPA ID number in the designated facility block (Item 8) of the new manifest.

(3) 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.

(4) 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).

(5) 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.

(6) 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.

(7) 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 shall 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 shall use a new manifest and comply with R315-8-5.4(f)(1), (2), (3), (4), (5), and (6).

(g) If a facility rejects a waste or identifies a container residue that exceeds the quantity limits for "empty" containers set for in R315-2-7(b) after it has signed, date, and returned a copy of the manifest to the delivering transporter or to the generator, the facility shall amend its copy of the manifest to indicate the rejected wastes or residues in the discrepancy space of the amended manifest. The facility shall also copy the manifest tracking number from Item 4 of the new manifest to the Discrepancy space of the amended manifest, and shall re-sign and date the manifest to certify to the information as amended. The facility shall retain the amended manifest for at least three years from the date of amendment, and shall within30 days, send a copy of the amended manifest to the transporter and generator that received copies prior to their being amended.

5.5 AVAILABILITY, RETENTION, AND DISPOSITION OF RECORDS

(a) Records of waste disposal locations and quantities required to be maintained under R315-8-5.3, which incorporates by reference 40 CFR 264.73(b)(2) shall be submitted to the Board and local land authority upon closure of the facility.

(b) The retention period for all records required under this section is extended automatically during the course of any unresolved enforcement action regarding the facility or as requested by the Executive Secretary.

(c) All records, including plans, required under R315-8 shall be furnished upon request, and made available at all reasonable times for inspection.

5.6 BIENNIAL REPORT

Owners or operators of facilities that treat, store, or dispose of hazardous waste shall prepare and submit a single copy of an biennial report to the Board by March 1 of each even numbered year. The biennial report shall be submitted on EPA form 8700-13B. The biennial report shall cover facility activities during the previous calendar year and shall include the following information:

(a) The EPA identification number, name, and address of the facility;

(b) The calendar year covered by the report;

(c) For off-site facilities, the EPA identification number of each hazardous waste generator from which a hazardous waste was received during the year; for imported shipments, the name and address of the foreign generator shall be given in the report;

(d) A description and the quantity of each hazardous waste received by the facility during the year. For off-site facilities, this information shall be listed by EPA identification number of each generator;

(e) The method(s) of treatment, storage, or disposal for each hazardous waste; and

(f) The most recent closure cost estimate under R315-8-8, which incorporates by reference 40 CFR 264. 140 - 264.151, and for disposal facilities, the most recent post-closure cost estimate under R315-8-8, which incorporates by reference 40 CFR 264.140 - 264.151; and

(g) For generators who treat, store, or dispose of hazardous waste on-site, a description of the efforts undertaken during the year to reduce the volume and toxicity of waste generated;

(h) For generators who treat, store, or dispose of hazardous waste on-site, a description of the changes in volume and toxicity of waste actually achieved during the year in comparison to previous years to the extent the information is available for the years prior to 1984;

(i) The certification signed by the owner or operator of the facility or his authorized representative.

5.7 UNMANIFESTED WASTE REPORT

(a) If a facility accepts for treatment, storage, or disposal any hazardous waste from an off-site source without an accompanying manifest, or without an accompanying shipping paper as described in R315-6-2.20(e)(2), and if the waste is not excluded from the manifest requirement of R315, then the

owner or operator shall prepare and submit a letter to the Executive Secretary within 15 days of the receipt of the waste. The unmanifested waste report shall include the following information:

(1) The EPA identification number, name, and address of the facility;

(2) The date of receipt of the waste;

(3) The EPA identification number, name and address of the generator and the transporter, if available;

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

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

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

(7) A brief explanation of why the waste was unmanifested, if known.

5.8 ADDITIONAL REPORTS

In addition to the biennial and unmanifested waste reporting requirements described in R315-8-5.6 and R315-8, a facility owner operator shall also report the following to the Board:

(a) Discharges, fires, and explosions as specified in R315-8-4.7(j);

(b) Upon its request, all information as the Board may deem necessary to determine compliance with the requirements of R315-8;

(c) Facility closure as specified in R315-8-7, which incorporates by reference 40 CFR 264.110 - 264.120; and

(d) As otherwise required in R315-8-6, R315-8-11, R315-8-12, R315-8-13, R315-8-14, R315-8-17, which incorporates by reference 40 CFR 264-1030 - 264.1036, R315-8-18, which incorporates by reference 40 CFR 264.1050 - 264.1065, and R315-8-22, which incorporates by reference 40 CFR 264.1080 - 264.1090.

R315-8-6. Groundwater Protection.

6.1 APPLICABILITY

(a)(1) Except as provided in R315-8-6.1(b), R315-8-6 applies to owners or operators of facilities that treat, store or dispose of hazardous waste. The owner or operator shall satisfy the requirements identified in R315-8-6.1(a)(2) 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 the units.

(2) All solid waste management units shall comply with the requirements in R315-8-6.12. 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", shall comply with the requirements of R315-8-6.2 through R315-8-6.11 in lieu of R315-8-6.12 for purposes of detecting, characterizing and responding to releases to the uppermost aquifer. The financial responsibility requirements of R315-8-6.12 apply to regulated units.

(3) Groundwater monitoring shall be required at non-land disposal facilities as determined to be necessary and appropriate by the Executive Secretary.

(b) The owner or operator's regulated unit or units are not subject to regulation for releases into the uppermost aquifer under R315-8-6 if:

(1) The owner or operator is exempted under R315-8-1(e) or

(2) He operates a unit which the Board finds:

(i) Is an engineered structure.

(ii) Does not receive or contain liquid waste or waste containing free liquid.

(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.

(3) The Board finds pursuant to R315-8-13.11(d) 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 R315-8-13.9 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 paragraph can only relieve an owner or operator of responsibility to meet the requirements of this subpart during the post-closure care period; or

(4) The Board finds that there is no potential for migration of liquid from a regulated unit to the uppermost aquifer during the active life of the regulated unit, including the closure period and the post-closure care period specified under R315-8-7, which incorporates by reference 40 CFR 264.110 - 264.120. This demonstration shall 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 shall base any predictions made under this paragraph on assumptions that maximize the rate of liquid migration.

(5) He designs and operates a waste pile in compliance with R315-8-12.1(c).

(c) The regulations under this section apply during the active life of the regulated unit, including the closure period. After closure of the regulated unit, the regulations in this section:

(1) Do not apply if the waste, waste residues,

contaminated containment system components, and contaminated subsoils are removed or decontaminated at closure;

(2) Apply during the post-closure care period under R315-8-7, which incorporates by reference 40 CFR 264.110 - 264-120, if the owner or operator is conducting a detection monitoring program under R315-8-6.9;

(3) Apply during the compliance period under R315-8-6.7 the owner is conducting a compliance monitoring program under R315-8-6.10 or a corrective action program under R315-8-6.11.

(d) Requirements in this section may apply to miscellaneous units when necessary to comply with R315-8-24, which incorporates by reference 40 CFR 264.601 - 264.603.

(e) The regulations of R315-8-6 apply to all owners and operators subject to the requirements of R315-3-1.1(e)(7), when the Executive Secretary issues either a post-closure permit or an enforceable document, as defined in R315-3-1.1(e)(7), at the facility. When the Executive Secretary issues an enforceable document, references in R315-8-6 to "in the permit" mean "in the enforceable document."

(f) The Executive Secretary may replace all or part of the requirements of R315-8-6.2 through R315-8-6.11 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 R315-3-1.1(e)(7) where the Executive Secretary determines that:

(1) 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

(2) It is not necessary to apply the groundwater monitoring and corrective action requirements of R315-8-6.2 through R315-8-6.11 because alternative requirements will protect human health and the environment.

6.2 REQUIRED PROGRAMS

(a) Owners and operators subject to this section shall conduct a monitoring and response program as follows:

(1) Whenever hazardous constituents under R315-8-6.4, from a regulated unit are detected at the compliance point under R315-8-6.6, the owner or operator shall institute a compliance monitoring program under R315-8-6.10. Detected is defined as statistically significant evidence of contamination as described in R315-8-6.9(f);

(2) Whenever the groundwater protection standard under R315-8-6.3, is exceeded, the owner or operator shall institute a corrective action program under R315-8-6.11. "Exceeded" is defined as statistically significant evidence of increased contamination as described in R315-8-6.10(d);

(3) Whenever hazardous constituents under R315-8-6.4, from a regulated unit exceed concentration limits under R315-8-6.5 in groundwater between the compliance point under R315-8-6.6 and the downgradient facility property boundary, the owner or operator shall institute a corrective action program under R315-8-6.11; or

(4) In all other cases, the owner or operator shall institute a detection monitoring program under R315-8-6.9.

(b) The Executive Secretary will specify in the facility permit the specific elements of the monitoring and response program. The Executive Secretary may include one or more of the programs identified in R315-8-6.2(a) 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 Executive Secretary 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 this type of a program could be taken.

6.3 GROUNDWATER PROTECTION STANDARD

The owner or operator shall comply with conditions specified in the facility permit that are designed to ensure that hazardous constituents under R315-8-6.4 that are detected in the groundwater from a regulated unit do not exceed the concentration limits under R315-8-6.5 in the uppermost aquifer underlaying the waste management area beyond the point of compliance under R315-8-6.6 during the compliance period under R315-8-6.7. The Executive Secretary will establish this groundwater protection standard in the facility permit when hazardous constituents have been detected in the groundwater.

6.4 HAZARDOUS CONSTITUENTS

(a) The Executive Secretary will specify in the facility permit the hazardous constituents to which the groundwater protection standard of R315-8-6.3 applies. Hazardous constituents are constituents identified in R315-50-10, which incorporates by reference 40 CFR 261, Appendix VIII, that have been detected in groundwater in the uppermost aquifer underlaying a regulated unit and that are reasonably expected to be in or derived from waste contained in a regulated unit, unless the Executive Secretary has excluded them under paragraph 8.6.4(b).

(b) The Executive Secretary will exclude an R315-50-10 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 Executive Secretary will consider the following:

(1) Potential adverse effects on groundwater 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 groundwater and the direction of

groundwater flow;

(iv) The proximity and withdrawal rates of groundwater users;

(v) The current and future uses of groundwater in the area;

(vi) The existing quality of groundwater, including other sources of contamination and their cumulative impact on the groundwater 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

(2) 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 groundwater and the direction of groundwater 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.

(c) In making any determination under R315-8-6.4(b) about the use of groundwater in the area around the facility, the Executive Secretary will consider any identification of underground sources of drinking water.

6.5 CONCENTRATION LIMITS

(a) The Executive Secretary will specify in the facility permit concentration limits in the groundwater for hazardous constituents established under R315-8-6.4. The concentration of a hazardous constituent:

(1) Shall not exceed the background level of that constituent in the groundwater at the time that limit is specified in the permit; or

(2) For any of the constituents listed in Table 1, shall 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 Groundwater 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	(C10H10C18, 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

(1)Milligrams per liter

(3) Shall not exceed an alternate limit established by the Executive Secretary under R315-8-6.5(b).

(b) The Executive Secretary will establish an alternate concentration limit for a hazardous constituent if they find 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 Executive Secretary will consider the following factors:

(1) Potential adverse effects on groundwater 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 groundwater and the direction of groundwater flow;

(iv) The proximity and withdrawal rates of groundwater users;

(v) The current and future uses of groundwater in the area;

(vi) The existing quality of groundwater, including other sources of contamination and their cumulative impact on the groundwater 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

(2) 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 groundwater, and the direction of groundwater 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.

(c) In making any determination under R315-8-6.5(b) about the use of groundwater in the area around the facility the Board will consider any identification of underground sources of drinking water.

6.6 POINT OF COMPLIANCE

(a) The Executive Secretary will specify in the facility permit the point of compliance at which the groundwater protection standard of R315-8-6.3 applies and at which monitoring shall 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 underlaying the regulated units.

(b) 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.

(1) The waste management area includes horizontal space taken up by any liner, dike, or other barrier designed to contain waste in a regulated unit.

(2) If the facility contains more than one regulated unit, the waste management area is described by an imaginary line circumscribing the several regulated units.

6.7 COMPLIANCE PERIOD

(a) The Executive Secretary will specify in the facility permit the compliance period during which the groundwater protection standard of R315-8-6.3 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 permit and the closure period.

(b) The compliance period begins when the owner or operator initiates a compliance monitoring program meeting the requirements of R315-8-6.9.

(c) If the owner or operator is engaged in a corrective action program at the end of the compliance period specified in R315-8-6.7(a), the compliance period is extended until the owner or operator can demonstrate that the groundwater protection standard of R315-8-6.3 has not been exceeded for a period of three consecutive years.

6.8 GENERAL GROUNDWATER MONITORING REQUIREMENTS

The owner or operator shall comply with the following requirements for any groundwater monitoring program developed to satisfy R315-8-6.9, R315-8-6.10, or R315-8-6.11:

(a) The groundwater monitoring system shall consist of a sufficient number of wells, installed at appropriate locations and depths to yield groundwater samples from the uppermost aquifer that:

(1) Represent the quality of background water that has not been affected by leakage from a regulated unit;

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

(A) hydrogeologic conditions do not allow the owner or operator to determine what wells are hydraulically upgradient; and

(B) Sampling at other wells will provide an indication of background groundwater quality that is representative or more representative than that provided by the upgradient wells;

(2) represent the quality of groundwater passing the point of compliance; and

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

(b) If a facility contains more than one regulated unit, separate groundwater monitoring systems are not required for each regulated unit provided that provisions for sampling the groundwater in the uppermost aquifer will enable detection and measurement at the compliance point of hazardous constituents from the regulated units that have entered the groundwater in the uppermost aquifer.

(c) All monitoring wells shall be cased in a manner that maintains the integrity of the monitoring well bore hole. This casing shall be screened or perforated and packed with gravel or sand, where necessary, to enable collection of groundwater samples. The annular space, i.e., the space between the bore hole and well casing, above the sampling depth shall be sealed to prevent contamination of samples and the groundwater.

(d) The groundwater monitoring program shall include consistent sampling and analysis procedures that are designed to ensure monitoring results that provide a reliable indication of groundwater quality below the waste management area. At a minimum the program shall include procedures and techniques for:

(1) Sample collection;

(2) Sample preservation and shipment;

(3) Analytical procedures; and

(4) Chain of custody control.

(e) The groundwater monitoring program shall include sampling and analytical methods that are appropriate for groundwater sampling and that accurately measure hazardous constituents in groundwater samples.

(f) The groundwater monitoring program shall include a determination of the groundwater surface elevation each time groundwater is sampled.

(g) 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. 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 should be as large as necessary to ensure with reasonable confidence that a contaminant release to groundwater 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 Executive Secretary. This sampling procedure should be:

(1) 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

(2) an alternate sampling procedure proposed by the owner or operator and approved by the Executive Secretary.

(h) The owner or operator will specify one of the following statistical methods to be used in evaluating groundwater monitoring data for each hazardous constituent, upon approval by the Executive Secretary, 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 R315-8-6.8(i)(5), the pql shall be proposed by the owner or operator and approved by the Executive Secretary. Use of any of the following statistical methods shall be protective of human health and the environment and shall comply with the performance standards outlined in R315-8-6.8(i).

(1) a parametric analysis of variance, ANOVA, followed by multiple comparisons procedures to identify statistical significant evidence of contamination. The method shall include estimation and testing of the contrasts between each compliance well's mean and the background mean levels for each constituent;

(2) an analysis of variance, ANOVA, based on ranks followed by multiple comparisons procedures to identify statistical significant evidence of contamination. The method shall include estimation and testing of the contrasts between compliance well's median and the background median levels for each constituent;

(3) 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;

(4) a control chart approach that gives control limits for each constituent;

(5) another statistical test method submitted by the owner or operator and approved by the Executive Secretary.

(i) Any statistical method chosen under R315-8-6.8(h) for specification in the unit permit shall comply with the following performance standards, as appropriate:

(1) The statistical method used to evaluate groundwater 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.

(2) If an individual well comparison procedure is used to compare an individual compliance well constituent concentration with background constituent concentrations or a groundwater 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 shall be maintained. This performance standard does not apply to tolerance intervals, predictions intervals or control charts.

(3) If a control chart approach is used to evaluate groundwater 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 Executive Secretary if he finds it to be protective of human health and the environment.

(4) 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 shall contain, shall be proposed by the owner or operator and approved by the Executive Secretary if he 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.

(5) 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 Executive Secretary under R315-8-6.8(h) 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.

(6) 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.

(j) Groundwater monitoring data collected in accordance with R315-8-6.8(g) including actual levels of constituents shall be maintained in the facility operating record. The Executive Secretary will specify in the permit when the data shall be submitted for review.

6.9 DETECTION MONITORING PROGRAM

An owner or operator required to establish a detection monitoring program under this section shall, at a minimum, discharge the following responsibilities:

(a) The owner or operator shall monitor for indicator parameters, e.g., specific conductance, pH, total organic carbon, or total organic halogen, waste constituents, or reaction products that provide a reliable indication of the presence of hazardous constituents in groundwater. The Executive Secretary will specify the parameters or constituents to be monitored in the facility permit after considering the following factors:

(1) The types, quantities, and concentrations of constituents in wastes managed at the regulated unit;

(2) The mobility, stability, and persistence of waste constituents or their reaction products in the unsaturated zone beneath the waste management area;

(3) The detectability of indicator parameters, waste constituents, and reaction products in groundwater; and

(4) The concentrations or values and coefficients of variation of proposed monitoring parameters or constituents in the groundwater background.

(b) The owner or operator shall install a groundwater monitoring system at the compliance point as specified under R315-8-6.6. The groundwater monitoring system shall comply with R315-8-6.8(a)(2), (b), and (c).

(c) The owner or operator shall conduct a groundwater monitoring program for each chemical parameter and hazardous constituent specified in the permit pursuant to R315-8-6.9(a) in accordance with R315-8-6.9(g). The owner or operator shall maintain a record of groundwater analytical data as measured and in a form necessary for the determination of statistical significance under R315-8-6.8(h).

(d) The Executive Secretary 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 under R315-8-6.9(a) in accordance with R315-8-6.8(g). A sequence of at least four samples from each well, background and compliance wells, shall be collected at least semiannually during detection monitoring.

(e) The owner or operator shall determine the groundwater flow rate and direction in the uppermost aquifer at least annually.

(f) The owner or operator shall determine whether there is statistically significant evidence of contamination for any chemical parameter of hazardous constituent specified in the permit pursuant to R315-8-6.9(a) at a frequency specified under R315-8-6.9(d).

(1) In determining whether statistically significant evidence of contamination exists, the owner or operator shall use the method specified in the permit under R315-8-6.8(h). This method shall compare data collected at the compliance point to the background groundwater quality data.

(2) The owner or operator shall 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 Executive Secretary 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 groundwater samples.

(g) If the owner or operator determines pursuant to R315-8-6.9(f) that there is statistically significant evidence of contamination for chemical parameters of hazardous constituents specified pursuant to R315-8-6.9(a) at any monitoring well at the compliance point, he shall:

(1) notify the Executive Secretary of this finding in writing within seven days. The notification shall indicate what chemical parameters or hazardous constituents have shown statistically significant evidence of contamination;

(2) immediately sample the groundwater in all monitoring wells and determine whether constituents in the list of R315-50-14, which incorporates by reference 40 CFR 264, Appendix IX, are present, and if so, in what concentration;

(3) for any R315-50-14, which incorporates by reference 40 CFR 264, Appendix IX, compounds found in the analysis pursuant to R315-8-6.9(g)(2), the owner or operator may resample within one month and repeat the analysis for these compounds detected. If the results for 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 R315-8-6.9(g)(2), the hazardous constituents found during this initial

R315-50-14, which incorporates by reference 40 CFR 264, Appendix IX, analysis will form the basis for compliance monitoring;

(4) within 90 days, submit to the Executive Secretary an application for a permit modification to establish a compliance monitoring program meeting the requirements of R315-8-6.10. The application shall include the following information;

(i) an identification of the concentration of any R315-50-14, which incorporates by reference 40 CFR 264, Appendix IX, constituent detected in the groundwater at each monitoring well at the compliance point;

(ii) any proposed changes to the groundwater monitoring system at the facility necessary to meet the requirements of R315-8-6.10;

(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 R315-8-6.10;

(iv) for each hazardous constituent detected at the compliance point, a proposed concentration limit under R315-8-6.10(a)(1) or (2), or a notice of intent to seek an alternate concentration limit under R315-8-6.5(b); and

(5) within 180 days, submit to the Executive Secretary:

(i) all data necessary to justify an alternate concentration limit sought under R315-8-6.5(b); and

(ii) an engineering feasibility plan for a corrective action program necessary to meet the requirement of R315-8-6.11, unless:

(A) all hazardous constituents identified under R315-8-6.9(g)(2) are listed in R315-8-6.5, Table 1 and their concentrations do not exceed their respective values given in that table; or

(B) the owner or operator has sought an alternate concentration limit under R315-8-6.5(b) for every hazardous constituent identified under R315-8-6.9(g)(2).

(6) If the owner or operator determines, pursuant to R315-8-6.9(f), that there is a statistically significant difference for chemical parameters or hazardous constituents specified pursuant to R315-8-6.9(a) at any monitoring well at the compliance point, he 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 groundwater. The owner or operator may make a demonstration under R315-8-6.9(g)(6) in addition to, or in lieu of, submitting a permit modification application under R315-8-6.9(g)(4); however, the owner or operator is not relieved of the requirement to submit a permit modification application within the time specified in R315-8-6.9(g)(4) unless the demonstration made under R315-8-6.9(g)(6) successfully shows that a source other than the regulated unit caused the increase, or that the increase resulted from error in sampling, analysis, or evaluation. In making a demonstration under R315-8-6.9(g)(6), the owner or operator shall:

(i) notify the Executive Secretary 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 paragraph;

(ii) within 90 days, submit a report to the Executive Secretary 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 Executive Secretary 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 R315-8-6.9.

(h) If the owner or operator determines that the detection monitoring program no longer satisfies the requirements of this section, he shall, within 90 days, submit an application for a permit modification to make any appropriate changes to the program.

6.10 COMPLIANCE MONITORING PROGRAM

An owner or operator required to establish a compliance monitoring program under this section shall, at a minimum, discharge the following responsibilities:

(a) The owner or operator shall monitor the groundwater to determine whether regulated units are in compliance with the groundwater protection standard under R315-8-6.3. The Executive Secretary will specify the groundwater protection standard in the facility permit including:

(1) A list of the hazardous constituents identified under R315-8-6.4;

(2) Concentration limits under R315-8-6.5 for each of those hazardous constituents;

(3) The compliance point under R315-8-6.6;

(4) The compliance period under R315-8-6.7.

(b) The owner or operator shall install a groundwater monitoring system at the compliance point as specified under R315-8-6.6. The groundwater monitoring system shall comply with R315-8-6.8(a)(2), (b) and (c).

(c) The Executive Secretary will specify the sampling procedures and statistical methods appropriate for the constituents and the facility, consistent with R315-8-6.8(g) and (h).

(1) The owner or operator shall conduct a sampling program for each chemical parameter or hazardous waste constituent in accordance with R315-8-6.8(g).

(2) The owner or operator shall record groundwater analytical data as measured and in form necessary for the determination of statistical significance under R315-8-6.8(h) for the compliance period of the facility.

(d) The owner or operator shall determine whether there is statistically significant evidence of increased contamination for any chemical parameter or hazardous constituent specified in the permit, pursuant to R315-8-6.10(a), at a frequency specified under R315-8-6.10(f).

(1) In determining whether statistically significant evidence of increased contamination exists, the owner or

operator shall use the method specified in the permit under R315-8-6.5. The method shall compare data collected at the compliance point to a concentration limit developed in accordance with R315-8-6.8(h).

(2) The owner or operator shall determine whether there is statistically significant evidence of increase contamination at each monitoring well at the compliance point within a reasonable time period after completion of sampling. The Executive Secretary 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 groundwater samples.

(e) The owner or operator shall determine the groundwater flow rate and direction in the uppermost aquifer at least annually.

(f) The Executive Secretary will specify the frequencies for collecting samples and conducting statistical tests to determine statistically significant evidence of increased contamination in accordance with R315-8-6.8(g). A sequence of at least four samples from each well, background and compliance wells, shall be collected at least semi-annually during the compliance period of the facility.

(g) The owner or operator shall analyze samples from all monitoring wells at the compliance point for all constituents contained in R315-50-14, which incorporates by reference 40 CFR, Appendix IX, at least annually to determine whether additional hazardous constituents are present in the uppermost aquifer and, if so, at what concentration, pursuant to procedures in R315-8-6.9(f). If the owner or operator finds R315-50-14, which incorporates by reference 40 CFR 264, Appendix IX, constituents in the groundwater that are not already identified in the permit as monitoring constituents, the owner or operator may resample within one month and repeat the R315-50-14, which incorporates by reference 40 CFR 264, Appendix IX, analysis. If the second analysis confirms the presence of new constituents, the owner or operator shall report the concentration of these additional constituents to the Executive Secretary 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 shall report the concentrations of these additional constituents to the Executive Secretary within seven days after completion of the initial analysis and add them to the monitoring list.

(h) If the owner or operator determines pursuant to R315-8-6.10(d) that any concentration limits under R315-8-6.5 are being exceeded at any monitoring well at the point of compliance he shall:

(1) Notify the Executive Secretary of this finding in writing within seven days. The notification shall indicate which concentration limits have been exceeded;

(2) Submit to the Executive Secretary an application for a permit modification to establish a corrective action program meeting the requirements of R315-8-6.11, within 180 days, or within 90 days if an engineering feasibility study has been previously submitted to the Executive Secretary under R315-8-6.9(h)(5). The application shall at a minimum include the following information:

(i) A detailed description of corrective actions that will achieve compliance with the groundwater protection standard specified in the permit under R315-8-6.10(a); and

(ii) A plan for a groundwater monitoring program that will demonstrate the effectiveness of the corrective action. The groundwater monitoring program may be based on a compliance monitoring program developed to meet the requirements of this section.

(i) If the owner or operator determines, pursuant to R315-8-6.10(d), that the groundwater concentration limits under R315-8-6.10 are being exceeded at any monitoring well at the point of compliance, he 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 groundwater. In making a demonstration under R315-8-6.10(i), the owner or operator shall:

(1) Notify the Executive Secretary in writing within seven days that he intends to make a demonstration under R315-8-6.10(i);

(2) Within 90 days, submit a report to the Executive Secretary 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;

(3) Within 90 days, submit to the Executive Secretary an application for a permit modification to make any appropriate changes to the compliance monitoring program at the facility; and

(4) Continue to monitor in accord with the compliance monitoring program established under this section.

(j) If the owner or operator determines that the compliance monitoring program no longer satisfies the requirements of this section, he shall within 90 days, submit an application for a permit modification to make any appropriate changes to the program.

6.11 CORRECTIVE ACTION PROGRAM

An owner or operator required to establish a corrective action program under this section shall, at a minimum, discharge the following responsibilities:

(a) The owner or operator shall take corrective action to ensure that regulated units are in compliance with the groundwater protection standard under R315-8-6.3. The Executive Secretary will specify the groundwater protection standard in the facility permit, including:

(1) A list of hazardous constituents identified under R315-8-6.4;

(2) Concentration limits under R315-8-6.5 for each of those hazardous constituents;

(3) The compliance point under R315-8-6.6; and

(4) The compliance period under R315-8-6.7.

(b) The owner or operator shall 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.

(c) The owner or operator shall begin corrective action within a reasonable time period after the groundwater protection standard is exceeded. The Executive Secretary 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 the requirement will operate in lieu of R315-8-6.10(i)(2).

(d) In conjunction with a corrective action program, the owner or operator shall establish and implement a groundwater monitoring program to demonstrate the effectiveness of the corrective action program. The monitoring program may be based on the requirements for a compliance monitoring program under R315-8-6.10 and shall be as effective as that program in determining compliance with the groundwater protection standard under R315-8-6.3 and in determining the success of a corrective action program under R315-8-6.11(e), where appropriate.

(e) In addition to the other requirements of this section, the owner or operator shall conduct a corrective action program to remove or treat in place any hazardous constituents under R315-8-6.4 that exceed concentration limits under R315-8-6.5 in groundwater:

(1) between the compliance point under R315-8-6.6 and the downgradient facility property boundary; and

(2) beyond the facility boundary, where necessary to protect human health and the environment, unless the owner or operator demonstrates to the satisfaction of the Executive Secretary that, despite the owner's or operator's best efforts, the owner or operator was unable to obtain the necessary permission to undertake the action. The owner or 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 the releases will be determined on a case-by-case basis.

(3) Corrective action measures under R315-8-6.11(e) shall be initiated and completed within a reasonable period of time considering the extent of contamination.

(4) Corrective action measures under this paragraph may be terminated once the concentration of hazardous constituents under R315-8-6.4 is reduced to levels below their respective concentration limits under R315-8-6.5.

(f) The owner or operator shall continue corrective action measures during the compliance period to the extent necessary to ensure that the groundwater protection standard is not exceeded. If the owner or operator is conducting corrective action at the end of the compliance period, he shall continue that corrective action for as long as necessary to achieve compliance with the groundwater 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 groundwater monitoring program under R315-8-6.11(d), that the groundwater protection standard of R315-8-6.3 has not been exceeded for a period of three consecutive years.

(g) The owner or operator shall report in writing to the Executive Secretary on the effectiveness of the corrective action program. The owner or operator shall submit these reports semi-annually.

(h) If the owner or operator determines that the corrective action program no longer satisfies the requirements of this section, he shall within 90 days, submit an application for a permit modification to the program.

6.12 CORRECTIVE ACTION FOR SOLID WASTE MANAGEMENT UNITS

(a) The owner or operator of a facility seeking a permit for the treatment, storage or disposal of hazardous waste shall 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 the unit.

(b) Corrective action will be specified in the permit in accordance with R315-8-6-12 and R315-8-21, which incorporates by reference 40 CFR 264.552 and 264.553. The permit will contain schedules of compliance for the corrective action, where such corrective action cannot be completed prior to issuance of the permit, and assurances of financial responsibility for completing the corrective action.

(c) The owner or operator shall 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 Executive Secretary that, despite the owner's or operator's best efforts, the owner or operator was unable to obtain the necessary permission to undertake the actions. The owner or 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 the releases will be determined on a case-by-case basis. Assurances of financial responsibility for corrective action shall be provided.

(d) This 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.

R315-8-7. Closure and Post Closure.

The requirements as found in 40 CFR subpart G, 264.110 - 264.120, 1998 ed., as amended by 63 FR 56710, October 22, 1998, are incorporated by reference with the following exceptions:

(a) substitute "Board" for all references made to "Regional Administrator" except in 264.112 where "Regional Administrator" and "Director" means "Executive Secretary".

(b) substitute R315-3 for all general reference made to 40 CFR 124 and 270.

(c) substitute "The Utah Solid and Hazardous Waste Act" for all references made to the "Resource Conservation and Recovery Act" or "RCRA."

R315-8-8. Financial Requirements.

The requirements as found in 40 CFR subpart H, 264.140 - 264.151, 1998 ed., as amended by 63 FR 56710, October 22, 1998, are incorporated by reference with the following exceptions:

(a) substitute "Executive Secretary" for all references to "Administrator" or "Regional Administrator".

(b) substitute "Board" for all references to "Agency" or "EPA."

(c) substitute "The Utah Solid and Hazardous Waste Act" for all references to the "Resource Conservation and Recovery Act" or "RCRA."

R315-8-9. Use and Management of Containers.

9.1 APPLICABILITY

The rules in this section apply to owners and operators of all hazardous waste facilities that store containers of hazardous waste, except as provided otherwise in R315-8-1.

Under R315-2-7 and R315-2-11, 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 R315-2-7. In that event, management of the container is exempt from the requirements of this section.

9.2 CONDITION OF CONTAINERS

If a container holding hazardous waste is not in good condition, e.g., severe rusting, apparent structural defects, or if it begins to leak, the owner or operator shall 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 section.

9.3 COMPATIBILITY OF WASTE WITH CONTAINERS

The owner or operator shall use a container made of or lined with materials which will not react with, and are otherwise compatible with, the hazardous waste to be stored, so that the ability of the container to contain the waste is not impaired.

9.4 MANAGEMENT OF CONTAINERS

(a) A container holding hazardous waste shall always be closed during storage, except when it is necessary to add or remove waste.

(b) A container holding hazardous waste shall not be opened, handled, or stored in a manner which may rupture the container or cause it to leak.

Reuse of containers in transportation is governed by U.S. Department of Transportation regulations including those set forth in 49 CFR 173.28.

9.5 INSPECTIONS

At least weekly, the owner or operator shall inspect areas where containers are stored, looking for leaking containers and for deterioration of containers and the containment system caused by corrosion or other factors. See R315-8-2.6(c) and R315-8-9.2 for remedial action required if deterioration or leaks are detected.

9.6 CONTAINMENT

(a) Container storage areas shall have a containment system that is designed and operated in accordance with R315-8-9.6(b), except as otherwise provided by R315-8-9.6(c).

(b) A containment system shall be designed and operated as follows:

(1) A base shall underlay 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;

(2) The base shall be sloped or the containment system shall 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;

(3) The containment system shall 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;

(4) Run-on into the containment system shall be prevented unless the collection system has sufficient excess capacity in addition to that required in R315-8-9.6(b)(3) to contain any run-on which might enter the system; and

(5) Spilled or leaked waste and accumulated precipitation shall be removed from the sump or collection area in as timely a manner as is necessary to prevent overflow of the collection system.

If the collected material is a hazardous waste under R315-2, it shall be managed as a hazardous waste in accordance with all applicable requirements of these rules. 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.

(c) Storage areas that store containers holding only wastes that do not contain free liquids need not have a containment system defined by R315-8-9.6(b), except as provided by R315-8-9.6(d) or provided that:

(1) The storage area is sloped or is otherwise designed and operated to drain and remove liquid resulting from precipitation, or

(2) The containers are elevated or are otherwise protected from contact with accumulated liquid.

(d) Storage areas that store containers holding the wastes listed below that do not contain free liquids shall have a containment system defined by R315-8-9.6(b):

(1) F020, F021, F022, F023, F026, and F027.

9.7 SPECIAL REQUIREMENTS FOR IGNITABLE OR REACTIVE WASTE

Containers holding ignitable or reactive waste shall be located at least 15 meters, 50 feet, from the facility's property line. See R315-8-2.8(a) for additional requirements.

9.8 SPECIAL REQUIREMENTS FOR INCOMPATIBLE WASTES

(a) Incompatible wastes, or incompatible wastes and materials, see 40 CFR 264, Appendix V for examples, shall not be placed in the same container, unless R315-8-2.8(b) is complied with.

(b) Hazardous waste shall not be placed in an unwashed container that previously held an incompatible waste or material. As required by R315-8-2.4, which incorporates by reference 40 CFR 264.13, the waste analysis plan shall include analyses needed to comply with R315-8-9.8(b). Also R315-8-2.8(c) requires waste analyses, trial tests or other documentation to assure compliance with R315-8-2.8(b). As required by R315-8-5.3, which incorporates by reference 40 CFR 264.73, the owner or operator shall place the results of each waste analysis and trial test, and any documented information, in the operating record of the facility.

(c) 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 shall be separated from the other materials or protected from them by means of a dike, berm, wall, or other device. The purpose of this section 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.

9.9 CLOSURE

At closure, all hazardous waste and hazardous waste residues shall be removed from the containment system. Remaining containers, liners, bases, and soil containing or contaminated with hazardous waste or hazardous waste residues shall be decontaminated or removed.

At closure, as throughout the operating period, unless the owner or operator can demonstrate in accordance with R315-2-3(d) 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 shall manage it in accordance with all applicable requirements of these rules.

9.10 AIR EMISSION STANDARDS

The owner or operator shall manage all hazardous waste placed in a container in accordance with the applicable requirements of R315-8-17, which incorporates by reference 40 CFR subpart AA, R315-8-18, which incorporates by reference 40 CFR subpart BB, and R315-8-22, which incorporates by reference 40 CFR subpart CC.

R315-8-10. Tanks.

The requirements as found in 40 CFR 264, subpart J, 264.190 - 264.200, 1996 ed., as amended by 61 FR 59931, November 25, 1996, are adopted and incorporated by reference with the following exceptions:

(a) Substitute "Executive Secretary" for all references to "Administrator" or "Regional Administrator" found in subpart J except paragraph 264.193(g) which should have "Regional Administrator" replaced by "Board".

(b) Add, following January 12, 1988, in 40 CFR 265.191(a), "or by December 16, 1988 for non-HSWA existing tank systems."

(c) Replace 40 CFR 265.193(a)(2) to (4) with the following corresponding paragraphs:

(1) For all HSWA existing tank systems used to store or treat EPA Hazardous Waste Nos. F020, F021, F022, F023, F026, and F027, within two years after January 12, 1987, or within two years after December 16, 1988 for non-HSWA existing tank systems;

(2) For those HSWA existing tank systems of known and documented age, within two years after January 12, 1987, or within two years after December 16, 1988 for non-HSWA existing tank systems, or when the tank system has reached 15 years of age, whichever comes later;

(3) For those HSWA existing tank systems for which the age cannot be documented, within eight years of January 12, 1987, or within eight years of December 16, 1988 for non-HSWA existing tank systems; but if the age of the facility is greater than seven years, secondary containment shall be provided by the time the facility reaches 15 years of age, or within two years of January 12, 1987, or within two years of December 16, 1988 for non-HSWA existing tank systems, whichever comes later; and

(d) Add, following the last January 12, 1987, in 40 CFR 265-193(a)(5), "or December 16, 1988 for non-HSWA tank systems."

R315-8-11. Surface Impoundments.

11.1 APPLICABILITY

The rules in this section apply to owners and operators of facilities that use surface impoundments to treat, store, or dispose of hazardous waste except as provided otherwise in R315-8-1.

11.2 DESIGN AND OPERATING REQUIREMENTS

(a) Any surface impoundment that is not covered by R315-8-11.2(f) or R315-7-18.9 shall have a liner for all portions of the impoundment, except for existing portions of such impoundments. The liner shall be designed, constructed, and installed to prevent any migration of wastes out of the impoundment to the adjacent subsurface soil or groundwater 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 groundwater or surface water, during the active life of the facility, provided that the impoundment is closed in accordance with R315-8-11.5(a)(1). For impoundments that will be closed in accordance with R315-8-11.5(a)(2), the liner shall be constructed of materials that can prevent wastes from migrating into the liner during the active life of the facility.

The liner shall be:

(1) 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;

(2) 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

(3) Installed to cover all surrounding earth likely to be in contact with the waste or leachate.

(b) The owner or operator will be exempted from the requirements of R315-8-11.2(a) if the Executive Secretary 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 R315-8-6.4, into the groundwater or surface water at any future time. In deciding whether to grant an exemption, the Executive Secretary will consider:

(1) The nature and quantity of the wastes;

(2) The proposed alternate design and operation;

(3) The hydrogeologic setting of the facility, including the attenuative capacity and thickness of the liners and soils present between the impoundment and groundwater or surface water; and

(4) All other factors which would influence the quality and mobility of the leachate produced and the potential for it to migrate to groundwater or surface water.

(c) 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 shall install two or more liners and a leachate collection and removal system between such liners. "Construction commences" is as defined in R315-1-1(b), which incorporates by reference 40 CFR 260.10, under "existing facility".

(1)(i) The liner system shall include:

(A) 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

(B) A composite bottom liner, consisting of at least two components. The upper component shall 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 shall 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 shall be constructed of at least three feet, 91 cm, of compacted soil material with a hydraulic conductivity of no more than 1×10^{-7} cm/sec.

(ii) The liners shall comply with R315-8-11.2(a)(1)-(3).

(2) 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 shall 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^{-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^2sec 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 shall have its own sump(s). The design of each sump and removal system shall provide a method for measuring and recording the volume of liquids present in the sump and of liquids removed.

(3) The owner or operator shall collect and remove pumpable liquids in the sumps to minimize the head on the bottom liner.

(4) The owner or operator of a leak detection system that is not located completely above the seasonal high water table shall demonstrate that the operation of the leak detection system will not be adversely affected by the presence of ground water.

(d) The Executive Secretary may approve alternative design or operating practices to those specified in R315-8-11.2(c) if the owner or operator demonstrates to the Executive Secretary that such design and operating practices, together with location characteristics:

(1) Will prevent the migration of any hazardous constituent into the groundwater or surface water at least as effectively as the liners and leachate collection and removal system specified in R315-8-11.2(c); and

(2) Will allow detection of leaks of hazardous constituents through the top liner at least as effectively.

(e) The double liner requirement set forth in R315-8-

11.2(f) may be waived by the Executive Secretary for any monofill, if:

(1) The monofill contains only hazardous wastes from foundry furnace emission controls or metal casting molding sand, and the wastes do not contain constituents which would render the wastes hazardous for reasons other than the EP toxicity characteristics, and

(2)(i)(A) The monofill has at least one liner for which there is no evidence that the 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, groundwater, 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 R315-8-11.2(c) on the basis of a liner designed, constructed, installed, and operated to prevent hazardous waste from passing beyond the liner, at the closure of the impoundment, the owner or operator shall remove or decontaminate all waste residues, all contaminated liner material, and contaminated soil to the extent practicable given the specific site conditions and the nature and extent of contamination. If all contaminated soil is not removed or decontaminated, the owner or operator of the impoundment will comply with appropriate post-closure requirements, including but not limited to groundwater monitoring and corrective action:

(B) The monofill is located more than one-quarter mile from an underground source of drinking water, as that term is defined in 40 CFR 144.3; and

(C) The monofill is in compliance with generally applicable groundwater monitoring requirements for facilities with a permit; 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 groundwater or surface water at any future time.

(f) The owner or operator of any replacement surface impoundment unit is exempt from R315-8-11.2(c) if:

(1) The existing unit was constructed in compliance with the design standards of sections 3004 (o)(1)(A)(i) and (o)(5) of the Resource Conservation and Recovery Act; and

(2) There is no reason to believe that the liner is not functioning as designed.

(g) A surface impoundment shall 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.

(h) A surface impoundment shall have dikes that are designed, constructed, and maintained with sufficient structural integrity to prevent massive failure to the dikes. In ensuring structural integrity, it shall not be presumed that the liner system will function without leakage during the active life of the unit.

(i) The Executive Secretary will specify in the permit all design and operating practices that are necessary to ensure that the requirements of this section are satisfied.

11.3 MONITORING AND INSPECTION

(a) During construction and installation, liners, except in the case of existing portions of surface impoundments exempt from R315-8-11.2(a), and cover systems, e.g., membranes, sheets, or coatings, shall be inspected for uniformity, damage, and imperfections (e.g., holes, cracks, thin spots, or foreign materials). Immediately after construction or installation:

(1) Synthetic liners and covers shall be inspected to ensure tight seams and joints and the absence of tears, punctures, or blisters; and

(2) Soil-based and admixed liners and covers shall 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.

(b) While a surface impoundment is in operation, it shall be inspected weekly and after storms to detect evidence of any of the following:

(1) Deterioration, malfunctions, or improper operation of overtopping control systems;

(2) Sudden drops in the level of the impoundment's contents; and

(3) Severe erosion or other signs of deterioration in dikes or other containment devices.

(c) 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 shall 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 shall establish, in particular, that the dike:

(1) Will withstand the stress of the pressure exerted by the types and amounts of wastes to be placed in the impoundment; and

(2) Will not fail due to scouring or piping, without dependence on any liner system included in the surface impoundment construction.

(d)(1) An owner or operator required to have a leak detection system under R315-8-11.2(c) or (d) shall record the amount of liquids removed from each leak detection system sump at least once each week during the active life and closure period.

(2) After the final cover is installed, the amount of liquids removed from each leak detection system sump shall 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 shall 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 shall 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 shall 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.

(3) "Pump operating level" is a liquid level proposed by the owner or operator and approved by the Executive Secretary based on pump activation level, sump dimensions, and level that avoids backup into the drainage layer and minimizes head in the sump.

11.4 EMERGENCY REPAIRS; CONTINGENCY PLANS

(a) A surface impoundment shall be removed from service in accordance with R315-8-11.4(b) when:

(1) 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

(2) The dike leaks.

(b) When a surface impoundment shall be removed from service as required by R315-8-11.4(a), the owner or operator shall:

(1) Immediately shut off the flow or stop the addition of wastes into the impoundment;

(2) Immediately contain any surface leakage which has occurred or is occurring;

(3) Immediately stop the leak;

(4) Take any necessary steps to stop or prevent catastrophic failure;

(5) If a leak cannot be stopped by any other means, empty the impoundment; and

(6) Notify the Executive Secretary of the problem in writing within seven days after detecting the problem.

(c) As part of the contingency plan required in R315-8-4, the owner or operator shall specify a procedure for complying with the requirements of R315-8-11.4(b).

(d) No surface impoundment that has been removed from service in accordance with the requirements of this section may be restored to service unless the portion of the impoundment which was failing is repaired and the following steps are taken:

(1) If the impoundment was removed from service as the result of actual or imminent dike failure, the dike's structural integrity shall be recertified in accordance with R315-8-11.3(c).

(2) 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 shall be installed in compliance with R315-8-11.2(a), and

(ii) For any other portion of the impoundment, the repaired liner system shall be certified by a qualified engineer as meeting the design specifications approved in the permit.

(e) A surface impoundment that has been removed from service in accordance with the requirements in this section and that is not being repaired shall be closed in accordance with the provisions of R315-8-11.5.

11.5 CLOSURE AND POST-CLOSURE CARE

(a) At closure, the owner or operator shall:

(1) 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 wastes unless R315-2-3(d) applies; or

(2)(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:

(A) Provide long-term minimization of the migration of liquids through the closed impoundment;

(B) Function with minimum maintenance;

(C) Promote drainage and minimize erosion or abrasion of the final 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 permeability of any bottom liner system or natural subsoils present.

(b) If some waste residues or contaminated materials are left in place at final closure, the owner or operator shall comply with all post-closure requirements contained in R315-8-7, which incorporates by reference 40 CFR 264.110 - 264.120, including maintenance and monitoring throughout the post-closure care period, specified in the permit under R315-8-7, which incorporates by reference 40 CFR 264.110 - 264.120. The owner or operator shall:

(1) 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;

(2) Maintain and monitor the leak detection system in accordance with R315-8-11.2(c)(2)(iv) and (3) and R315-8-11.3(d), and comply with all other applicable leak detection system requirements of this part;

(3) Maintain and monitor the groundwater monitoring system and comply with all other applicable requirements of R315-8-6; and

(4) Prevent run-on and run-off from eroding or otherwise damaging the final cover.

(c)(1) If an owner or operator plans to close a surface impoundment in accordance with R315-8-11.5(a)(1), and the impoundment does not comply with the liner requirements of R315-8-11.2(a) and is not exempt from them in accordance with R315-8-11.2(b), then:

(i) The closure plan for the impoundment under R315-8-7, which incorporates by reference 40 CFR 264.110 - 264.120, shall include both a plan for complying with R315-8-11.5(a)(1) and a contingent plan for complying with R315-8-11.5(a)(2) in case not all contaminated subsoils can be practicably removed at closure; and

(ii) The owner or operator shall prepare a contingent post-closure plan under R315-8-7, which incorporates by reference 40 CFR 264.110 - 264.120, for complying with R315-8-11.5(b) in case not all contaminated subsoils can be practicably removed at closure.

(2) The cost estimates calculated under R315-8-8, which incorporates by reference 40 CFR 264.140 - 264.151, for closure and post-closure care of an impoundment subject to this paragraph shall 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 R315-8-11.5(a)(1).

11.6 SPECIAL REQUIREMENTS FOR IGNITABLE OR REACTIVE WASTE

Ignitable or reactive waste shall not be placed in a surface impoundment unless the waste and impoundment satisfy all applicable requirements of R315-13, which incorporates by reference 40 CFR 268, R315-50-12, which incorporates by reference 40 CFR 268 Appendix I, and R315-50-13, which incorporates by reference 40 CFR 268 Appendix II, and:

(a) The waste is treated, rendered, or mixed before or immediately after placement in the impoundment so that:

(1) The resulting waste, mixture, or dissolution of material no longer meets the definition of ignitable or reactive waste under R315-2-9(d) and (f), and

(2) R315-8-2.8(b) is complied with; or

(b) The waste is managed in a way that it is protected from any material or conditions which may cause it to ignite or react; or

(c) The surface impoundment is used solely for emergencies.

11.7 SPECIAL REQUIREMENTS FOR INCOMPATIBLE WASTES

Incompatible wastes, or incompatible wastes and materials, see 40 CFR 264, Appendix V for examples, shall not be placed in the same surface impoundment, unless R315-8-2.8(b) is complied with.

11.8 SPECIAL REQUIREMENTS FOR HAZARDOUS WASTE F020, F021, F022, F023, F026, AND F027

(a) Hazardous Wastes F020, F021, F022, F023, F026, and F027 shall 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 Executive Secretary pursuant to the standards set out in this paragraph, and in accord with all other applicable requirements of these rules. The factors to be considered are:

(1) The volume, physical, and chemical characteristics of the wastes, including their potential to migrate through soil or to volatilize or escape into the atmosphere:

(2) The attenuative properties of underlaying and surrounding soils or other materials;

(3) The mobilizing properties of other materials co-disposed with these wastes; and

(4) The effectiveness of additional treatment, design, or monitoring techniques.

(b) The Executive Secretary 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 groundwater, surface water, or air so as to protect human health and the environment.

11.9 ACTION LEAKAGE RATE

(a) The Executive Secretary shall approve an action leakage rate for surface impoundment units subject to R315-8-11.2(c) or (d). 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 one foot. The action leakage rate shall 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 shall 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.

(b) To determine if the action leakage rate has been exceeded, the owner or operator shall convert the weekly or monthly flow rate from the monitoring data obtained under R315-8-11.3(d) to an average daily flow rate, gallons per acre per day, for each sump. Unless the Executive Secretary approves a different calculation, the average daily flow rate for each sump shall be calculated weekly during the active life and closure period, and if the unit is closed in accordance with R315-8-11.5(b), monthly during the post-closure care period when monthly monitoring is required under R315-8-11.3(d).

11.10 RESPONSE ACTIONS

(a) The owner or operator of surface impoundment units subject to R315-8-11.2(c) or (d) shall have an approved response action plan before receipt of waste. The response action plan shall set forth the actions to be taken if the action leakage rate has been exceeded. At a minimum, the response action plan shall describe the actions specified in R315-8-11.10(b).

(b) If the flow rate into the leak detection system exceeds the action leakage rate for any sump, the owner or operator shall:

(1) Notify the Executive Secretary in writing of the exceedance within seven days of the determination;

(2) Submit a preliminary written assessment to the Executive Secretary 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;

(3) Determine to the extent practicable the location, size, and cause of any leak;

(4) 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;

(5) Determine any other short-term and longer-term actions to be taken to mitigate or stop any leaks; and

(6) Within 30 days after the notification that the action leakage rate has been exceeded, submit to the Executive Secretary the results of the analyses specified in R315-8-11.10(b)(3)-(5), 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 shall submit to the Executive Secretary a report summarizing the results of any remedial actions taken and actions planned.

(c) To make the leak and remediation determinations in R315-8-11.10(b)(3)-(5), the owner or operator shall:

(1)(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

(2) Document why such assessments are not needed.

11.11 AIR EMISSION STANDARDS

The owner or operator shall manage all hazardous waste placed in a surface impoundment in accordance with the applicable requirements of R315-8-18, which incorporates by reference 40 CFR subpart BB, and R315-8-22, which incorporates by reference 40 CFR subpart CC.

R315-8-12. Waste Piles.

12.1 APPLICABILITY

(a) The rules in this section apply to owners and operators of facilities that store or treat hazardous waste in piles, except as provided otherwise in R315-8-1.

(b) The rules in this section do not apply to owners or operators of waste piles that are closed with wastes left in place. These waste piles are subject to the rules under R315-8-14, Landfills.

(c) 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 R315-8-12.2 or R315-8-6, provided that:

(1) Liquids or materials containing free liquids are not placed in the pile;

(2) The pile is protected from surface water run-on or groundwater run-on by the structure or in some other manner;

(3) The pile is designed and operated to control dispersal of the waste by wind, where necessary, by means other than wetting; and

(4) The pile will not generate leachate through decomposition or other reactions.

12.2 DESIGN AND OPERATING REQUIREMENTS

(a) A waste pile, except for an existing portion of a waste pile, shall have:

(1) A liner that is designed, constructed, and installed to prevent any migration of wastes out of the pile into the adjacent subsurface soil or groundwater 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 groundwater or surface water, during the active life of the facility. The liner shall 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 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

(2) 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 Executive Secretary 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 shall be:

(i) Constructed of materials that are:

(A) Chemically resistant to the waste managed in the pile and the leachate expected to be generated; and

(B) 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.

(b) The owner or operator will be exempted from the requirements of R315-8-12.2(a) if the Executive Secretary 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 R315-8-6.4, into the groundwater or surface water at any future time. In deciding whether to grant an exemption, the Executive Secretary will consider:

(1) The nature and quantity of the wastes;

(2) The proposed alternate design and operation;

(3) The hydrogeologic setting of the facility, including attenuative capacity and thickness of the liners and soils present between the pile and groundwater or surface water; and

(4) All other factors which would influence the quality and mobility of the leachate produced and the potential for it to migrate to groundwater or surface water.

(c) The owner or operator of each new waste pile unit on which construction commences after January 29, 1992, each lateral expansion of a waste pile unit on which construction commences after July 29, 1992, and each replacement of an existing waste pile unit that is to commence reuse after July 29, 1992 shall install two or more liners and a leachate collection and removal system above and between such liners. "Construction commences" is as defined in R315-1-1(b), which incorporates by reference 40 CFR 260.10 under "existing facility".

(1)(i) The liner system shall include:

(A) 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

(B) A composite bottom liner, consisting of at least two components. The upper component shall 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 shall 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 shall be constructed of at least three feet, 91 cm, of compacted soil material with a hydraulic conductivity of no more than 1×10^{-7} cm/sec.

(ii) The liners shall comply with R315-8-12.2(a)(1)(i), (ii), and (iii).

(2) The leachate collection and removal system immediately above the top liner shall 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 Executive Secretary 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 shall comply with R315-8-12.2(c)(3)(iii) and (iv).

(3) 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 shall 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 shall have its own sump(s). The design of each sump and removal system shall provide a method for measuring and recording the volume of liquids present in the sump and of liquids removed.

(4) The owner or operator shall collect and remove pumpable liquids in the leak detection system sumps to minimize the head on the bottom liner.

(5) The owner or operator of a leak detection system that is not located completely above the seasonal high water table shall demonstrate that the operation of the leak detection system will not be adversely affected by the presence of groundwater.

(d) The Executive Secretary may approve alternative design or operating practices to those specified in R315-8-12.2(c) if the owner or operator demonstrates to the Executive Secretary that such design and operating practices, together with location characteristics:

(1) 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 R315-8-12.2(c); and

(2) Will allow detection of leaks of hazardous constituents through the top liner at least as effectively.

(e) R315-8-12.2(c) does not apply to monofills that are granted a waiver by the Executive Secretary in accordance with R315-8-11.2(h).

(f) The owner or operator of any replacement waste pile unit is exempt from R315-8-12.2(c) if:

(1) The existing unit was constructed in compliance with the design standards of section 3004(o)(1)(A)(i) and (o)(5) of the Resource Conservation and Recovery Act; and

(2) There is no reason to believe that the liner is not functioning as designed.

(g) The owner or operator shall 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.

(h) The owner or operator shall 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.

(i) Collection and holding facilities, e.g., tanks or basins, associated with run-on and run-off control systems shall be emptied or otherwise managed expeditiously after storms to maintain design capacity of the system.

(j) If the pile contains any particulate matter which may be subject to wind dispersal, the owner or operator shall cover or otherwise manage the pile to control wind dispersal.

(k) The Executive Secretary will specify in the permit all design and operating practices that are necessary to ensure that the requirements of this section are satisfied.

12.3 MONITORING AND INSPECTION

(a) During construction or installation, liners, except in the case of existing portions of piles exempt from R315-8-12.2(a), and cover systems, e.g., membranes, sheets, or coatings, shall be inspected for uniformity, damage, and imperfections, e.g., holes, cracks, thin spots, or foreign materials. Immediately after construction or installation:

(1) Synthetic liners and covers shall be inspected to ensure tight seams and joints and the absence of tears, punctures, or blisters; and

(2) Soil-based and admixed liners and covers shall 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.

(b) While a waste pile is in operation, it shall be inspected weekly and after storms to detect evidence of any of the following:

(1) Deterioration, malfunctions, or improper operation of run-on and run-off control systems;

(2) Proper functioning of wind dispersal control systems, where present; and

(3) The presence of leachate in and proper functioning of leachate collection and removal systems, where present.

(c) An owner or operator required to have a leak detection system under R315-8-12.2(c) shall record the amount of liquids removed from each leak detection system sump at least once each week during the active life and closure period.

12.4 SPECIAL REQUIREMENTS FOR IGNITABLE OR REACTIVE WASTE

Ignitable or reactive waste shall not be placed in a waste pile unless the waste and waste pile satisfy all applicable requirements of R315-13, which incorporates by reference 40 CFR 268, R315-50-12, which incorporates by reference 40 CFR 268 Appendix I, and R315-50-13, which incorporates by reference 40 CFR 268 Appendix II, and:

(a) The waste is treated, rendered, or mixed before or immediately after placement in the pile so that:

(1) The resulting waste, mixture, or dissolution of material no longer meets the definition of ignitable or reactive waste under R315-2-9(d) or (f); and

(2) R315-8-2.8(b) is complied with; or

(b) The waste is managed in a way that it is protected from any material or condition which may cause it to ignite or react.

12.5 SPECIAL REQUIREMENTS FOR INCOMPATIBLE WASTES

(a) Incompatible wastes, or incompatible wastes and materials shall not be placed in the same pile, unless R315-8-2.8(b) is complied with.

(b) 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 shall be separated from the other materials, or protected from them by means of a dike, berm, wall, or other device.

(c) Hazardous waste shall 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 R315-8-2.8(b).

12.6 CLOSURE AND POST-CLOSURE CARE

(a) At closure, the owner or operator shall remove or decontaminate all waste residues, contaminated containment system compoundments, liners, etc., contaminated subsoils, and structures and equipment contaminated with waste and leachate, and manage them as hazardous waste unless R315-2-3(d) applies.

(b) 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 R315-8-12.6(a), the owner or operator finds that not all contaminated subsoils can be practicably removed or decontaminated, he shall close the facility and perform post-closure care in accordance with the closure and post-closure care requirements that apply to landfills, R315-8-7, which incorporates by reference 40 CFR 264.110 - 264.120.

(c)(1) The owner or operator of a waste pile that does not comply with the liner requirements of R315-8-12.2(a)(1), and is not exempt from them in accordance with R315-8-12.1(c) or R315-8-12.2(b) shall:

(i) Include in the closure plan for the pile under R315-8-7.3 both a plan for complying with R315-8-12.6(a) and a contingent plan for complying with R315-8-12.6(b) in case not all contaminated subsoils can be practicably removed at closure; and

(ii) Prepare a contingent post-closure plan under R315-8-7, which incorporates by reference 40 CFR 264.110 - 264.120, for complying with R315-8-12.6(b) in case not all contaminated subsoils can be practicably removed at closure.

(2) The cost estimates calculated under R315-8-8, which incorporates by reference 40 CFR 264.140 - 264.151, for closure and post-closure care of a pile subject to this paragraph shall 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 R315-8-12.6(a).

12.7 SPECIAL REQUIREMENTS FOR HAZARDOUS WASTES F020, F021, F022, F023, F026, AND F027

(a) Hazardous Wastes F020, F021, F022, F023, F026 and F027 shall not be placed in waste piles that are not enclosed, as defined in R315-8-12.1(c), unless the owner or operator operates the waste pile in accordance with a management plan for these wastes that is approved by the Executive Secretary pursuant to the standards set out in this paragraph, and in accord with all other applicable requirements of these rules. The factors to be considered are:

(1) The volume, physical, and chemical characteristics of the wastes, including their potential to migrate through soil or to volatilize or escape into the atmosphere:

(2) The attenuative properties of underlaying and surrounding soils or other materials:

(3) The mobilizing properties of other materials co-disposed with these wastes; and

(4) The effectiveness of additional treatment, design, or monitoring techniques.

(b) The Executive Secretary 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 groundwater, surface water, or air so as to protect human health and the environment.

12.8 ACTION LEAKAGE RATE

(a) The Executive Secretary shall approve an action leakage rate for surface impoundment units subject to R315-8-12.2(c) or (d). 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 one foot. The action leakage rate shall 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 shall 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.

(b) To determine if the action leakage rate has been exceeded, the owner or operator shall convert the weekly flow rate from the monitoring data obtained under R315-8-12.3(c), to an average daily flow rate, gallons per acre per day, for each sump. Unless the Executive Secretary approves a different calculation, the average daily flow rate for each sump shall be calculated weekly during the active life and closure period.

12.9 RESPONSE ACTIONS

(a) The owner or operator of waste pile units subject to R315-8-12.2(c) or (d) shall have an approved response action plan before receipt of waste. The response action plan shall set forth the actions to be taken if the action leakage rate has been exceeded. At a minimum, the response action plan shall describe the actions specified in R315-8-12.9(b).

(b) If the flow rate into the leak detection system exceeds the action leakage rate for any sump, the owner or operator shall:

(1) Notify the Executive Secretary in writing of the exceedance within seven days of the determination;

(2) Submit a preliminary written assessment to the Executive Secretary 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;

(3) Determine to the extent practicable the location, size, and cause of any leak;

(4) 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;

(5) Determine any other short-term and long-term actions to be taken to mitigate or stop any leaks; and

(6) Within 30 days after the notification that the action leakage rate has been exceeded, submit to the Executive Secretary the results of the analyses specified in R315-8-12.9(b)(3), (4), and (5), 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 shall submit to the Executive Secretary a report summarizing the results of any remedial actions taken and actions planned.

(c) To make the leak and/or remediation determinations in R315-8-12.9(b)(3), (4), and (5), the owner or operator shall:

(1)(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

(2) Document why such assessments are not needed.

R315-8-13. Land Treatment.

13.1 APPLICABILITY

The rules in this section apply to owners and operators of facilities that treat or dispose of hazardous waste in land treatment units, except as provided otherwise in R315-8-1.

13.2 TREATMENT PROGRAM

(a) An owner or operator subject to this section shall 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 Executive Secretary will specify in the facility permit the elements of the treatment program, including:

(1) The wastes that are capable of being treated at the unit based on demonstration under R315-8-13.3;

(2) Design measures and operating practices necessary to maximize the success of degradation, transformation, and immobilization processes in the treatment zone in accordance with R315-8-13.4(a); and

(3) Unsaturated zone monitoring provisions meeting the requirements of R315-8-13.6.

(b) The Executive Secretary will specify in the facility permit the hazardous constituents that shall be degraded, transformed, or immobilized under this section. Hazardous constituents are constituents identified in R315-50-10, which incorporates by reference 40 CFR 261 Appendix VIII, that are

reasonably expected to be in, or derived from, waste placed in or on the treatment zone.

(c) The Executive Secretary 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 shall be:

(1) No more than 1.5 meters, five feet, from the initial soil surface; and

(2) More than 1 meter, three feet, above the seasonal high water table.

13.3 TREATMENT DEMONSTRATION

(a) For each waste that will be applied to the treatment zone, the owner or operator shall demonstrate, prior to application of the waste, that hazardous constituents in the waste can be completely degraded, transformed, or immobilized in the treatment zone.

(b) 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 R315-8-13.3(a), he shall obtain a treatment or disposal permit under R315-3-6.4. The Executive Secretary will specify in this plan the testing, analytical, design, and operating requirements, including the duration of the tests, the horizontal and vertical dimensions of the treatment zone, monitoring procedures, closure and clean-up activities necessary to meet the requirements in R315-8-13.3(c).

(c) Any field test or laboratory analysis conducted in order to make a demonstration under R315-8-13.3(a) shall:

(1) Accurately simulate the characteristics and operating conditions for the proposed land treatment unit including:

(i) The characteristics of the waste, including the presence of R315-50-10 constituents, which incorporates by reference 40 CFR 261, Appendix VIII;

(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.

(2) Be able 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

(3) 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 the waste used in the test;

(v) In the case of field tests, the potential for migration of hazardous constituents to groundwater or surface water.

13.4 DESIGN AND OPERATING REQUIREMENTS

The Executive Secretary 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 section.

(a) The owner or operator shall 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 shall design, construct, operate, and maintain the unit in accord with all design and operating conditions that were used in the treatment demonstration under R315-8-13.3. At a minimum, the Executive Secretary will specify the following in the facility plan:

(1) The rate and method of waste application to the treatment zone;

(2) Measures to control soil pH;

(3) Measures to enhance microbial or chemical reactions, e.g., fertilization, tilling; and

(4) Measures to control the moisture content of the treatment zone.

(b) The owner or operator shall design, construct, operate, and maintain the treatment zone to minimize run-off of hazardous constituents during the active life of the land treatment unit.

(c) The owner or operator shall 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.

(d) The owner or operator shall 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.

(e) Collection and holding facilities, e.g., tanks or basins, associated with run-on and run-off control systems shall be emptied or otherwise managed expeditiously after storms to maintain the design capacity of the system.

(f) If the treatment zone contains particulate matter which may be subject to wind dispersal, the owner or operator shall manage the unit to control wind dispersal.

(g) The owner or operator shall inspect the unit weekly and after storms to detect evidence of:

(1) Deterioration, malfunctions, or improper operation of run-on and run-off control systems; and

(2) Improper functioning of wind dispersal control measures.

13.5 FOOD-CHAIN CROPS

The Executive Secretary 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 section. The Executive Secretary will specify in the facility plan the specific food-chain crops which may be grown.

(a)(1) The owner or operator shall demonstrate that there

is no substantial risk to human health caused by the growth of the crops in or on the treatment zone by demonstrating, prior to the planting of the 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.

(2) The owner or operator shall make the demonstration required under this paragraph prior to the planting of crops at the facility for all constituents identified in R315-50-10, which incorporates by reference 40 CFR 261 Appendix VIII, that are reasonably expected to be in, or derived from, waste placed in or on the treatment zone.

(3) In making a demonstration under this paragraph, the owner or operator may use field tests, greenhouse studies, available data, or, in the case of existing units, operating data, and shall:

(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.

(4) If the owner or operator intends to conduct field tests or greenhouse studies in order to make the demonstration required under this paragraph, he shall obtain a permit for conducting these activities.

(b) The owner or operator shall comply with the following conditions if cadmium is contained in wastes applied to the treatment zone:

(1)(i) The pH of the waste and soil mixture shall be 6.5 or greater at the time of each waste application, except for waste containing cadmium at concentrations of two mg/kg, dry weight, or less;

(ii) The annual application of cadmium from waste shall 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, and annual cadmium application rate shall not exceed:

TABLE

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

(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 shall not exceed: five kg/ha if soil cation exchange capacity (CEC) is less than five 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

(2)(i) Animal feed shall be the only food-chain crop produced;

(ii) The pH of the waste and soil mixture shall 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 shall be maintained whenever food-chain crops are grown;

(iii) There shall be an operating plan which demonstrates how the animal feed will be distributed to preclude ingestion by humans. The operating plan shall 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 shall 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 shall not be grown except in compliance with R315-8-13.5(b)(2).

13.6 UNSATURATED ZONE MONITORING

An owner or operator subject to this section shall establish an unsaturated zone monitoring program to discharge the following responsibilities:

(a) The owner or operator shall monitor the soil and soil-pore liquid to determine whether hazardous constituents migrate out of the treatment zone.

(1) The Executive Secretary will specify the hazardous constituents to be monitored in the facility plan. The hazardous constituents to be monitored are those specified under R315-8-13.2(b).

(2) The Executive Secretary may require monitoring for principal hazardous constituents (PHCs) in lieu of the constituents specified under R315-8-13.2(b). 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 Board will establish PHCs if they find, based on the waste analyses, treatment demonstrations, or other data, that effective degradation, transformation, or immobilization of the PHCs will assure treatment to at least equivalent levels for the other hazardous constituents in the waste.

(b) The owner or operator shall 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 shall consist of a sufficient number of sampling points at appropriate locations and depths to yield samples that;

(1) Represent the quality of background soil-pore liquid and the chemical make-up of soil that has not been affected by

leakage from the treatment zone; and

(2) Indicate the quality of soil-pore liquid and the chemical make-up of the soil below the treatment zone.

(c) The owner or operator shall establish a background value for each hazardous constituent to be monitored under R315-8-13.6(a). The permit will specify the background values for each constituent or specify the procedures to be used to calculate the background values.

(1) Background soil values may be based on a one-time sampling at a background plot having characteristics similar to those of the treatment zone.

(2) Background soil-pore liquid values shall be based on at least quarterly sampling for one year at a background plot having characteristics similar to those of the treatment zone.

(3) The owner or operator shall express all background values in a form necessary for the determination of statistically significant increases under R315-8-13.6(f).

(4) In taking samples used in the determination of all background values, the owner or operator shall use an unsaturated zone monitoring system that complies with R315-8-13.6(b)(1).

(d) The owner or operator shall conduct soil monitoring and soil-pore liquid monitoring immediately below the treatment zone. The Executive Secretary 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 shall express the results of soil and soil-pore liquid monitoring in a form necessary for the determination of statistically significant increases under R315-8-13.6(f).

(e) The owner or operator shall 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 shall implement procedures and techniques for:

(1) Sample collection;

(2) Sample preservation and shipment;

(3) Analytical procedures; and

(4) Chain of custody control.

(f) The owner or operator shall determine whether there is a statistically significant change over background values for any hazardous constituent to be monitored under R315-8-13.6(a) below the treatment zone each time he conducts soil monitoring and soil-pore liquid monitoring under R315-8-13.6(d).

(1) In determining whether a statistically significant increase has occurred, the owner or operator shall compare the value of each constituent, as determined under R315-8-13.6(d), to the background value for that constituent according to the statistical procedure specified in the facility plan under this paragraph.

(2) The owner or operator shall determine whether there has been a statistically significant increase below the treatment zone within a reasonable time period after completion of sampling. The Executive Secretary will specify that time period in the facility plan 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.

(3) The owner or operator shall 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 Executive Secretary will specify a statistical procedure in the facility plan 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.

(g) If the owner or operator determines, pursuant to R315-8-13.6(f), that there is a statistically significant increase of hazardous constituents below the treatment zone he shall:

(1) Notify the Board of this finding in writing within seven days. The notification shall indicate what constituents have shown statistically significant increases.

(2) Within 90 days, submit to the Executive Secretary an application for 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.

(h) If the owner or operator determines, pursuant to R315-8-13.6(f), 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 paragraph in addition to, or in lieu of, submitting a permit modification application under R315-8-13.6(g)(2), he is not relieved of the requirement to submit a plan modification application within the time specified in R315-8-13.6(g)(2) unless the demonstration made under this paragraph 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 paragraph, the owner or operator shall:

(1) Notify the Board or its duly authorized representative in writing within seven days of determining a statistically significant increase below the treatment zone that he intends to make a determination under this paragraph;

(2) Within 90 days, submit a report to the Board demonstrating that a source other than the regulated units caused the increase or that the increase resulted from error in sampling, analysis, or evaluation;

(3) Within 90 days, submit to the Executive Secretary an application for a permit modification to make any appropriate changes to the unsaturated zone monitoring program at the facility; and

(4) Continue to monitor in accordance with the unsaturated zone monitoring program established under this section.

13.7 RECORDKEEPING

The owner or operator shall include hazardous waste application dates, rates, and amounts in the operating record required under R315-8-5.3, which incorporates by reference 40 CFR 264.73.

13.8 CLOSURE AND POST-CLOSURE CARE

(a) During the closure period the owner or operator shall:

(1) Continue all operations, including pH control, necessary to maximize degradation, transformation, or immobilization of hazardous constituents within the treatment zone as required under R315-8-13.4(a), except to the extent such measures are inconsistent with R315-8-13.8(a)(8);

(2) Continue all operations in the treatment zone to minimize run-off of hazardous constituents as required under R315-8-13.4(b);

(3) Maintain the run-on control system required under R315-8-13.4(c);

(4) Maintain the run-off management system required under R315-8-13.4(d);

(5) Control wind dispersal of hazardous waste if required under R315-8-13.4(f);

(6) Continue to comply with any prohibitions or conditions concerning growth of food-chain crops under R315-8-13.5;

(7) Continue unsaturated zone monitoring in compliance with R315-8-13.6 except that soil-pore liquid monitoring may be terminated 90 days after the last application of waste to the treatment zone; and

(8) Establish a vegetative cover on the portion of the facility being closed at a time that the cover will not substantially impede degradation, transformation, or immobilization of hazardous constituents in the treatment zone. The vegetative cover shall be capable of maintaining growth without extensive maintenance.

(b) For the purpose of complying with R315-8-7, which incorporates by reference 40 CFR 264.110 - 264.120, when closure is completed the owner or operator may submit to the Board certification by an independent qualified soil scientist, in lieu of an independent registered professional engineer, that the facility has been closed in accordance with the specifications in the approved closure plan.

(c) During the post-closure care period the owner or operator shall:

(1) 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 these measures are consistent with other post-closure care activities;

(2) Maintain a vegetative cover over closed portions of the facility;

(3) Maintain the run-on control system required under R315-8-13.4(c);

(4) Maintain the run-off management system required under R315-8-13.4(d);

(5) Control wind dispersal of hazardous waste if required under R315-8-13.4(f);

(6) Continue to comply with any prohibitions or conditions concerning growth of food-chain crops under R315-8-13.5; and

(7) Continue unsaturated zone monitoring in compliance with R315-8-13.6, except that soil-pore liquid monitoring may be terminated 90 days after the last application of waste to the treatment zone.

(d) The owner or operator is not subject to regulation under R315-8-13.8(a)(8) and (c) if the Board 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 R315-8-13.8(d)(3). The owner or operator may submit such a demonstration to the Board at any time during the closure or post-closure care periods. For the purposes of this paragraph:

(1) The owner or operator shall establish background soil values and determine whether there is a statistically significant increase over those values for all hazardous constituents specified in the facility plan under R315-8-13.2(b).

(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 shall express background values and values for hazardous constituents in the treatment zone in a form necessary for the determination of statistically significant increases under R315-8-13.8(d)(3).

(2) In taking samples used in the determination of background and treatment zone values, the owner or operator shall 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.

(3) In determining whether a statistically significant increase has occurred, the owner or operator shall 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 shall 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.

(e) The owner or operator is not subject to regulation under section R315-8-6 if the Board finds that the owner or operator satisfies R315-8-13.8(d) and if unsaturated zone monitoring under R315-8-13.6 indicates that hazardous

constituents have not migrated beyond the treatment zone during the active life of the land treatment unit.

13.9 SPECIAL REQUIREMENTS FOR IGNITABLE OR REACTIVE WASTE

The owner or operator shall not apply ignitable or reactive waste to the treatment zone unless the waste and the treatment zone meet all applicable requirements of R315-13, R315-50-12, and R315-50-13, which incorporate by reference 40 CFR 268, and:

(a) The waste is immediately incorporated into the soil so that:

(1) The resulting waste, mixture, or dissolution of material no longer meets the definition of ignitable or reactive waste under R315-2-9(d) or (f); and

(2) Section R315-8-2.8(b) is complied with; or

(b) The waste is managed in a way that it is protected from any material or conditions which may cause it to ignite or react.

13.10 SPECIAL REQUIREMENTS FOR INCOMPATIBLE WASTES

The owner or operator shall not place incompatible wastes, or incompatible wastes and materials, see 40 CFR 264, Appendix V for examples, in or on the same treatment zone, unless R315-8-2.8(b) is complied with.

13.11 SPECIAL REQUIREMENTS FOR HAZARDOUS WASTES F020, F021, F022, F023, F026, F027

(a) Hazardous Wastes F020, F021, F022, F023, F026, and F027 shall 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 Executive Secretary pursuant to the standards set out in this paragraph, and in accord with all other applicable requirements of these rules. The factors to be considered are:

(1) The volume, physical, and chemical characteristics of the wastes including their potential to migrate through soil or to volatilize or escape into the atmosphere;

(2) The attenuative properties of underlaying and surrounding soils or other materials;

(3) The mobilizing properties of other materials co-disposed with these wastes; and

(4) The effectiveness of additional treatment, design, or monitoring techniques.

(b) The Board may determine that additional design, operating, and monitoring requirements are necessary for land treatment facilities managing hazardous waste F020, F021, F022, F023, F026, and F027 in order to reduce the possibility of migration of these wastes to groundwater, surface water, or air so as to protect human health and the environment.

R315-8-14. Landfills.

14.1 APPLICABILITY

The rules in this section apply to owners and operators of facilities that dispose of hazardous waste in landfills, except as R315-8-1 provides otherwise.

14.2 DESIGN AND OPERATING REQUIREMENTS

(a) Any landfill that is not covered by R315-8-14.2(c) or R315-7-21.2(a) shall have a liner system for all portions of the landfill, except for existing portions of the landfill. The liner system shall have:

(1) A liner that is designed, constructed, and installed to prevent any migration of wastes out of the landfill to the adjacent subsurface soil or groundwater or surface water at any time during the active life, including the closure period, of the landfill. The liner shall be constructed of material that prevents wastes from passing into the liner during the active life of the facility. The liner shall 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

(2) 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 Executive Secretary will specify design and operating conditions in the permit to ensure that the leachate depth at any point on the liner system, does not exceed 30 cm, one foot. The leachate collection and removal system shall be:

(i) Constructed of materials that are:

(A) Chemically resistant to the waste managed in the landfill and the leachate expected to be generated; and

(B) 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.

(b) The owner or operator will be exempted from the requirements of R315-8-14.2(a) if the Board 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 R315-8-6.4, into the groundwater or surface water at any future time. In deciding whether to grant an exemption, the Board will consider:

(1) The nature and quantity of the wastes;

(2) The proposed alternate design and operation;

(3) The hydrogeologic setting of the facility, including the attenuative capacity and thickness of the liners and soils present between the landfill and groundwater or surface water; and

(4) All other factors which would influence the quality

and mobility of the leachate produced and the potential for it to migrate to groundwater or surface water.

(c) 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 shall install two or more liners and a leachate collection and removal system above and between such liners. "Construction commences" is as defined in R315-1-1(b), which incorporates by reference 40 CFR 260.10, under "existing facility."

(1)(i) The liner system shall include:

(A) 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

(B) A composite bottom liner, consisting of at least two components. The upper component shall 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 shall 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 shall be constructed of at least three feet, 91 cm, of compacted soil material with a hydraulic conductivity of no more than 1×10^{-7} cm/sec.

(ii) The liners shall comply with R315-8-14.2(a)(1)(i), (ii), and (iii).

(2) The leachate collection and removal system immediately above the top liner shall be designed, constructed, operated, and maintained to collect and remove leachate from the landfill during the active life and post-closure care period. The Executive Secretary 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 shall comply with R315-8-14.2(c)(3)(iii) and (iv).

(3) 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 shall 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 shall have its own sump(s). The design of each sump and removal system shall provide a method for measuring and recording the volume of liquids present in the sump and of liquids removed.

(4) The owner or operator shall collect and remove pumpable liquids in the leak detection system sumps to minimize the head on the bottom liner.

(5) The owner or operator of a leak detection system that is not located completely above the seasonal high water table shall demonstrate that the operation of the leak detection system will not be adversely affected by the presence of ground water.

(d) The Executive Secretary may approve alternative design or operating practices to those specified in R315-8-14.2(c) if the owner or operator demonstrates to the Executive Secretary that such design and operating practices, together with location characteristics:

(1) 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 R315-8-14.2(c); and

(2) Will allow detection of leaks of hazardous constituents through the top liner at least as effectively.

(e) The double liner requirement set forth in R315-8-14.2(h) may be waived by the Board for any monofill, if:

(1) The monofill contains only hazardous wastes from foundry furnace emission controls or metal casting molding sand, and the wastes do not contain constituents which would render the wastes hazardous for reasons other than the Toxicity Characteristics in R315-2-9(g) and EPA Hazardous Waste Numbers D004 through D017; and

(2)(i)(A) The monofill has at least one liner for which there is no evidence that the liner is leaking:

(B) The monofill is located more than one-quarter mile from an underground source of drinking water, as that term is defined in 40 CFR 144.3; and

(C) The monofill is in compliance with generally applicable groundwater monitoring requirements for facilities with permit; 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 groundwater or surface water at any future time.

(f) The owner or operator of any replacement landfill unit is exempt from R315-8-14.2(c) if:

(1) The existing unit was constructed in compliance with the design standards of section 3004(o)(1)(A)(i) and (o)(5) of the Resource Conservation and Recovery Act; and

(2) There is no reason to believe that the liner is not functioning as designed.

(g) The owner or operator shall 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.

(h) The owner or operator shall 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.

(i) Collection and holding facilities, e.g., tanks or basins, associated with run-on and run-off control systems shall be emptied or otherwise managed expeditiously after storms to maintain design capacity of the system.

(j) If the landfill contains any particulate matter which may be subject to wind dispersal, the owner or operator shall cover or otherwise manage the landfill to control wind dispersal.

(k) The Executive Secretary will specify in the permit all design and operating practices that are necessary to ensure that the requirements of this section are satisfied.

14.3 MONITORING AND INSPECTION

(a) During construction or installation, liners, except in the case of existing portions of landfills exempt from R315-8-14.2(a), and cover systems, e.g., membranes, sheets, or coatings, shall be inspected for uniformity, damage, and imperfections, e.g., holes, cracks, thin spots, or foreign materials. Immediately after construction or installation:

(1) Synthetic liners and covers shall be inspected to ensure tight seams and joints and the absence of tears, punctures, or blisters; and

(2) Soil-based and admixed liners and covers shall 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.

(b) While a landfill is in operation, it shall be inspected weekly and after storms to detect evidence of any of the following:

(1) Deterioration, malfunctions, or improper operation of run-on and run-off control systems;

(2) Proper functioning of wind dispersal control systems, where present; and

(3) The presence of leachate in and proper functioning of leachate collection and removal systems, where present.

(c)(1) An owner or operator required to have a leak detection system under R315-8-14.2(c) or (d) shall record the amount of liquids removed from each leak detection system sump at least once each week during the active life and closure period.

(2) After the final cover is installed, the amount of liquids removed from each leak detection system sump shall 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 shall 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 shall 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 shall 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.

(3) "Pump operating level" is a liquid level proposed by the owner or operator and approved by the Executive Secretary based on pump activation level, sump dimensions, and level that avoids backup into the drainage layer and minimizes head in the sump.

14.4 SURVEYING AND RECORDKEEPING

The owner or operator of a landfill shall maintain the following items in the operating record required under R315-8-5.3, which incorporates by reference 40 CFR 264.73:

(a) On a map, the exact location and dimensions, including depth, of each cell with respect to permanently surveyed bench marks; and

(b) The contents of each cell and the approximate location of each hazardous waste type within each cell.

14.5 CLOSURE AND POST-CLOSURE CARE

(a) At final closure of the landfill or upon closure of any cell, the owner or operator shall cover the landfill or cell with a final cover designed and constructed to:

(1) Provide long-term minimization of migration of liquids through the closed landfill;

(2) Function with minimum maintenance;

(3) Promote drainage and minimize erosion or abrasion of the cover;

(4) Accommodate settling and subsidence so that the cover's integrity is maintained; and

(5) Have a permeability less than or equal to the permeability of any bottom liner system or natural subsoils present.

(b) After final closure, the owner or operator shall comply with all post-closure requirements contained under R315-8-9.8 and R315-8-7, which incorporates by reference 40 CFR 264.110 - 264.120, including maintenance and monitoring throughout the post-closure care period, specified in the permit, under R315-8-7, which incorporates by reference 40 CFR 264.110 - 264.120. The owner or operator shall:

(1) 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;

(2) Continue to operate the leachate collection and removal system until leachate is no longer detected;

(3) Maintain and monitor the leak detection system in

accordance with R315-8-14.2(c)(3)(iv) and (4) and R315-8-14.3(c), and comply with all other applicable leak detection system requirements of R315-8;

(4) Maintain and monitor the groundwater monitoring system and comply with all other applicable requirements of these rules;

(5) Prevent run-on and run-off from eroding or otherwise damaging the final cover; and

(6) Protect and maintain surveyed bench marks used in complying with R315-8-14.4.

14.6 SPECIAL REQUIREMENTS FOR IGNITABLE OR REACTIVE WASTE

(a) Except as provided in R315-8-14.6(b), and in R315-8-14.10, ignitable or reactive waste shall not be placed in a landfill, unless the waste and landfill meet all applicable requirements of R315-13, R315-50-12, and R315-50-13, which incorporate by reference 40 CFR 268, and:

(1) The resulting waste, mixture, or dissolution of material no longer meets the definition of ignitable or reactive waste under R315-2-9(d) or (f); and

(2) R315-8-2.8(b) is complied with.

(b) Except for prohibited wastes which remain subject to treatment standards in R315-13, which incorporates by reference 40 CFR 268 subpart D, ignitable wastes in containers may be landfilled without meeting the requirements of R315-8-14.6(a), provided that the wastes are disposed of in a way that they are protected from any material or conditions which may cause them to ignite. At a minimum, ignitable wastes shall 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; shall be covered daily with soil or other non-combustible material to minimize the potential for ignition of the wastes; and shall not be disposed of in cells that contain or will contain other wastes which may generate heat sufficient to cause ignition of the waste.

14.7 SPECIAL REQUIREMENTS FOR INCOMPATIBLE WASTES

Incompatible wastes, or incompatible wastes and materials shall not be placed in the same landfill cell, unless R315-8-2.8(b) is complied with.

14.8 SPECIAL REQUIREMENTS FOR LIQUID WASTE

(a) Bulk or non-containerized liquid waste or waste containing free liquids may be placed in a landfill, prior to May 8, 1985, if:

(1) The landfill has a liner and leachate collection and removal system that meet the requirements of R315-8-14.2(a); or

(2) Before disposal, the liquid waste or waste containing free liquids is treated or stabilized, chemically or physically, e.g., by mixing with a sorbent solid, so that free liquids are no longer present.

(b) Effective May 8, 1985, 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.

(c) To demonstrate the absence or presence of free liquids in either a containerized or a bulk waste, the following test shall be used: Method 9095, Paint Filter Liquids Test, as described in "Test Methods for Evaluating Solid Wastes, Physical/Chemical Methods." EPA Publication No. SW-846 as incorporated by reference in 40 CFR 260.11, see R315-1-2.

(d) Containers holding free liquids shall not be placed in a landfill unless:

(1) 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

(2) The container is very small, such as an ampule; or

(3) The container is designed to hold free liquids for use other than storage, such as a battery or capacitor; or

(4) The container is a lab pack as defined in R315-8-14.10, and is disposed of in accordance with R315-8-14.10.

(e) Sorbents used to treat free liquids to be disposed of in landfills shall be nonbiodegradable. Nonbiodegradable sorbents are: materials listed or described in R315-8-14.8(e)(1); materials that pass one of the tests in R315-8-14.8(e)(2); or materials that are determined by EPA to be nonbiodegradable through the R315-2-16, which incorporates by reference 40 CFR 260.22, petition process.

(1) 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.

(2) 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; 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 the Organization for Economic Cooperation and Development (OECD) test 301B, CO_2 Evolution, Modified Sturm Test.

(f) Effective November 8, 1985, the landfill placement of any liquid which is not a hazardous waste in a landfill is prohibited unless the owner or operator of the landfill demonstrates to the Board, or the Board determines that;

(1) The only reasonably available alternative to the placement in the 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

(2) Placement in the owner or operator's landfill will not present a risk of contamination of any underground source of drinking water, as that term is defined in 40 CFR 144.3.

14.9 SPECIAL REQUIREMENTS FOR CONTAINERS

Unless they are very small, such as an ampule, containers shall be either:

(a) At least 90 percent full when placed in the landfill; or

(b) Crushed, shredded, or similarly reduced in volume to the maximum practical extent before burial in the landfill.

14.10 DISPOSAL OF SMALL CONTAINERS OF HAZARDOUS WASTE IN OVERPACKED DRUMS, LAB PACKS

Small containers of hazardous waste in overpacked drums, lab packs, may be placed in a landfill if the following requirements are met:

(a) Hazardous waste shall be packaged in non-leaking inside containers. The inside containers shall 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 shall be tightly and securely sealed. The inside containers shall 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.

(b) The inside containers shall 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 R315-8-14.8(e), to completely sorb all of the liquid contents of the inside containers. The metal outer container shall be full after it has been packed with inside containers and sorbent material.

(c) The sorbent material used shall not be capable of reacting dangerously with, being decomposed by, or being ignited by the contents of the inside containers in accordance with R315-8-2.8(b).

(d) Incompatible wastes, as defined in R315-1 shall not be placed in the same outside container.

(e) Reactive wastes, other than cyanide or sulfide bearing wastes as defined in R315-2-9(f)(v) shall be treated or rendered non-reactive prior to packaging in accordance with R315-8-14.10(a) through (d). Cyanide and sulfide bearing reactive waste may be packed in accordance with R315-8-14.10(a) through (d) without first being treated or rendered non-reactive.

(f) The disposal is in compliance with the requirements of R315-13, R315-50-12, and R315-50-13, which incorporate by reference 40 CFR 268. Persons who incinerate lab packs according to the requirements in R315-13, which incorporates by reference 40 CFR 268.42(c)(1), may use fiber drums in place of metal outer containers. Such fiber drums shall meet the DOT specification in 49 CFR 173.12 and be overpacked according to the requirements in R315-8-14.10(b).

14.11 SPECIAL REQUIREMENTS FOR HAZARDOUS WASTES F020, F021, F022, F023, F026, AND F027

(a) Hazardous Wastes F020, F021, F022, F023, F026, and F027 shall not be placed in a landfill unless the owner or operator operates the landfill in accord with a management plan for these wastes that is approved by the Executive Secretary pursuant to the standards set out in this paragraph, and in accord with all other applicable requirements. The factors to be considered are:

(1) 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;

(2) The attenuative properties of underlaying and surrounding soils or other materials;

(3) The mobilizing properties of other materials co-disposed with these wastes; and

(4) The effectiveness of additional treatment, design, or monitoring requirements.

(b) The Board 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 groundwater, surface water, or air so as to protect human health and the environment.

14.12 ACTION LEAKAGE RATE

(a) The Executive Secretary shall approve an action leakage rate for surface impoundment units subject to R315-8-14.2(c) or (d). 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 one foot. The action leakage rate shall 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 shall 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.

(b) To determine if the action leakage rate has been exceeded, the owner or operator shall convert the weekly or monthly flow rate from the monitoring data obtained under R315-8-14.3(c), to an average daily flow rate, gallons per acre

per day, for each sump. Unless the Executive Secretary approves a different calculation, the average daily flow rate for each sump shall be calculated weekly during the active life and closure period, and monthly during the post-closure care period when monthly monitoring is required under R315-8-14.3(c).

14.13 RESPONSE ACTIONS

(a) The owner or operator of landfill units subject to R315-8-14.2(c) or (d) shall have an approved response action plan before receipt of waste. The response action plan shall set forth the actions to be taken if the action leakage rate has been exceeded. At a minimum, the response action plan shall describe the actions specified in R315-8-14.13(b).

(b) If the flow rate into the leak detection system exceeds the action leakage rate for any sump, the owner or operator shall:

(1) Notify the Executive Secretary in writing of the exceedence within seven days of the determination;

(2) Submit a preliminary written assessment to the Executive Secretary 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;

(3) Determine to the extent practicable the location, size, and cause of any leak;

(4) 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;

(5) Determine any other short-term and longer-term actions to be taken to mitigate or stop any leaks; and

(6) Within 30 days after the notification that the action leakage rate has been exceeded, submit to the Executive Secretary the results of the analyses specified in R315-8-14.13(b)(3)-(5), 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 shall submit to the Executive Secretary a report summarizing the results of any remedial actions taken and actions planned.

(c) To make the leak and/or remediation determinations in R315-8-14.13(b)(3)-(5), the owner or operator shall:

(1)(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

(2) Document why such assessments are not needed.

R315-8-15. Incinerators.

15.1 APPLICABILITY

(a) The rules in this section apply to owners or operators of facilities that incinerate hazardous waste, as defined in 40 CFR 260.10, except as R315-8-1 provides otherwise.

(b) Integration of the MACT standards.

(1) Except as provided by R315-8-15.1(b)(2), (3), and (4) the standards of R315-8 no longer apply when an owner or operator demonstrates compliance with the maximum achievable control technology (MACT) requirements of R307-214-2, which incorporates by reference 40 CFR 63, subpart EEE, by conducting a comprehensive performance test and submitting to the Executive Secretary a Notification of Compliance under R307-214-2, which incorporates by reference 40 CFR 63.1207(j) and 63.1210(b), documenting compliance with the requirements of 307-214-2, which incorporates by reference 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 R315-8 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.

(2) The MACT standards do not replace the closure requirements of R315-8-15.8 or the applicable requirements of R315-8-1 through R315-8-8, R315-8-18, which incorporates by reference 40 CFR 264 subpart BB, and R315-8-22, which incorporates by reference 40 CFR 264 subpart CC.

(3) The particulate matter standard of R315-8-15.4(b) remains in effect for incinerators that elect to comply with the alternative to the particulate matter standard of R307-214-2, which incorporates by reference to CFR 63.1206(b)(14).

(4) The following requirements remain in effect for startup, shutdown, and malfunction events if you elect to comply with R315-3-9(a)(1)(i) to minimize emissions of toxic compounds from these events:

(i) R315-8-15.6(a) requiring that an incinerator operate in accordance with operating requirements specified in the permit; and

(ii) R315-8-15.6(c) 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.

(c) After consideration of the waste analysis included with part B of the permit application, the Executive Secretary, in establishing the permit conditions, shall exempt the applicant from all requirements of this section except R315-8-15.2, Waste Analysis and R315-8-15.8, Closure,

(1) If the Executive Secretary finds that the waste to be burned is:

(i) Listed as a hazardous waste in R315-2-10 or R315-2-11 solely because it is ignitable, Hazard Code I, corrosive Hazard Code C, or both; or

(ii) Listed as a hazardous waste in R315-2-10 or R315-2-11 solely because it is reactive, Hazard Code R, for characteristics other than those listed in R315-2-9(f)(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 characteristics of ignitability, corrosivity, or both, as determined by the test for characteristics of hazardous wastes under R315-2-9, or

(iv) A hazardous waste solely because it possesses any of the reactivity characteristics described by R315-2-9(f)(1)(i), (ii), (iii), (vi), (vii), and (viii) and will not be burned when other hazardous wastes are present in the combustion zone; and

(2) If the waste analysis shows that the waste contains none of the hazardous constituents listed in R315-50-10, which incorporates by reference 40 CFR 261 Appendix VIII, which could reasonably be expected to be in the waste.

(d) If the waste to be burned is one which is described by R315-8-15.1(c)(1)(i), (ii), (iii), or (iv) and contains insignificant concentrations of the hazardous constituents listed in R315-50-10, which incorporates by reference 40 CFR 261 Appendix VIII, then the Executive Secretary may, in establishing permit conditions, exempt the applicant from all requirements of this section except R315-8-15.2, Waste analysis and R315-8-15.8, Closure, after consideration of the waste analysis included with part B of the permit application, unless the Executive Secretary finds that the waste will pose a threat to human health and the environment when burned in an incinerator.

(e) The owner or operator of an incinerator may conduct trial burns subject only to the requirements of R315-3-6.3.

15.2 WASTE ANALYSIS

(a) As a portion of the trial burn plan required by R315-3-6.3 or with part B of the permit the owner or operator shall have included an analysis of the waste feed sufficient to provide all information required by R315-3-6.3(b) or R315-3-2.10. Owners or operators of new hazardous waste incinerators shall provide the information required by R315-3-6.3(c) or R315-3-2.10 to the greatest extent possible.

(b) Throughout normal operation the owner or operator shall conduct sufficient waste analysis to verify that waste feed to the incinerator is within the physical and chemical composition limits specified in his permit, R315-8-15.6.

15.3 PRINCIPAL ORGANIC HAZARDOUS CONSTITUENTS (POHCS)

(a) Principal Organic Hazardous Constituents (POHCs) in the waste feed shall be treated to the extent required by the performance standard of R315-8-15.4.

(b)(1) One or more POHCs will be specified in the facility's permit, from among these constituents listed in R315-50-10, which incorporates by reference 40 CFR 261 Appendix VIII, 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 permit. 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.

(2) Trial POHCs will be designated for performance of trial burns in accordance with the procedure specified R315-3-6.3 for obtaining trial burn permits.

15.4 PERFORMANCE STANDARDS

An incinerator burning hazardous waste shall be designed, constructed, and maintained so that, when operated in accordance with operating requirements specified under R315-8-15.6, it will meet the following performance standards:

(a)(1) An incinerator burning hazardous waste shall achieve a destruction and removal efficiency (DRE) of 99.99% for each principal organic hazardous constituent (POHC) designated, R315-8-15.3, in its permit for each waste feed. DRE is determined for each POHC from the following equation:

$DRE = (W_{in} - W_{out}) / W_{in} \times 100\%$

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.

(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 (HC1) shall control HC1 emissions so that the rate of emission is no greater than the larger of either 1.8 kilograms per hour or one percent of the HC1 in the stack gas prior to entering any pollution control equipment.

(b) An incinerator burning hazardous waste shall 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:

$P_c = P_m \times 14 / (21-Y)$

When P_c is correct 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, as 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 Executive Secretary will select an appropriate correction procedure, to be specified in the facility permit.

(c) For purposes of permit enforcement, compliance with the operating requirements specified in the permit under R315-8-15.6 will be regarded as compliance with this section. However, evidence that compliance with those permit conditions is insufficient to ensure compliance with the performance requirements of this section may be "information" justifying modification, revocation, or reissuance of a permit under R315-3-4.2.

(d) An incinerator burning hazardous wastes F020, F021,

F022, F023, F026, or F027 shall achieve a destruction and removal efficiency (DRE) of 99.9999% for each principal organic hazardous constituent (POHC) designated, under R315-8-15.3, in its permit. This performance shall 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 R315-8-15.4(a)(1). In addition, the owner or operator of the incinerator shall notify the Executive Secretary of his intent to incinerate hazardous wastes F020, F021, F022, F023, F026, or F027.

15.5 HAZARDOUS WASTE INCINERATOR PERMITS

(a) 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 8.15.6., except:

(1) In approved trial burns, R315-3-6.3, or

(2) Under exemptions created by R315-8-15.1.

(b) Other hazardous wastes may be burned 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 under R315-3-2.10.

(c) The permit for a new hazardous waste incinerator shall establish appropriate conditions for each of the applicable requirements of this section including but not limited to allowable waste feeds and operating conditions necessary to meet the requirements of R315-8-15.6, sufficient to comply with the following standards:

(1) 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 R315-8-15.5(c)(2), not to exceed a duration of 720 hours operating time for treatment of hazardous waste, the operating requirements shall be those most likely to ensure compliance with the performance standards in R315-8-15.4 based on the Executive Secretary's engineering judgement. The Executive Secretary 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;

(2) For the duration of the trial burn, the operating requirements shall be sufficient to demonstrate compliance with the performance standards of R315-8-15.4 and shall be in accordance with the approved trial burn plan;

(3) 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 Executive Secretary, the operating requirements shall be those most likely to ensure compliance with the performance standards of R315-8-15.4 based on the Executive Secretary's engineering judgement.

(4) For the remaining duration of the permit, the operating requirements shall be those demonstrated, in a trial burn or by alternative data specified in R315-3-2.10(c), as sufficient to ensure compliance with the performance standards of R315-8-15.4.

15.6 OPERATING REQUIREMENTS

(a) An incinerator shall 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 R315-8-15.5(b), and included with part B of a facility's permit to be sufficient to comply with the performance standards of R315-8-15.4.

(b) 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 requirements of R315-8-15.4, to which the operating requirements apply. For each such waste feed, the permit will specify acceptable operating limits including the following conditions:

(1) Carbon monoxide (CO) level in the stack exhaust gas;

(2) Waste feed rate;

(3) Combustion temperature;

(4) An appropriate indicator of combustion gas velocity;

(5) Allowable variations in incinerator system design or operating procedures; and

(6) Any other operating requirements as are necessary to ensure that the performance standards of R315-8-15.4 are met.

(c) During start-up and shut-down of an incinerator, hazardous waste, except wastes exempted in accordance with R315-8-15.1, shall 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.

(d) Fugitive emissions from the combustion zone shall be controlled by:

(1) Keeping the combustion zone totally sealed against fugitive emissions; or

(2) Maintaining a combustion zone pressure lower than atmospheric pressure; or

(3) An alternative means of control demonstrated, with part B of the permit to provide fugitive emissions control equivalent to maintenance of combustion zone pressure lower than atmospheric pressure.

(e) An incinerator shall be operated with a functioning system to automatically cut off waste feed to the incinerator when operating conditions deviate from limits established under R315-8-15.6(a).

(f) An incinerator shall cease operation when changes in waste feed, incinerator design, or operating conditions exceed limits designated in its permit.

15.7 MONITORING AND INSPECTIONS

(a) The owner or operator shall conduct, as a minimum, the following monitoring while incinerating hazardous waste:

(1) Combustion temperature, waste feed rate, and the indicator of combustion gas velocity specified in the facility permit shall be monitored on a continuous basis.

(2) Carbon monoxide (CO) shall be monitored on a continuous basis at a point in the incinerator downstream of the combustion zone and prior to release to the atmosphere.

(3) Upon request by the Board, sampling and analysis of the waste and exhaust emissions shall be conducted to verify that the operating requirements established in the permit achieve the performance standards of R315-8-15.4.

(b) The incinerator and associated equipment, pumps, valves, conveyors, pipes, etc., shall be subjected to thorough visual inspection, at least daily, for leaks, spills, fugitive emissions, and signs of tampering.

(c) The emergency waste feed cutoff system and associated alarms shall be tested at least weekly to verify operability, unless the applicant demonstrates to the Board that weekly inspections will unduly restrict or upset operations and that less frequent inspections will be adequate. At a minimum, operational testing shall be conducted at least monthly.

(d) This monitoring and inspection data shall be recorded and the records shall be placed in the operating record required by R315-8-5.3, which incorporates by reference 264.73.

15.8 CLOSURE

At closure the owner or operator shall remove all hazardous waste and hazardous waste residues, including, but not limited to, ash, scrubber waters, and scrubber sludges, from the incinerator site.

At closure, as throughout the operating period, unless the owner or operator can demonstrate, in accordance with R315-2-3(d), that the residue removed from the incinerator is not a hazardous waste, the owner or operator becomes a generator of hazardous waste and shall manage it in accordance with applicable requirements. R315-4 - R315-9.

R315-8-16. Miscellaneous Units.

The requirements as found in 40 CFR 264, subpart X, which includes sections 264.600 through 264.603, 2000 ed., are adopted and incorporated by reference.

R315-8-17. Air Emission Standards for Process Vents.

The requirements as found in 40 CFR subpart AA sections 264.1030 through 264.1036, 1998 ed., as amended by 64 FR 3382, January 21, 1999, are adopted and incorporated by reference with the following exception:

(1) substitute "Board" for all federal regulation references made to "Regional Administrator".

R315-8-18. Air Emission Standards for Equipment Leaks.

The requirements as found in 40 CFR subpart BB sections 264.1050 through 264.1065, 2004 ed., are adopted and incorporated by reference with the following exception:

(1) substitute "Board" for all federal regulation references made to "Regional Administrator."

R315-8-19. Drip Pads.

The requirements as found in 40 CFR subpart W sections 264.570 through 264.575, 1996 ed., are adopted and incorporated by reference with the following exception:

(1) substitute "Board" for all federal regulation references made to "Regional Administrator".

(2) Add, following December 6, 1990, in 40 CFR 264.570(a), "for all HSWA drip pads or July 30, 1993 for all non-HSWA drip pads."

(3) Add, following December 24, 1992, in 40 CFR 570(a), "for all HSWA drip pads or July 30, 1993 for all non-HSWA drip pads."

R315-8-20. Containment Buildings.

The requirements of subpart DD sections 264.1100 through 264.1110, as found in 57 FR 37194, August 18, 1992, are adopted and incorporated by reference with the following exception:

(1) substitute "Executive Secretary" for all federal regulation references made to "Regional Administrator."

R315-8-21. Corrective Action for Solid Waste Management Units.

The requirements of 40 CFR 264, subpart S, which includes sections 264.550 through 264.555, 2000 ed., as amended by 67 FR 2962, January 22, 2002, are adopted and incorporated by reference with the following exception:

substitute "Executive Secretary" for all federal regulation references made to "Regional Administrator."

R315-8-22. Air Emission Standards for Tanks, Surface Impoundments, and Containers.

The requirements as found in 40 CFR subpart CC, sections 264.1080 through 264.1091, 1998 ed., as amended by 64 FR 3382, January 21, 1999, are adopted and incorporated by reference with the following exception:

(1) substitute "Executive Secretary" for all federal regulation references made to "Regional Administrator."

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