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OFFICE OF WEST VIRGINIA
SECRETARY OF STATE

NOTICE OF RULE MODIFICATION OF A PROPOSED RULE

Department of Commerce, Labor
and Environmental Resources

AGENCY: Division of Environmental Protection TITLE NUMBER: 47

CITE AUTHORITY W. Va. Code § 20-5E-6

AMENDMENT TO AN EXISTING RULE: YES XX NO

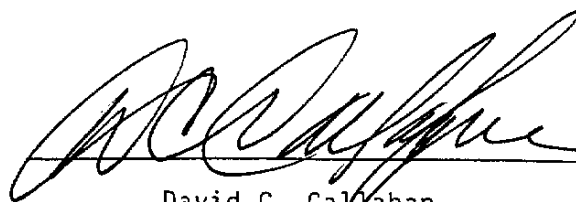
IF YES, SERIES NUMBER OF RULE BEING AMENDED: 35

TITLE OF RULE BEING AMENDED: "Hazardous Waste Management Regulations"

IF NO, SERIES NUMBER OF NEW RULE BEING PROPOSED:

TITLE OF RULE BEING PROPOSED:

THE ABOVE PROPOSED LEGISLATIVE RULE, FOLLOWING REVIEW BY THE LEGISLATIVE RULE
MAKING REVIEW COMMITTEE IS HEREBY MODIFIED AS A RESULT OF REVIEW AND COMMENT
BY THE LEGISLATIVE RULE-MAKING REVIEW COMMITTEE. THE ATTACHED MODIFICATIONS ARE
FILED WITH THE SECRETARY OF STATE.



David C. Callahan
Director

52-30

TITLE 47
LEGISLATIVE RULES
DEPARTMENT OF COMMERCE, LABOR, AND ENVIRONMENTAL RESOURCES
DIVISION OF NATURAL RESOURCES

SERIES 35
HAZARDOUS WASTE MANAGEMENT REGULATIONS

§47-35-1. Scope and Authority.

1.1. Scope and Purpose. -- The purpose of these regulations is to provide for the regulation of the generation, treatment, storage, and disposal of hazardous waste to the extent necessary for the protection of the public health and safety and the environment.

1.2. Authority. -- W.Va. Code §20-5E-6.

1.3. Filing Date. --

1.4. Effective Date. --

1.5. Incorporation by Reference. Whenever either federal statutes or regulations or State statutes or regulations are incorporated by reference into these regulations, the reference is to that statute or regulation in effect on ~~June 30, 1989~~ July 1, 1990.

1.6. Promulgation History. (Reserved).

§47-35-2. Definitions.

For the purposes of these regulations, the following words and phrases shall have the meanings ascribed to them in Section 2 of these regulations unless the context of the regulations indicate otherwise:

2.1. "Aboveground Tank" means a device meeting the definition of "tank" in these regulations and that is situated in such a way that the entire surface area of the tank is completely above the plane of the adjacent surrounding surface and the entire surface area of the tank (including the tank bottom) is able to be visually inspected.

2.2. "Accumulated Speculatively" for the purposes of Sections 3.1.2 and 3.1.6 of these regulations -- means a material that is accumulated before being recycled. A material is not accumulated speculatively, however if the person accumulating it can show that the material is potentially recyclable and has feasible means of being recycled; and that during the calendar year the amount of material that is recycled or transferred to a different site for recycling equals at least seventy-five (75%) percent by weight of

volume of the amount of that material accumulated at the beginning of the period. In calculating the percentage of turnover, the seventy-five (75%) percent requirement is to be applied to each material of the same type, such as slags from a single smelting process that is recycled in the same way (that is, from which the same material is recovered or that is used in the same way). Materials accumulating in units that would be exempt from regulation under Section 3.1.4.c of these regulations are not to be included in making the calculation. Materials that are already defined as wastes also are not to be included in making the calculation. Materials are no longer in this category once they are removed from accumulation for recycling.

2.3. "Active Life" of a facility means the period from the initial receipt of hazardous waste at the facility until the chief receives certification of final closure.

2.4. "Active Portion" means that portion of a facility where treatment, storage, or disposal operations are being conducted. It includes the treated area of a landfarm and the active face of a landfill, but does not include those portions of a facility which have been closed in accordance with all applicable closure requirements.

2.5. "Administrator" means the administrator of the United States Environmental Protection Agency or his designee.

2.6. "Ancillary Equipment" means any device including, but not limited to, such devices as piping, fitting, flanges, valves, and pumps that is used to distribute, meter, or control the flow of hazardous waste from its point of generation to a storage or treatment tank(s), between hazardous waste storage and treatment tanks to a point of disposal on-site, or to a point of shipment for disposal off-site.

2.7. "Angle of Draw" means the angle between the vertical line drawn from the edge of the underground opening and the point of the surface where the subsidence diminishes to zero.

2.8. "Application, Part A" means that part of the application which a permit applicant must complete to qualify for interim status under Section 3005(e) of RCRA or these regulations and for consideration for a permit.

2.9. "Application, Part B" means that part of the application which a permit applicant must complete to be considered for a permit.

2.10 "Approved Form" means any Environmental Protection Agency standard national form for administering the hazardous waste provisions of RCRA, or a form approved by the chief or the director.

2.11. "Aquifer" means a geologic formation, group of formations, or part of a formation that is capable of yielding a significant amount of groundwater to wells or springs.

2.12. "Authorized Representative" means the person responsible for the overall operation of a facility or operational unit that is part of a facility.

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

2.13.1. The unit must have physical provisions for recovering and exporting thermal energy in the form of steam, heated fluids, or heated gases;

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

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

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

2.14. "By-Product" for the purposes of Sections 3.1.2 and 3.1.6 of these regulations means a material that is not one of the primary products of a production process and that is not solely or separately produced by the production process. Examples are process residues such as slags or distillation column bottoms. The term does not include a co-product that is produced for the general public's use and is ordinarily used in the form it is produced by the process.

2.15. "Calendar Year" means January 1 through December 31.

2.16. "Certification" means a statement of professional opinion

based upon knowledge and belief.

2.17. "Chief" means the chief of the Section of Waste Management of the West Virginia Division of Natural Resources.

2.18. "Closed Facility" means a facility which has been properly closed in accordance with the approved facility closure plan and all applicable regulations and requirements.

2.19. "Closed Portion" means that portion of a facility which an owner or operator has closed in accordance with the facility closure plan and all applicable closure requirements.

2.20. "Closure" means the act of securing a hazardous waste management facility pursuant to the requirements of these regulations.

2.21. "Common Code" means the unique code assigned by the Chemical Abstract Services (also known as the CAS Registry Number) to each EPA hazardous waste and to each DOT hazardous waste material.

2.22. "Component" means either the tank or the ancillary equipment of a tank system, but for purposes of Section 11 of these regulations, "component" means any constituent part of a unit or any group of constituent parts of a unit which are assembled to perform a specific function (e.g., a pump seal, pump, kiln liner, kiln thermocouple).

2.23. "Confined Aquifer" means an aquifer, overlain by a confining layer of significantly lower hydraulic conductivity, containing groundwater that is under sufficient pressure to rise above the level at which it is encountered by a well.

2.24. "Consignee" for purposes of Section 6.5.1 of these regulations means the ultimate treatment, storage, or disposal facility in a receiving country to which hazardous waste will be sent.

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

2.26. "Contingency Plan" means a document setting out an organized, planned, and coordinated course of actions to be followed in the event of a fire, explosion, or release of hazardous waste or hazardous constituents which could threaten human health or the environment.

2.27. "Corrosion Expert" means a person who, by reason of his knowledge of the physical sciences and the principles of engineering and mathematics, acquired through a professional education and related practical experience, is qualified to engage

in the practice of corrosion control on buried or submerged metal piping systems and metal tanks. Such a person must be certified as being qualified by the National Association of Corrosion Engineers (NACE) or be a registered professional engineer who has certification or licensing that includes education and experience in corrosion control on buried or submerged metal piping systems and metal tanks.

2.28. "Cumulative Impact Area" means an area, including the permit area within which impacts resulting from the proposed operation may interact with the impacts of all anticipated or existing facilities on both the surface and groundwater systems. The cumulative impact area includes the permit area, adjacent areas and all other areas, where as a result of hydraulic continuity, material damage may result.

2.29. "Cumulative Impact" means the hydraulic impact that results from the cumulation of flows from all facilities to common channels or aquifers in a cumulative impact area. Other facilities within a given cumulative impact area may be in full compliance with effluent standards and all other regulatory requirements, but as a result of their off-site flows, there is a cumulative impact. A cumulative impact is not prohibited, but it should be minimized. However, when the magnitude of such an impact exceeds threshold limits or ranges as predetermined by the chief, they constitute material damage.

2.30. "CWA" means the Clean Water Act (formerly referred to as the Federal Water Pollution Control Act), Public Law 92-500, as amended by Public Law 95-217 and Public Law 95-576; 33 U.S.C. §1251 et seq.

2.31. "Danger Reach" means land that is immediately adjacent to a river or stream below a water-impounding structure or dam. The extent of the danger reach is that area which would be inundated by the flow of water from the impoundment created by the dam if the dam were to fail.

2.32. "Designated Facility" or "Designated Hazardous Waste Management Facility" means a hazardous waste treatment, storage, or disposal facility which has received a permit from the Environmental Protection Agency in accordance with 40 C.F.R. Parts 124 and 270, a permit from this State or another authorized state hazardous waste program, or which has been granted interim status or that is regulated under Section 3.1.6 or 9.6 of these regulations, and that has been designated on the manifest to receive a specific hazardous waste shipment.

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

2.34. "Director" means the director of the Division of Natural Resources.

2.35. "Discharge" or "Hazardous Waste Discharge" means the accidental or intentional spilling, leaking, pumping, pouring, emitting, emptying, or dumping of hazardous waste into or on any land or State waters.

2.36. "Displacement" means the relative movement of any two sides of a fault measured in any direction.

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

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

2.39. "Division" means the Division of Natural Resources of the West Virginia Department of Commerce, Labor and Environmental Resources.

2.40. "Domestic Sewage" means untreated sanitary wastes that pass through a sewer system.

2.41. "DOT" means the United States Department of Transportation.

2.42. "Draft Permit" means a document prepared under Section 11.21 of these regulations indicating the chief's tentative decision to issue, deny, modify, revoke and reissue, revoke, or reissue a permit.

2.43. "Elementary Neutralization Unit" means a device which:

2.43.1. Is used for neutralizing wastes which are hazardous only because they exhibit the corrosivity characteristic defined in Section 3.3.3 of these regulations, or are listed in Section 3.4 of these regulations only for this reason; and

2.43.2. Meets the definition of a tank, tank system, container, transport vehicle, or vessel as defined in these regulations.

2.44. "Emergency Permit" means a permit issued where an imminent and substantial endangerment to human health or the environment is determined to exist by the director or the chief.

2.45. "EPA" means the United States Environmental Protection Agency.

2.46. "EPA Acknowledgement of Consent" for purposes of Section 6.5.1 of these regulations means notification sent to EPA from the U.S. Embassy in a receiving country that acknowledges the written consent of the receiving country to accept the hazardous waste and describes the terms and conditions of the country's consent to the shipment.

2.46-2.47. "EPA Hazardous Waste Number" means the number assigned by EPA to each hazardous waste listed in Section 3.4 of these regulations and to each characteristic identified in Section 3.3 of these regulations.

2.47-2.48. "EPA Identification Number" means the number assigned by EPA to each hazardous waste generator, hazardous waste transporter, or hazardous waste facility.

2.48-2.49. "Equivalent Method" means any testing or analytical method approved by the Administrator under 40 C.F.R. §§260.20 and 260.21.

2.49-2.50. "Existing Facility" or "Existing Hazardous Waste Management Facility" means a facility which was in operation or for which construction commenced on or before July 10, 1981, the effective date of West Virginia's Hazardous Waste Management Act. Under this authority a facility has commenced construction if:

2.49-1-2.50.1. The owner or operator has obtained all necessary federal, State, and local approvals or permits to begin physical construction; and either

2.49-2-2.50.2. A continuous physical on-site construction program has begun, or

2.49-3-2.50.3. The owner or operator has entered into contractual obligations which cannot be canceled or modified without substantial loss for construction of the facility to be completed within a reasonable time.

2.50-2.51. "Existing Portion" means that land surface area of an existing waste management unit, included in the original Part A permit application, on which wastes have been placed prior to the issuance of a permit.

2.51-2.52. "Existing Tank System" or "Existing Component" means a tank system or component that is used for the storage or treatment of hazardous waste and that is in operation or for which installation has commenced on or prior to the effective date of these regulations. Installation will be considered to have commenced if the owner or operator has obtained all federal, State,

and local approvals or permits necessary to begin physical construction of the site or installation of the tank system and if either a continuous on-site physical construction or installation program has begun or the owner or operator has entered into contractual obligations -- which cannot be canceled or modified without substantial loss -- for physical construction of the site or installation of the tank system to be completed within a reasonable time.

2.52-2.53. "Facility Mailing List" for the purpose of Section 11 of these regulations -- means a list maintained by the chief in accordance with Section 11.24.3.a.6 of these regulations.

2.53-2.54. "Fault" means a fracture along which rock strata on one side have been displaced with respect to those on the other side.

2.54-2.55. "Federal Agency" means any department, agency, or other instrumentality of the federal government, any independent agency or establishment of the federal government including any government corporation, and the Government Printing Office.

2.55-2.56. "Federal, State, and Local Approvals or Permits Necessary to Begin Physical Construction" means permits and approvals required under federal, State, or local hazardous waste control statutes, regulations, or ordinances.

2.56-2.57. "Final Closure" means the closure of all hazardous waste management units at the facility in accordance with all applicable closure requirements so that hazardous waste management activities under Section 8 of these regulations and 40 C.F.R. Part 265 are no longer conducted at the facility unless subject to the provisions in Section 6.3.5 of these regulations.

2.57-2.58. "Final Cover" means cover material that is applied upon closure of a landfill and is permanently exposed at the surface.

2.58-2.59. "Flash Point" means the minimum temperature at which a liquid or solid gives off sufficient vapor to form an ignitable vapor-air mixture near the surface of the liquid or solid. An ignitable mixture is one that, when ignited, is capable of the initiation and propagation of flame away from the source of ignition. Propagation of flame means the spread of the flame from layer to layer independent of the source of ignition.

2.59-2.60. "Flood Pool" means the land area above the dam or water impounding structure surrounding the impoundment which will flood due to increased water levels in the impoundment as a result of abnormally high runoff or precipitation events. The extent of the flood pool is limited by the land contour at the same elevation as the crest of the dam or impounding structure.

~~2.60-2.61.~~ "Food Chain Crops" means tobacco, crops grown for human consumption, or crops grown for pasture, forage, or feed for animals whose products are consumed by humans.

~~2.61-2.62.~~ "Foreign Source" means a source outside the geographical boundaries of the continental United States.

~~2.62-2.63.~~ "Freeboard" means the vertical distance between the top of a surface impoundment, open tank, or other containment device and the surface of the waste contained therein.

~~2.63-2.64.~~ "Free Liquids" means liquids which readily separate from the solid portion of a waste under ambient temperature and pressure.

~~2.64-2.65.~~ "Functionally Equivalent Component" for purposes of Section 11 of these regulations -- means a component which performs the same function or measurement and which meets or exceeds the performance specifications of another component.

~~2.65-2.66.~~ "Generator" means any person, by site location, whose act or process produces hazardous waste identified or listed in Section 3 of these regulations or whose act first causes a hazardous waste to become subject to these regulations.

~~2.66-2.67.~~ "Groundwater" means the water below the land surface in a zone of saturation.

~~2.67-2.68.~~ "Hazardous Constituent" or "Constituent" are constituents identified in Appendix VIII of these regulations or constituents that caused the director to list the hazardous waste in Section 3.4 of these regulations or constituents listed in Table II of these regulations, that are reasonably expected to be in or derived from waste contained in a regulated unit or that have been detected in groundwater in the uppermost aquifer underlying a regulated unit.

~~2.68-2.69.~~ "Hazardous Waste" means a hazardous waste as defined in Section 3.1.3 of these regulations except as Section 3.1.1.b of these regulations provides otherwise.

~~2.69-2.70.~~ "Hazardous Waste Activity" means the handling of hazardous waste as in the generation, transportation, treatment, storage, or disposal of any hazardous waste.

~~2.70-2.71.~~ "Hazardous Waste Fuel" for purposes of Section 9.4.1.a of these regulations means the fuel produced from hazardous waste by processing, blending, or other treatment that is burned for energy recovery in any boiler or industrial furnace, except as provided in Section 9.4.1.b of these regulations.

~~2.71-2.72.~~ "Hazardous Waste Generation" means the act or

process of producing hazardous waste materials.

2.72-2.73. "Hazardous Waste Management" means the systematic control of the collection, source separation, storage, transportation, processing, treatment, recovery, and disposal of hazardous wastes.

2.73-2.74. "Hazardous Waste Management Facility" or "Facility" means all contiguous land and structures, other appurtenances, and improvements on the land used for treating, storing, or disposing of hazardous waste. A facility may consist of several treatment, storage, or disposal operational units.

2.74-2.75. "Hazardous Waste Management Unit" is a contiguous area of land on or in which hazardous waste is placed, or the largest area in which there is a significant likelihood of mixing hazardous waste constituents in the same area. Examples of hazardous waste management units include a surface impoundment, a waste pile, a land treatment area, a landfill cell, an incinerator, a tank (including its associated piping and underlying containment system), and a container storage area. A container alone does not constitute a unit; a unit includes containers and the land or pad upon which they are placed.

2.75-2.76. "Holocene" means the most recent epoch of the quaternary period, extending from the end of the pleistocene to the present.

2.76-2.77. "Household Waste" means any waste material (including garbage, trash, and sanitary wastes in septic tanks) derived from households (including single and multiple residences, hotels and motels, bunkhouses, ranger stations, crew quarters, campgrounds, picnic grounds, and day-use recreation areas).

2.77-2.78. "Hydrologic Balance" means the relationship between the quality and quantity of water inflow to, water outflow from, and water storage in a hydrologic unit such as a drainage basin, aquifer, soil zone, lake, or reservoir. It encompasses the dynamic relationships among precipitation, runoff, evaporation, and changes in ground and surface water storage.

2.78-2.79. "Inactive Portion" means that portion of a facility which has not been in operation since the effective date of Section 3 of these regulations.

2.79-2.80. "Incinerator" means any enclosed device using controlled flame combustion that neither meets the criteria for classification as a boiler nor is listed as an industrial furnace.

2.80-2.81. "Incompatible Waste" means a hazardous waste which is unsuitable for:

~~2.80.1-2.81.1.~~ Placement in a particular device or facility because it may cause corrosion or decay of containment materials; or

~~2.80.2-2.81.2.~~ Commingling with another waste or material under uncontrolled conditions because the commingling might produce heat or pressure, fire or explosion, violent reaction, toxic dusts, mists, fumes or gases, or flammable fumes or gases.

Note: Appendix V of these regulations contains examples of potentially incompatible wastes.

~~2.81-2.82.~~ "Individual Generation Site" means the contiguous site at or on which one or more hazardous wastes are generated. An individual generation site, such as a large manufacturing plant, may have one or more sources of hazardous waste, but is considered a single or individual generation site if the site or property is contiguous.

~~2.82-2.83.~~ "Industrial Furnace" means any of the following enclosed devices that are integral components of manufacturing processes and that use controlled flame devices to accomplish recovery of materials or energy:

~~2.82.1-2.83.1.~~ Cement kilns;

~~2.82.2-2.83.2.~~ Lime kilns;

~~2.82.3-2.83.3.~~ Aggregate kilns;

~~2.82.4-2.83.4.~~ Phosphate kilns;

~~2.82.5-2.83.5.~~ Coke ovens;

~~2.82.6-2.83.6.~~ Blast furnaces;

~~2.82.7-2.83.7.~~ Smelting, melting, and refining furnaces (including pyrometallurgical devices such as cupolas, reverberator furnaces, sintering machines, roasters, and foundry furnaces);

~~2.82.8-2.83.8.~~ Titanium dioxide chloride process oxidation reactors;

~~2.82.9-2.83.9.~~ Methane reforming furnaces;

~~2.82.10-2.83.10.~~ Pulpig liquor recovery furnaces;

~~2.82.11-2.83.11.~~ Combustion devices used in the recovery of sulfur values from spent sulfuric acid; or

~~2.82.12-2.83.12.~~ Such other devices as the director may, after notice and comment, add to this list on the basis of one or

with interim status requirements of Section 3005 of RCRA, and in such a manner as will not cause or create a substantial risk of a health hazard or public nuisance or a significant adverse effect upon the environment.

~~2.89-2.90.~~ "International Shipment" means the transportation of hazardous waste, into or out of the jurisdiction of the United States.

~~2.90-2.91.~~ "Karst Terrain" means terrain underlain by ~~carbonate~~ (limestone and dolomite) bedrock deposits composed of limestone, dolomite, and/or gypsum containing voids, caves, and underground streams into which surface drainage flows through solution openings and sink holes produced by solution of the ~~carbonate rock~~ bedrock.

~~2.91-2.92.~~ "Landfill" means a disposal facility or part of a facility where hazardous waste is placed in or on land and which is not a pile, a land treatment facility, a surface impoundment, an underground injection well, a salt dome formation, a salt bed formation, an underground mine, or a cave.

~~2.92-2.93.~~ "Landfill Cell" or "Cell" means a discrete volume of a hazardous waste landfill which uses a liner to provide isolation of waste from adjacent cells or wastes. Examples of landfill cells are trenches and pits.

~~2.93-2.94.~~ "Land treatment Facility" means a facility or part of a facility at which hazardous waste is applied onto or incorporated into the soil surface; such facilities are disposal facilities if the waste will remain after closure.

~~2.94-2.95.~~ "Leachate" means liquid, including any suspended components in the liquid, that has percolated through or drained from hazardous waste.

~~2.95-2.96.~~ "Leak-Detection System" means a system capable of detecting the failure of either the primary or secondary containment structure or the presence of a release of hazardous waste or accumulated liquid in the secondary containment structure. Such a system must employ operational controls (e.g., daily visual inspections for releases into the secondary containment system of aboveground tanks) or consist of an interstitial monitoring device designed to detect continuously and automatically the failure of the primary or secondary containment structure or the presence of a release of hazardous waste into the secondary containment structure.

~~2.96-2.97.~~ "Liner" means a continuous layer of natural or man-made materials beneath or on the sides of a surface impoundment, landfill, or landfill cell which restricts the downward or lateral escape of hazardous waste, hazardous waste constituents, or leachate.

2-97-2.98. "Major Facility" means a disposal or treatment facility which disposes or treats an amount of hazardous waste exceeding or equal to one thousand (1,000) tons during a calendar year, and any storage facility having a storage capacity for one thousand (1,000) tons of hazardous waste or more.

2-98-2.99. "Manifest" means the shipping document originated and signed by the generator, which contains the information required by Section 6.2 of these regulations.

2-99-2.100. "Manifest Document Number" means the serial number assigned to the manifest by the generator for record keeping and reporting purposes.

2-100-2.101. "Marketers" for the purposes of Section 9.4 of these regulations -- means any person(s) who market hazardous waste fuel and include generators that market hazardous waste fuel directly to a burner, and persons who receive hazardous waste from generators and produce, process, or blend hazardous waste fuel from those hazardous wastes. Persons who distribute but do not process or blend hazardous waste fuel are also marketers, but are not presently subject to regulation.

2-101-2.102. "Mining Overburden Returned to the Mine Site" means any material overlying an economic mineral deposit which is removed to gain access to that deposit and is then used for reclamation of a surface mine.

2-102-2.103. "Miscellaneous Unit" means a hazardous waste management unit where hazardous waste is treated, stored, or disposed of and that is not a container, tank, surface impoundment, pile, land treatment unit, landfill, incinerator, boiler, industrial furnace, underground injection well with appropriate technical standards under 40 C.F.R. Part 146, or unit eligible for a research, development, and demonstration permit under 40 C.F.R. §270.65.

2-103-2.104. "Monitoring" means all procedures used to inspect and quantify the chemical or physical characteristics of the air, soils, or State waters.

2-104-2.105. "Movement" means transportation of hazardous waste to a facility in an individual transportation vehicle.

2-105-2.106. "New Facility" or "New Hazardous Waste Management Facility" means a facility which began operation or for which construction commenced after July 10, 1981, the effective date of the West Virginia Hazardous Waste Management Act.

2-106-2.107. "New Tank Component" or "New Tank System" means a tank system or component that will be used for the storage or treatment of hazardous waste and for which installation has

commenced after July 14, 1986, the effective date of these regulations; except, however, for purposes of Section 8.8.4.g.2 of these regulations, a new tank system is one for which construction commences after July 14, 1986, the effective date of these regulations. (See also "Existing Tank System".)

~~2.107.2.108.~~ "Not In Service" means a regulated unit that has ceased receiving hazardous waste and has been emptied to the point that portions of the liner(s) are exposed below the normal operating level.

~~2.108.2.109.~~ "NPDES (National Pollutant Discharge Elimination System)" means the national program for issuing, modifying, revoking, reissuing, terminating, monitoring, and enforcing permits and imposing and enforcing pretreatment requirements pursuant to CWA Sections 307, 402, 318, and 405. The term includes any approved State program.

~~2.109.2.110.~~ "One Hundred (100) Year Flood" means a flood that has a one percent (1%) chance of being equalled or exceeded in any given year.

~~2.110.2.111.~~ "One Hundred (100) Year Floodplain" means any land area which is subject to a one percent (1%) or greater chance of flooding in any given year from any source.

~~2.111.2.112.~~ "Onground Tank" means a device meeting the definition of "tank" in these regulations and that is situated in such a way that the bottom of the tank is on the same level as the adjacent surrounding surface so that the external tank bottom cannot be visually inspected.

~~2.112.2.113.~~ "On-Site" means on the same or geographically contiguous property which may be divided by public or private rights-of-way, provided the entrance and exit between the properties is at a cross-roads intersection, and access is by crossing as opposed to going along the rights-of-way. Noncontiguous properties owned by the same person but connected by a right-of-way which the person controls and to which the public does not have access, is also considered on-site property.

~~2.113.2.114.~~ "Open Burning" means the combustion of any material without the following characteristics:

~~2.113.1.2.114.1.~~ Control of combustion air to maintain adequate temperature for efficient combustion;

~~2.113.2.2.114.2.~~ Containment of the combustion reaction in an enclosed device to provide sufficient residence time and mixing for complete combustion; and

~~2.113.3.2.114.3.~~ Control of emission of the gaseous

combustion products.

~~2.114-2.115.~~ "Operator" means the person responsible for the overall operation of a hazardous waste management facility.

~~2.115-2.116.~~ "Owner" means a person who owns a hazardous waste management facility or part of a hazardous waste management facility.

~~2.116-2.117.~~ "Packaging" means the assembly of one or more containers and any other components necessary to assure compliance with the minimum packaging requirements under 49 C.F.R. Parts 173, 178, and 179 and includes containers (other than freight containers or overpacks), portable tanks, cargo tanks, tank cars, and multi-unit tank car units.

~~2.117-2.118.~~ "Partial Closure" means the closure of a hazardous waste management unit in accordance with the applicable closure requirements of Section 8 of these regulations and 40 C.F.R. Part 265 at a facility that contains other active hazardous waste management units. For example, partial closure may include the closure of a tank (including its associated piping and underlying containment system), a landfill cell, a surface impoundment, a waste pile, or other hazardous waste management unit while other units of the same facility continue to operate.

~~2.118-2.119.~~ "Permit" means a control document issued by this State pursuant to the State Act and these regulations, or by other states having an authorized program pursuant to Section 3006 of RCRA or by the Administrator pursuant to applicable federal regulations, ~~or a facility having "interim status".~~ The term "permit" includes permit by rule under Section 11.8 of these regulations and emergency permit under Section 11.9 of these regulations. The term "permit" does not include RCRA Interim Status under Section 11.3 of these regulations, or any permit which has not yet been subject to final agency action such as draft permits or a proposed permit.

~~2.119-2.120.~~ "Permit By Rule" means the provision of these regulations stating that a "facility or activity" is deemed to have a permit if it meets the requirements of such provision.

~~2.120-2.121.~~ "Permitted Facility" or "Permitted Hazardous Waste Management Facility" means a hazardous waste treatment, storage, or disposal facility that has received an EPA RCRA permit, a RCRA permit from an authorized state pursuant to Section 3006 of RCRA, or a State permit in accordance with the requirements of these regulations, ~~or a facility having "interim status".~~

~~2.121-2.122.~~ "Person" means an individual, trust, firm, joint stock company, public or private corporation, partnership, association, state or federal agency, the United States Government,

this State or any political subdivision thereof, any other state or any political subdivision thereof, or any interstate body.

~~2.122-2.123.~~ "Personnel" or "Facility Personnel" means all persons who work at or oversee the operations of a hazardous waste management facility, and whose actions or failure to act may result in noncompliance with the requirements of these regulations.

~~2.123-2.124.~~ "Physical Construction" or "Construct" means excavation, movement of earth, erection of forms or structures, or similar activity involving the actual preparation of a hazardous waste management facility.

~~2.124-2.125.~~ "Pile" means any noncontainerized accumulation of solid, non-flowing hazardous waste that is used for treatment or storage.

~~2.125-2.126.~~ "Point Source" means any discernible, confined, confined, and discrete conveyance including but not limited to any pipe, ditch, channel, tunnel, conduit, well, discrete fissure, container, rolling stock, concentrated animal feeding operation, or vessel or other floating craft from which pollutants are or may be discharged. This term does not include return flows from irrigated agriculture.

2.127. Primary Exporter" for the purposes of Section 6.5.1 of these regulations means any person who is required to originate the manifest for a shipment of hazardous waste in accordance with Section 6.2 of these regulations, which specifies a treatment, storage, or disposal facility in a receiving country as the facility to which the hazardous waste will be sent and any intermediary arranging for the export.

~~2.126-2.128.~~ "Probable" means that the context in which the term "probable" is used provides guidance regarding the required level effort and precision for predicting impacts. Probable involves making a predictive estimate or judgement of potential impacts of the proposed facility upon the natural, water, air, and cultural resources of the permit and adjacent areas.

~~2.127-2.129.~~ "Publicly Owned Treatment Works" or "POTW" means any device or system used in the treatment (including recycling and reclamation) of municipal sewage or industrial wastes of a liquid nature which is owned by a State or municipality as defined by CWA Section 502(4). This definition includes sewers, pipes, or other conveyances only if they convey wastewater to a POTW providing treatment.

~~2.128-2.130.~~ "RCRA" means the the federal Solid Waste Disposal Act as amended by the Resource Conservation and Recovery Act, as amended; 42 U.S.C. §6901 et seq.

2.131. "Receiving Country" for the purposes of Section 6.5.1 of these regulations, means a foreign country to which a hazardous waste is transported for the purpose of treatment, storage or disposal, except short-term storage incidental to transportation.

~~2.129.~~2.132. "Reclaimed" for the purposes of Sections 3.1.2 and 3.1.6 of these regulations -- means any material that is processed to recover a usable product or that is regenerated. Examples are recovery of lead values from spent batteries and regeneration of spent solvents.

~~2.130.~~2.133. "Recycled" for the purposes of Sections 3.1.2 and 3.1.6 of these regulations -- means a material that is used, reused, or reclaimed.

~~2.131.~~2.134. "Regulated Unit" means a facility that treats, stores, or disposes of hazardous waste in surface impoundments, waste piles, land treatment units, landfills, or miscellaneous units that receive hazardous waste in compliance with Section 8.13 of these regulations.

~~2.132.~~2.135. "Representative Sample" means a sample of a universe or whole which can be expected to exhibit the average properties of the universe or whole.

~~2.133.~~2.136. "Responsible Corporate Officer" for the purposes of Section 11.7 of these regulations -- means a president, secretary, treasurer, or vice-president of the corporation in charge of a principal business function, or any other person who performs similar policy or decision making functions for the corporation; or the manager of one or more manufacturing, production, or operation facilities employing more than two hundred fifty (250) people or having gross annual sales or expenditures exceeding twenty five million dollars if authority to sign documents has been assigned or delegated to the manager in accordance with corporate procedures.

~~2.134.~~2.137. "Retrofitting" means the act of installing or upgrading a regulated unit with liners, leachate collection, detection, and removal systems not installed at the time of original construction.

~~2.135.~~2.138. "Revocation" -- When the term is used in Section 11 of these regulations in the context of a permit action -- means an action which renders a permit permanently null and void.

~~2.136.~~2.139. "Runoff" means any rainwater, leachate, or other liquid that drains over land from any part of a facility.

~~2.137.~~2.140. "Run-On" means any rainwater, leachate, or other liquid that drains over land onto any part of a facility.

~~2-138-2.141.~~ "Standard Zone" or "Zone of Saturation" means that part of the earth's crust in which all voids are filled with water.

~~2-139-2.142.~~ "Scrap Metal" for the purposes of Sections 3.1.2 and 3.1.6 of these regulations -- means bits and pieces of metal parts such as bars, turnings, rods, sheets, wire, or metal pieces that may be combined together with bolts or soldering which when worn or superfluous can be recycled.

~~2-140-2.143.~~ "SDWA" means the federal Safe Drinking Water Act, Public Law 95-523, as amended by Public Law 95-1900; 42 U.S.C. §300f et seq.

~~2-141-2.144.~~ "SIC" means Standard Industrial Classification.

~~2-142-2.145.~~ "Sludge" means any solid, semi-solid, or liquid waste generated from a municipal, commercial, or industrial wastewater treatment plant, water supply treatment plant, or air pollution control facility, exclusive of the treated effluent from a wastewater treatment plant.

~~2-143-2.146.~~ "Small Quantity Generator" means a generator who generates less than one thousand (1,000) kilograms of hazardous waste in a calendar month.

~~2-144-2.147.~~ "Spent Material" for the purposes of Sections 3.1.2 and 3.1.6 of these regulations -- means any material that has been used and as a result of contamination can no longer serve the purpose for which it was produced without processing.

~~2-145-2.148.~~ "State Act" means the Hazardous Waste Management Act, W. Va. Code §20-5E et seq.

~~2-146-2.149.~~ "State Waters" or "Waters" means any and all water on or beneath the surface of the ground, whether percolating, standing, diffused, or flowing wholly or partially within this State, or bordering this State and within its jurisdiction, and shall include, without limiting the generality of the foregoing, natural or artificial lakes, rivers, streams, creeks, branches, brooks, ponds (except farm ponds, industrial settling basins and ponds, and water treatment facilities), impounding reservoirs, springs, wells, watercourses, and wetlands.

~~2-147-2.150.~~ "Storage" means the holding of hazardous waste for a temporary period, at the end of which the hazardous waste treated, disposed of, or stored elsewhere.

~~2-148-2.151.~~ "Storm" means the 5-year, 24-hour rainfall event for a particular location as it relates to the inspection requirements specified in Sections 8.9.5 and 8.11.3 of these regulations; "storm" for the purposes specified in the design requirements of Sections 8.9.2, 8.10.2, and 8.11.2 of these

regulations shall mean a 25-year, 24-hour rainfall event for a particular location. Both definitions are as defined by the National Weather Service in Technical Paper #40, "Rainfall Frequency Atlas of the United States," May 1961, and subsequent amendments thereto or equivalent region or State rainfall probability information developed therefrom.

~~2.149-2.152.~~ "Substantial Business Relationship" means the extent of a business relationship necessary under applicable State law to make a guarantee contract issued incident to that relationship valid and enforceable. A "substantial business relationship" must arise from a pattern of recent or ongoing business transactions, in addition to the guarantee itself, such that a currently existing business relationship between the guarantor and the owner or operator is demonstrated to the satisfaction of the director.

~~2.150-2.153.~~ "Sump" means any pit or reservoir that meets the definition of tank and those troughs/trenches connected to it that serves to collect hazardous waste for transport to hazardous waste storage, treatment, or disposal facilities.

~~2.151-2.154.~~ "Surface Impoundment" or "Impoundment" means a facility or part of a facility which is a natural topographic depression, man-made excavation, or diked area formed primarily of earthen materials (although it may be lined with man-made materials), which is designed to hold an accumulation of liquid wastes or wastes containing free liquids, and which is not an injection well. Examples of surface impoundments are holding, storing, settling, and aeration pits, ponds, and lagoons.

~~2.152-2.155.~~ "Suspension" -- when used in Section 11 of these regulations in the context of a permit action -- means an action which renders a permit temporarily null and void until such time as the chief reinstates, modifies, revokes, or revokes and reissues the permit in accordance with the applicable provisions of Section 11 of these regulations.

~~2.153-2.156.~~ "SW-846" means "Test Methods for the Evaluation of Solid Waste, Physical/Chemical Methods," EPA Publication SW-846, (Second Edition, 1982, as amended by Update I of April 1984 and Update II of 1985), U.S. Environmental Protection Agency, Office of Solid Waste, Washington, D.C.. Copies of this document may be obtained from the Superintendent of Documents, U.S. Government Printing Office, Washington, D.C. 20402.

Note: For guidance purposes, the Third Edition and its Revision I supersede the Second Edition and its Updates I and II. However, for regulatory purposes, the Second Edition and Updates I and II remain in effect together with the methods of the Third Edition and its Revision I.

~~2.154.~~2.157. "Tank" means a stationary device designed to contain an accumulation of hazardous waste which is constructed primarily of non-earthen materials which provide structural support.

~~2.155.~~2.158. "Tank System" means a hazardous waste storage or treatment tank and its associated ancillary equipment and containment system.

~~2.156.~~2.159. "Termination" -- when the term is used in Section 11 of these regulations in the context of a permit action -- means the same as the term "revocation".

~~2.157.~~2.160. "Thermal Treatment" means the treatment of hazardous waste in a device that uses elevated temperatures as the primary means to change the chemical, physical, or biological character or composition of the hazardous waste. Examples of thermal treatment processes are incineration, molten salt, pyrolysis, calcination, wet air oxidation, and microwave discharge.

~~2.158.~~2.161. "Totally Enclosed Treatment Facility" means a facility for the treatment of hazardous waste which is directly connected to an industrial production process and which is constructed and operated in a manner which prevents release of any hazardous waste or any constituent thereof into the environment during treatment.

~~2.159.~~2.162. "Transfer Facility" means any transportation related facility including loading docks, parking areas, storage areas, and other similar areas where shipments of hazardous waste are held during the normal course of transportation.

2.163. "Transit Country" for the purposes of Section 6.5.1 of these regulations, any foreign country other than a receiving country, through which a hazardous waste is transported.

~~2.160.~~2.164. "Transportation" means the movement of hazardous waste by air, rail, highway, or water.

~~2.161.~~2.165. "Transporter" means a person engaged in the off-site transportation of hazardous waste by air, rail, highway, or water.

~~2.162.~~2.166. "Transport Vehicle" means a motor vehicle or rail car used for the transportation of cargo by any mode. Each cargo-carrying body (e.g., trailer, railroad freight car) is a separate transport vehicle.

~~2.163.~~2.167. "Treatability Study" means a study in which a hazardous waste is subjected to a treatment process to determine: (1) whether the waste is amenable to the treatment process; (2) what pretreatment, if any, is required; (3) the optimal process

conditions needed to achieve the desired treatment; (4) the efficiency of a treatment process for a specific waste or wastes; or (5) the characteristics and volumes of residuals from a particular treatment process. Also included in this definition for the purpose of Section 3.1.4.e and 3.1.4.f exemptions are liner compatibility, corrosion, and other material compatibility studies and toxicological and health effects studies. A "treatability study" is not a means to commercially treat or dispose of hazardous waste.

~~2.164-2.168.~~ "Treatment" means any method, technique, or process including neutralization, designed to change the physical, chemical, or biological character or composition of any hazardous waste so as to neutralize such waste or so as to render such waste nonhazardous, safer to transport, store, or dispose of, or amenable to recovery, amenable for storage or reduced in volume. Such term includes any activity or processing designed to change the physical form or chemical composition of hazardous waste as to render it nonhazardous.

~~2.165-2.169.~~ "Treatment Zone" means a soil area of the unsaturated zone of a land treatment unit within which hazardous constituents are degraded, transformed, or immobilized.

~~2.166-2.170.~~ "Triple Rinsed" means containers that have been flushed three (3) times, each time using a volume of diluent at least equal to ten percent (10%) of the containers capacity.

~~2.167-2.171.~~ "Underground Injection" means the subsurface emplacement of fluids through a bored, drilled, or driven well; or through a dug well, where the depth of the dug well is greater than the largest surface dimension (see also "injection well").

~~2.168-2.172.~~ "Underground Tank" means a device meeting the definition of "tank" in these regulations whose entire surface area is totally below the surface of and covered by the ground.

~~2.169-2.173.~~ "Unfit-For-Use Tank System" means a tank system that has been determined through an integrity assessment or other inspection to be no longer capable of storing or treating hazardous waste without posing a threat of release of hazardous waste to the environment.

~~2.170-2.174.~~ "Unsaturated Zone" or "Zone of Aeration" means the zone between topographic surface and the water table.

~~2.171-2.175.~~ "Uppermost Aquifer" means the geologic formation nearest the natural ground surface that is an aquifer, as well as lower aquifers that are hydraulically interconnected with this aquifer within the facility's property boundary.

~~2.172-2.176.~~ "Used or Reused" for the purposes of Sections

3.1.2 and 3.1.6 of these regulations -- means a material that is either:

~~2.172.1-2.176.1.~~ Employed as an ingredient (including use as an intermediate) in an industrial process to make a product, such as distillation bottoms from one process used as feedstock for another process. However, a material will not satisfy this condition if distinct components of the material are recovered as separate end products (as when metals are recovered from metal-conditioning secondary materials); or

~~2.172.2-2.176.2.~~ Employed in a particular function or application as an effective substitute for a commercial product, such as spent pickle liquor used as phosphorus precipitant and sludge conditioner in wastewater treatment.

~~2.173-2.177.~~ "Vessel" means every description of watercraft used or capable of being used as a means of transportation on the water.

~~2.174-2.178.~~ "Washout" means the movement of hazardous waste from the active portion of the facility as a result of flooding.

~~2.175-2.179.~~ "Waste" means waste as defined in Section 3.1.2 of these regulations.

2.180. "Wastewater" for the purposes of Section 7 of these regulations, means wastes that contain less than 1% by weight total organic carbon (TOC) and less than 1% by weight total suspended solids (TSS), with the following exceptions:

2.180.1. F001, F002, F003, F004, F005 solvent-water mixtures that contain less than 1% by weight TOC or less than 1% by weight total F001, F002, F003, F004, F005 solvent constituents.

2.180.2. K011, K013, K014 wastewaters (as generated) than contain less than 5% by weight TOC and less than 1% by weight TSS.

2.180.3. K103 and K104 wastewaters contain less than 4% by weight TOC and less than 1% by weight TSS.

~~2.176-2.181.~~ "Wastewater Treatment Unit" means a device which:

~~2.176.1-2.181.1.~~ Is part of a wastewater treatment facility which is subject to regulation under Section 402 or 307(b) of the CWA;

~~2.176.2-2.181.2.~~ Receives and treats or stores an influent wastewater which is a hazardous waste as defined in these regulations, or generates and accumulates, or treats or stores a wastewater treatment sludge that is defined as a hazardous waste;

~~2.176-3.2.181.3.~~ Meets the definition of a tank as defined in Section 2 of these regulations.

~~2.177-2.182.~~ "Water (Bulk Shipment)" means the bulk transportation of hazardous waste which is loaded or carried on board a vessel without containers or labels.

~~2.178-2.183.~~ "Water Pollution Control Act" means the Water Pollution Control Act, W. Va. Code §20-5A et seq.

~~2.179-2.184.~~ "Water Table" means the upper surface of the zone of saturation in groundwaters in which the hydrostatic pressure is equal to atmospheric pressure.

~~2.180-2.185.~~ "Well" means any shaft or pit dug, drilled, jetted, driven, or bored into the earth, generally of a cylindrical form, and often cased with bricks or tubing to prevent the earth from caving in, whose depth is greater than the largest surface dimension.

~~2.181-2.186.~~ "Wetlands" means any area that is inundated or saturated by surface water or groundwater at a frequency and duration sufficient to support and that under normal circumstances does support, a prevalence of vegetation typically adapted for life in saturated soil conditions. Wetlands generally include swamps, marshes, bogs, and similar areas such as sloughs, wet meadows, mudflats, sandflats and natural ponds.

~~2.182-2.187.~~ "Zone of Engineering Control" means an area under the control of the owner or operator that, upon detection of a hazardous waste release, can be readily cleaned up prior to the release of hazardous waste or hazardous constituents to groundwater or surface water.

§47-35-3. Identification and Listing of Hazardous Waste.

3.1. Identification of Wastes.

3.1.1. Purpose and Scope.

3.1.1.a. Section 3.1 of these regulations identifies those wastes which are subject to regulation as hazardous wastes.

3.1.1.b. The definition of waste contained in Section 3.1.2 of these regulations applies only to wastes that are also hazardous for purposes of the State Act and the regulations implementing the State Act. For Example, it does not apply to materials such as nonhazardous scrap, paper, textiles, or rubber that are not otherwise hazardous wastes and that are recycled.

3.1.1.b.1. Section 3.1 of these regulations identifies only some of the materials which are wastes and hazardous wastes

under Sections 5, 12, 13, and 17 of the State Act. A material that is not defined as a waste in Section 3.1.2 of these regulations, or is not a hazardous waste identified or listed in Section 3.4 of these regulations, is still a waste and a hazardous waste for purposes of these sections if:

3.1.1.b.2. In the case of Sections 12 and 13 of the State Act, the director has reason to believe the material may be a waste within the meaning on Section 3(12) of the State Act and a hazardous waste within the meaning of Section 3(6) of the State Act; or

3.1.1.b.3. In the case of Section 17 of the State Act, the statutory elements are established.

3.1.2. Definitions of Waste.

3.1.2.a. A waste is any discarded material that is not excluded by Section 3.1.4.a of these regulations or that is not excluded by variance granted under Section 16.3 of these regulations.

3.1.2.a.1. A discarded material is any material which is:

3.1.2.a.1.A. Abandoned, as explained in Section 3.1.2.b of these regulations;

3.1.2.a.1.B. Recycled, as explained in Section 3.1.2.c of these regulations; or

3.1.2.a.1.C. Considered inherently waste-like, as explained in Section 3.1.2.d of these regulations.

3.1.2.b. Materials are waste if they are abandoned by being:

3.1.2.b.1. Disposed of;

3.1.2.b.2. Burned or incinerated; or

3.1.2.b.3. Accumulated, stored, or treated (but not recycled) before or in lieu of being abandoned by being disposed of, burned, or incinerated.

3.1.2.c. Materials are waste if they are recycled, or accumulated, stored, or treated before recycling, as specified in Sections 3.1.2.c.1 through 3.1.2.c.4 of these regulations.

3.1.2.c.1. Used in a manner constituting disposal.

3.1.2.c.1.A. Materials noted with an asterisk

symbol in Column 1 of Table I of these regulations are wastes when they are:

3.1.2.c.1.A.i. Applied to or placed on the land in a manner that constitutes disposal; or

3.1.2.c.1.A.ii. Used to produce products that are applied to or placed on the land or are otherwise contained in products that are applied to or placed on the land, in which cases the product itself remains a waste.

3.1.2.c.1.A.iii. However, commercial chemical products listed in Section 3.4.4 of these regulations are not wastes if they are applied to the land and that is their ordinary manner of use.

3.1.2.c.2. Burning for energy recovery.

3.1.2.c.2.A. Materials noted with an asterisk symbol in Column 2 of Table I of these regulations are wastes when they are:

3.1.2.c.2.A.i. Burned to recover energy.

3.1.2.c.2.A.ii. Used to produce a fuel or are otherwise contained in fuels (in which case the fuel itself remains a waste).

3.1.2.c.2.B. However, commercial chemical products listed in Section 3.4.4 of these regulations are not wastes if they are themselves fuel.

3.1.2.c.3. Reclaimed. Materials noted with an asterisk symbol in Column 3 of Table I of these regulations are wastes when reclaimed.

3.1.2.c.4. Accumulated Speculatively. Materials noted with an asterisk symbol in Column 4 of Table I of these regulations are wastes when accumulated speculatively.

3.1.2.d. Inherently Waste-Like Materials. The following materials are wastes when they are recycled in any manner:

3.1.2.d.1. Hazardous Waste Numbers F020, F021 (unless used as an ingredient to make a product at the site of generation), F022, F023, F026, F027, and F028.

3.1.2.d.2. The director will use the following criteria to add wastes to the list in Section 3.1.2.d.1 of these regulations.

3.1.2.d.2.A. The material is ordinarily disposed,

burned, or incinerated and may pose a substantial hazard to human health and the environment when recycled; or

3.1.2.d.2.B. The material contains toxic constituents listed in Appendix VIII of these regulations and may pose a substantial hazard to human health and the environment when recycled. These constituents are not ordinarily found in raw materials or products for which the materials substitute (or are found in raw materials or products in smaller concentrations) and are not used or reused during the recycling process.

3.1.2.e. Materials that are not waste when recycled.

3.1.2.e.1. Materials are not wastes when they can be shown to be recycled by being:

3.1.2.e.1.A. Used or reused as ingredients in an industrial process to make a product, provided the materials are not being reclaimed;

3.1.2.e.1.B. Used or reused as effective substitutes for commercial products; or

3.1.2.e.1.C. Returned to the original process from which they are generated, without first being reclaimed. The material must be returned as a substitute for raw material feedstock, and the process must use raw materials as principal feedstocks.

3.1.2.e.2. The following materials are wastes, even if the recycling involves use, reuse or return to the original process (described in Sections 3.1.2.e.1.A through 3.1.2.e.1.C of these regulations:

3.1.2.e.2.A. Materials used in a manner constituting disposal or used to produce products that are applied to the land;

3.1.2.e.2.B. Materials burned for energy recovery, used to produce a fuel, or contained in fuels;

3.1.2.e.2.C. Materials accumulated speculatively;
or

3.1.2.e.2.D. (Reserved)

3.1.2.f. Documentation of claims that materials are not wastes or are conditionally exempt from regulation. Respondents in actions to enforce regulations implementing the State Act who raise a claim that a certain material is not a waste, or is conditionally exempt from regulation, must demonstrate that there is a known market or disposition for the material, and that they meet the

terms of the exclusion or exemption. In doing so, they must provide appropriate documentation (such as contracts showing that a second person uses the material as an ingredient in a production process) to demonstrate that the material is not a waste, or is exempt from regulation. In addition, owners or operators of facilities claiming that they are actually recycling materials must show that they have the necessary equipment to do so.

3.1.3. Definition of Hazardous Waste.

3.1.3.a. A waste as defined in Section 3.1.2 of these regulations is a hazardous waste if:

3.1.3.a.1. It is not excluded from regulation as a hazardous waste under Section 3.1.4.b of these regulations; and

3.1.3.a.2. It meets any of the following criteria:

3.1.3.a.2.A. It is listed in Section 3.4 of these regulations and has not been excluded from the list in Section 3.4 of these regulations pursuant to Section 16 of these regulations.

3.1.3.a.2.B. It is a mixture of a waste and a hazardous waste that is listed in Section 3.4 of these regulations solely because it exhibits one or more of the characteristics of hazardous waste identified in Section 3.3 of these regulations, unless the resultant mixture no longer exhibits any characteristic of hazardous waste identified in Section 3.3 of these regulations or unless the waste is excluded from regulation under Section 3.1.4.b.7 of these regulations and the resultant mixture no longer exhibits any characteristic of hazardous waste identified in Section 3.3 of these regulations for which the hazardous waste listed in Section 3.4 of these regulations was listed.

3.1.3.a.2.C. It is a mixture of a waste and one or more hazardous wastes listed in Section 3.4 of these regulations and has not been excluded from regulation pursuant to Section 16 of these regulations; however, the following mixtures of solid wastes and hazardous wastes listed in Section 3.4 of these regulations are not hazardous wastes (except by application of Section 3.1.3.a.2.A or 3.1.3.a.2.D of these regulations) if the generator complies with the requirements contained in Section 3.1.3.a.3 of these regulations:

3.1.3.a.2.C.i. It is one or more of the following spent solvents listed in Section 3.4.2 of these regulations -- carbon tetrachloride, tetrachloroethylene, and trichloroethylene -- provided that the maximum total weekly usage of these solvents (other than the amounts that can be demonstrated not to be discharged to wastewater) divided by the average weekly flow of wastewater into the headworks of the facility's wastewater treatment or pretreatment does not exceed one ~~part per million~~ (1

~~ppm~~ milligram per liter (1 mg/L);

3.1.3.a.2.C.ii. It is one or more of the following spent solvents listed in Section 3.4.2 of these regulations -- methylene chloride, 1,1,1-trichloromethane, chlorobenzene, o-dichlorobenzene, cresols, cresylic acid, nitrobenzene, toluene, methyl ethyl ketone, carbon ~~disulfate~~ disulfide, isobutanol, pyridine, and spent chlorofluorocarbon solvents -- provided that the maximum total weekly usage of these solvents (other than the amounts that can be demonstrated not to be discharged to wastewater) divided by the average weekly flow of wastewater into the headworks of the facility's wastewater treatment or pretreatment system does not exceed twenty-five ~~parts per million (25 ppm)~~ milligrams per liter (25 mg/L);

3.1.3.a.2.C.iii. It is the following waste listed in Section 3.4.3 of these regulations -- heat exchanger bundle cleaning sludge from the petroleum refining industry (EPA Hazardous Waste Number K050);

3.1.3.a.2.C.iv. It is a discarded commercial chemical product, or chemical intermediate listed in Section 3.4.4 of these regulations, arising from "de minimis" losses of these materials from manufacturing operations produced in the manufacturing process. For purposes of Section 3.1.3 of these regulations, "de minimis" losses include those from normal material handling operations such as spills from the unloading or transfer of materials from bins or other containers, or leaks from pipes, valves, or other devices used to transfer materials; minor leaks from process equipment, storage tanks, or containers; leaks from well-maintained pump packings and seals; sample purgings; relief device discharges; discharges from safety showers or the rinsing and cleaning of personal safety equipment; and rinsate from empty containers or from containers that are rendered empty by that rinsing; or

3.1.3.a.2.C.v. It is a wastewater resulting from laboratory operations containing toxic (T) wastes listed in Section 3.4 of these regulations, provided the annualized average flow of laboratory wastewater does not exceed one percent of total wastewater flow into the headworks of the facility's wastewater treatment or pretreatment system, or provided the wastes' combined annualized average concentration does not exceed one ~~part per million (1 ppm)~~ milligram per liter (1 mg/L) in the headworks of the facility's wastewater treatment or pretreatment facility. Toxic (T) wastes used in laboratories that are demonstrated not to be discharged to wastewater are not to be included in this calculation.

3.1.3.a.2.D. It exhibits any of the characteristics of hazardous waste identified in Section 3.3 of these regulations except that any mixture of a waste from the extraction,

beneficiation, and processing of ores and minerals excluded under Section 3.1.4.b.7 of these regulations and any other waste exhibiting a characteristic of hazardous waste under Section 3.3 of these regulations, is hazardous only if it exhibits a characteristic that would not have been exhibited by the excluded waste alone if such mixture had not occurred or if it continues to exhibit any of the characteristics exhibited by the nonexcluded wastes prior to mixture. Further, for the purposes of applying the Toxicity Characteristic Leaching Procedure to such mixtures, the mixture is also a hazardous waste if it exceeds the maximum concentration for any contaminant listed in Table II of these regulations that would not have been exceeded by the excluded waste alone if the mixture had not occurred or if it continues to exceed the maximum concentration for any contaminant exceeded by the nonexempt waste prior to mixture.

3.1.3.a.3. In order for a mixture of a waste and one or more hazardous wastes identified in Section 3.1.3.a.2.C of these regulations to be exempt from the definition of hazardous waste, the owner or operator must comply with the following:

3.1.3.a.3.A. Before claiming an exemption, demonstrate in writing to the chief that the weekly ratio of the usage of solvents to the flow of wastewater in the headworks of wastewater treatment does not exceed the values listed in Section 3.1.3.a.2.C.i or 3.1.3.a.2.C.ii of these regulations; or the annualized ratio of annual flow of laboratory wastes of the total flow of wastewater in the headworks of wastewater treatment or the combined annualized concentration in the headworks of wastewater treatment does not exceed the values listed in Section 3.1.3.a.2.C.v of these regulations. He must also report annually to the chief the ratios or values described in this paragraph for the previous year.

3.1.3.a.3.B. Annually submit to the chief a list of hazardous wastes that are expected to be present in the mixture to be exempted.

3.1.3.a.3.C. Before claiming an exemption, demonstrate in writing to the chief that the mixture consists of wastewater which is treated in a wastewater treatment facility, the discharge of which is subject to regulation under W. Va. Code §20-5A-1 including wastewater at facilities which have eliminated the discharge of wastewater.

3.1.3.a.3.D. Provide a certification in writing to the chief that groundwater monitoring complying with either Subpart F of 40 C.F.R. Part 265, or which is approved by the chief, is or will be in place at the wastewater treatment facility identified in Section 3.1.3.a.3.C of these regulations. A time schedule for the installation of such groundwater monitoring must be included. This requirement does not apply to wastewater treatment units or

containers.

3.1.3.a.4. Before claiming an exemption, the owner or operator of each wastewater treatment facility receiving mixtures of wastes under Section 3.1.3.a.2 of these regulations shall notify the chief of the receipt of such wastes on a form prescribed by the chief.

3.1.3.b. A waste which is not excluded from regulation under Section 3.1.3.a.1 of these regulations becomes a hazardous waste when any of the following events occur:

3.1.3.b.1. In the case of a waste listed in Section 3.4 of these regulations when the waste first meets the listing description set forth in Section 3.4 of these regulations;

3.1.3.b.2. In the case of a mixture of a waste and one or more listed hazardous wastes, when a hazardous waste listed in Section 3.4 of these regulations is first added to the waste; or

3.1.3.b.3. In the case of any other waste (including a waste mixture), when the waste exhibits any of the characteristics identified in Section 3.3 of these regulations.

3.1.3.c. Unless and until it meets the criteria of Section 3.1.3.d of these regulations:

3.1.3.c.1. A hazardous waste will remain a hazardous waste.

3.1.3.c.1.A. Except as otherwise provided in Section 3.1.3.c.2.B of these regulations, any waste generated from the treatment, storage, or disposal of a hazardous waste, including any sludge, spill residue, ash, emissions control dust, or leachate (but not including precipitation runoff) is a hazardous waste. However, materials that are reclaimed from waste and that are used beneficially are not wastes and hence are not hazardous wastes under this provision unless the reclaimed material is burned for energy recovery or used in a manner constituting disposal.

3.1.3.c.2.B. The following wastes are not hazardous wastes even though they are generated from the treatment, storage, or disposal of hazardous waste, unless they exhibit one or more of the characteristics of hazardous waste:

3.1.3.c.2.B.i. Waste pickle liquor sludge generated by lime stabilization of spent pickle liquor from the iron and steel industry (SIC Codes 331 and 332).

3.1.3.c.2.B.ii. Wastes from burning any of the materials exempted from regulation by Section 3.1.6.c of these regulations.

3.1.3.d. Any waste described in Section 3.1.3.c of these regulations is not a hazardous waste if it meets the following criteria:

3.1.3.d.1. In the case of any waste, it does not exhibit any of the characteristics identified in Section 3.3 of these regulations.

3.1.3.d.2. In the case of a waste that is a listed waste under Section 3.4 of these regulations, contains a waste listed under Section 3.4 of these regulations or is derived from a waste listed in Section 3.4 of these regulations, it also has been excluded from Section 3.1.3.c of these regulations under Section 16 of these regulations.

3.1.4. Exclusions.

3.1.4.a. Materials which are not wastes:

3.1.4.a.1. Domestic sewage;

3.1.4.a.2. Any mixture of domestic sewage as defined in Section 2 of these regulations, and other wastes that passes through a sewer system to a publicly-owned treatment works for treatment.

3.1.4.a.3. Industrial wastewater discharges that are point source discharges regulated or exempted from regulation under CWA Section 402;

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

3.1.4.a.4. Irrigation return flows;

3.1.3.a.5. Source, special nuclear, or by-product material as defined by the Atomic Energy Act of 1954, as amended, 42 U.S.C. §2011;

3.1.4.a.6. Materials subjected to in-situ mining techniques which are not removed from the ground as part of the extraction process.

3.1.4.a.7. Pulping liquors (i.e., black liquor) that are reclaimed in a pulping liquor recovery furnace and then reused in the pulping process, unless it is accumulated speculatively as defined in Section 2 of these regulations.

3.1.4.a.8. Spent sulfuric acid used to produce virgin

sulfuric acid, unless it is accumulated speculatively as defined in Section 2 of these regulations.

3.1.4.a.9. Secondary materials that are reclaimed and returned to the original process or processes in which they were generated where they are used in the production process provided:

3.1.4.a.9.A. Only tank storage is involved, and the entire process through completion of reclamation is closed by being entirely connected with pipes or other comparable enclosed means of conveyance;

3.1.4.a.9.B. Reclamation does not involve controlled flame combustion (such as occurs in boilers, industrial furnaces, or incinerators);

3.1.4.a.9.C. The secondary materials are never accumulated in such tanks for over twelve (12) months without being reclaimed; and

3.1.4.a.9.D. The reclaimed material is not used to produce a fuel, or used to produce products that are used in a manner constituting disposal.

3.1.4.b. Wastes which are not hazardous wastes:

3.1.4.b.1. Household waste, as defined in Section 2 of these regulations, including household waste that has been collected, transported, stored, treated, disposed, recovered (e.g., refuse-derived fuel), or reused. A resource recovery facility managing municipal solid waste shall not be deemed to be treating, storing, disposing of, or otherwise managing hazardous waste for the purposes of complying with these regulations, if such facility:

3.1.4.b.1.A. Receives and burns only:

3.1.4.b.1.A.i. Household waste, as defined in Section 2 of these regulations; and

3.1.4.b.1.A.ii. Solid waste from commercial or industrial sources that does not contain hazardous waste; and

3.1.4.b.1.B. Such facility does not accept hazardous wastes and the owner or operator of such facility has established contractual requirements or other appropriate notification or inspection procedures to ensure that hazardous wastes are not received at or burned in such facility.

3.1.4.b.2. Wastes generated by any of the following and which are returned to the soil as fertilizers:

3.1.4.b.2.A. The growing and harvesting of

agricultural crops;

3.1.4.b.2.B. The raising of animals, including animal manures.

3.1.4.b.3. Mining overburden returned to the mine site.

3.1.4.b.4. Fly ash waste, bottom ash waste, slag waste, and flue gas emission control waste generated primarily from the combustion of coal or other fossil fuels.

3.1.4.b.5. Drilling fluids, produced waters, and other wastes associated with the exploration, development, or production of crude oil, natural gas, or geothermal energy.

3.1.4.b.6.A. Wastes which fail the test for the Toxicity Characteristic of ~~EP toxicity~~ because chromium is present or are listed in Section 3.4 of these regulations due to the presence of chromium which do not fail the test for the Toxicity Characteristic of ~~EP toxicity~~ for any other constituent or are not listed due to the presence of any other constituent, and which do not fail the test for any other characteristic, if it is shown by a waste generator or by waste generators that:

3.1.4.b.6.A.i. The chromium in the waste is exclusively (or nearly exclusively) trivalent chromium;

3.1.4.b.6.A.ii. The waste is generated from an industrial process which uses trivalent chromium exclusively (or nearly exclusively) and the process does not generate hexavalent chromium; and

3.1.4.b.6.A.iii. The waste is typically and frequently managed in non-oxidizing environments.

3.1.4.b.6.B. Specific wastes which meet the standard in Section 3.1.4.b.6.A of these regulations, (so long as they do not fail the test for the Toxicity Characteristic of ~~EP toxicity~~, and do not fail the test for any other characteristic) are:

3.1.4.b.6.B.i. Chrome (blue) trimmings generated by the following sub-categories of the leather tanning and finishing industry; hair pulp/chrome tan/retan/wet finish; hair save/chrome tan/retan/wet finish; retan/wet finish; no beamhouse; through-the-blue; and shearling;

3.1.4.b.6.B.ii. Chrome (blue) shavings generated by the following sub-categories of the leather tanning and finishing industry; hair pulp/chrome tan/retan/wet finish; hair save/chrome tan/retan/wet finish; retan/wet finish; no beamhouse;

through-the-blue; and shearling;

3.1.4.b.6.B.iii. Buffing dust generated by the following sub-categories of the leather tanning and finishing industry; hair pulp/chrome tan/retan/wet finish; hair save/chrome tan/retan/wet finish; retan/wet finish; no beamhouse; and through-the-blue;

3.1.4.b.6.B.iv. Sewer screenings generated by the following sub-categories of the leather tanning and finishing industry; pulp/chrome tan/retan/wet finish; hair save/chrome tan/retan/wet finish; retan/wet finish; no beamhouse; through-the-blue; and shearling;

3.1.4.b.6.B.v. Wastewater treatment sludges generated by the following sub-categories of the leather tanning and finishing industry; hair pulp/chrome tan/retan/wet finish; hair save/chrome tan/retan/wet finish; retan/wet finish; no beamhouse; through-the-blue; and shearling;

3.1.4.b.6.B.vi. Wastewater treatment sludges generated by the following sub-categories of the leather tanning and finishing industry; hair pulp/chrome tan/retan/wet finish; hair save/chrome tan/retan/wet finish; and through-the-blue;

3.1.4.b.6.B.vii. Waste scrap leather from the leather tanning industry, the shoe manufacturing industry, and other leather product manufacturing industries;

3.1.4.b.6.B.viii. Wastewater treatment sludges from the production of TiO_2 pigment using chromium-bearing ores by the chloride process.

3.1.4.b.7. Waste from the extraction, beneficiation, and processing of ores and minerals (including coal), including phosphate rock and overburden from the mining of uranium ore. For purposes of Section 3.1.4.b.7 of these regulations, beneficiation of ores and minerals is restricted to the following activities: Crushing; grinding; washing; dissolution; crystallization; filtration; sorting; sizing; drying; sintering; pelletizing; briqueting; calcinating to remove water and/or carbon dioxide; roasting; autoclaving; and/or chlorination in preparation for leaching except where the roasting (and/or autoclaving and/or chlorination)/leaching sequence produces a final or intermediate product that does not undergo further beneficiation or processing); gravity concentration; magnetic separation; electrostatic separation; flotation; ion exchange; solvent extraction; electrowinning; precipitation; amalgamation; and heap, dump, vat, tank, and in situ leaching. For the purposes of Section 3.1.4.b.7 of these regulations, waste from the processing of ores and minerals will include only the following wastes, until the U.S. EPA completes a report to Congress and a regulatory determination on

their ultimate regulatory status:

- 3.1.4.b.7.A. Slag from primary copper processing;
- 3.1.4.b.7.B. Slag from primary lead processing;
- 3.1.4.b.7.C. Red and brown muds from bauxite refining;
- 3.1.4.b.7.D. Phosphogypsum from phosphoric acid production;
- 3.1.4.b.7.E. Slag from elemental phosphorus production;
- 3.1.4.b.7.F. Gasifier ash from coal gasification;
- 3.1.4.b.7.G. Process wastewater from coal gasification;
- 3.1.4.b.7.H. Calcium sulfate wastewater treatment plant sludge from primary copper processing;
- 3.1.4.b.7.I. Slag tailings from primary copper processing;
- 3.1.4.b.7.J. Fluorogypsum from hydrofluoric acid production;
- 3.1.4.b.7.K. Process wastewater from hydrofluoric acid production;
- 3.1.4.b.7.L. Air pollution control dust/sludge from iron blast furnaces;
- 3.1.4.b.7.M. Iron blast furnace slag;
- 3.1.4.b.7.N. Treated residue from roasting/leaching of chrome ore;
- 3.1.4.b.7.O. Process wastewater from primary magnesium processing by the anhydrous process;
- 3.1.4.b.7.P. Process wastewater from phosphoric acid production;
- 3.1.4.b.7.Q. Basic oxygen furnace and open hearth furnace air pollution control dust/sludge from carbon steel production;
- 3.1.4.b.7.R. Basic oxygen furnace and open hearth furnace slag from carbon steel production;

3.1.4.b.7.S. Chloride process waste solids from titanium tetrachloride production;

3.1.4.b.7.T. Slag from primary zinc processing.

3.1.4.b.8. Cement kiln dust waste.

3.1.4.b.9. Waste which consists of discarded wood or wood products which fails the test for ~~the characteristic of EP toxicity~~ the Toxicity Characteristic Leaching Procedure and which is not a hazardous waste for any other reason if the waste is generated by persons who utilize the arsenical-treated wood and wood products for these materials intended end use.

3.1.4.b.10. Petroleum-contaminated media and debris that fail the test for the Toxicity Characteristic of Section 3.3.5 of these regulations (Hazardous Waste Codes D018 through D043 only) and are subject to the corrective action regulations under 40 C.F.R. Part 280 [Technical Standards and Corrective Action Requirements for Owners and Operators of Underground Storage Tanks (UST)] or Title 47, Series 36, "Underground Storage Tank Technical Regulations (47 C.S.R. 36) or Title 45, Series 25, "Regulations to Prevent and Control Air Pollution from Hazardous Waste Treatment, Storage or Disposal Facilities".

3.1.4.b.11. Used chlorofluorocarbon refrigerants from totally enclosed heat transfer equipment, including mobile air conditioning systems, mobil refrigeration, and commercial and industrial air conditioning and refrigeration systems that use chlorofluorocarbons as the heat transfer fluid in a refrigeration cycle, provided the refrigerant is reclaimed for further use.

3.1.4.c. Hazardous wastes which are exempted from certain regulations. A hazardous waste which is generated in a product or raw material storage tank, a product or raw material transport vehicle or vessel, a product or raw material pipeline, or in a manufacturing process unit or an associated non-waste treatment manufacturing unit is not subject to regulation under Sections 4, 6, 8, or 11 of these regulations or under 40 C.F.R. Part 265 until it exits the unit in which it was generated, unless the unit is a surface impoundment, or unless the hazardous waste remains in the unit more than ninety (90) days after the unit ceases to be operated for manufacturing, or for storage or transportation of the product or raw materials.

3.1.4.d. Samples.

3.1.4.d.1. Except as provided in Section 3.1.4.d.2 of these regulations, a sample of waste or a sample of water, soil, or air which is collected for the sole purpose of testing to determine its characteristics or composition is not subject to any requirements of these regulations when:

3.1.4.d.1.A. The sample is being transported to a laboratory for the purpose of testing;

3.1.4.d.1.B. The sample is being transported back to the sample collector after testing;

3.1.4.d.1.C. The sample is being stored by the sample collector before transport to a laboratory for testing;

3.1.4.d.1.D. The sample is being stored in a laboratory before testing;

3.1.4.d.1.E. The sample is being stored in a laboratory after testing but before it is returned to the sample collector; or

3.1.4.d.1.F. The sample is being stored temporarily in the laboratory after testing for a specific purpose (for example, until conclusion of a court case or enforcement action where further testing of the sample may be necessary).

3.1.4.d.2. In order to qualify for the exemption in Sections 3.1.4.d.1.A and 3.1.4.d.1.B of these regulations, a sample collector shipping samples to a laboratory and a laboratory returning samples to a sample collector must:

3.1.4.d.2.A. Comply with West Virginia Department of Highways (DOH), U.S. Postal Service (USPS), or any other applicable shipping requirements; or

3.1.4.d.2.B. Comply with the following requirements if the sample collector determines that the West Virginia DOH, USPS, or other shipping requirements do not apply to the shipment of the sample:

3.1.4.d.2.B.i. Assures the following information accompanies the sample:

3.1.4.d.2.B.i.1. The sample collector's name, mailing address, and telephone number;

3.1.4.d.2.B.i.2. The laboratory's name, mailing address, and telephone number;

3.1.4.d.2.B.i.3. The quantity of the sample;

3.1.4.d.2.B.i.4. The date of shipment; and

3.1.4.d.2.B.i.5. A description of the sample.

3.1.4.d.2.B.ii. Package the sample so that it does not leak, spill, or vaporize from its packaging.

3.1.4.d.3. This exemption does not apply if the laboratory determines that the waste is hazardous but the laboratory is no longer meeting any of the conditions stated in Section 3.1.4.d.1 of these regulations.

3.1.4.e. Treatability Study Samples.

3.1.4.e.1. Except as provided in Section 3.1.4.e.2 of these regulations, persons who generate or collect samples for the purpose of conducting treatability studies as defined in Section 2 of these regulations, are not subject to any requirement of Sections 3 through 6 of these regulations or Section 10 (small quantity generators) of these regulations when:

3.1.4.e.1.A. The sample is being collected and prepared for transportation by the generator or sample collector; or

3.1.4.e.1.B. The sample is being accumulated or stored by the generator or sample collector prior to transportation to a laboratory or testing facility; or

3.1.4.e.1.C. The sample is being transported to the laboratory or testing facility for the purpose of conducting a treatability study.

3.1.4.e.2. The exemption in Section 3.1.4.e.1 of these regulations, is applicable to samples of hazardous waste being collected and shipped for the purpose of conducting treatability studies provided that:

3.1.4.e.2.A. The generator or sample collector uses (in "treatability studies") no more than one thousand kilograms (1,000 kg) of any non-acute hazardous waste, one kilogram (1 kg) of acute hazardous waste, or two hundred fifty kilograms (250 kg) of soils, water, or debris contaminated with acute hazardous waste for each process being evaluated for each generated waste stream; and

3.1.4.e.2.B. The sample must be packaged so it will not leak, spill, or vaporize from its packaging during shipment; and

3.1.4.e.2.B.i. The transportation of each sample shipment complies with West Virginia DOH, USPS, or other applicable shipping requirements; or

3.1.4.e.2.B.ii. If the West Virginia DOH, USPS, or other shipping requirements do not apply to the shipment of the sample, the following information must accompany the sample:

3.1.4.e.2.B.ii.1. The name, mailing address, and telephone number of the originator of the sample;

3.1.4.e.2.B.ii.2. The name, mailing address, and telephone number of the facility that will perform the treatability study;

3.1.4.e.2.B.ii.3. The quantity of the sample;

3.1.4.e.2.B.ii.4. The date of shipment; and

3.1.4.e.2.B.ii.5. A description of the sample, including its EPA Hazardous Waste Number.

3.1.4.e.2.C. The sample is shipped to a laboratory or testing facility which is exempt under Section 3.1.4.f of these regulations or has an appropriate permit or interim status.

3.1.4.e.2.D. The generator or sample collector maintains the following records for a period ending three (3) years after the completion of the treatability study:

3.1.4.e.2.D.i. Copies of the shipping documents;

3.1.4.e.2.D.ii. A copy of the contract with the facility conducting the treatability study;

3.1.4.e.2.D.iii. Documentation showing:

3.1.4.e.2.D.iii.1. The amount of waste shipped under this exemption;

3.1.4.e.2.D.iii.2. The name, mailing address, and EPA Identification Number of the laboratory or testing facility;

3.1.4.e.2.D.iii.3. The date the shipments were made; and

3.1.4.e.2.D.iii.4. Whether or not unused samples and residues were returned to the generator or sample collector.

3.1.4.e.2.E. The generator reports the information required under Section 3.1.4.e.2.D of these regulations in its biennial report.

3.1.4.e.3. The chief may grant requests on a case-by-case basis for quantity limits in excess of those specified in these regulations for up to an additional five hundred kilograms (500 kg) of non-acute hazardous waste, one kilogram (1 kg) of acute hazardous waste and two hundred fifty kilograms (250 kg) of soils, water, or debris contaminated with acute hazardous waste, to conduct further treatability study evaluation when there has been an equipment or mechanical failure during the conduct of a

treatability study, there is a need to verify the results of a previously conducted treatability study, there is a need to study and analyze alternative techniques within a previously evaluated treatment process, or there is a need to do further evaluation of an ongoing treatability study to determine final specification for treatment. The additional quantities allowed are subject to all the provisions in Section 3.1.4.e.1 of these regulations. The generator or sample collector must apply to the chief and provide in writing the following information:

3.1.4.e.3.A. The reason why the generator or sample collector requires an additional quantity of samples for the study and the amount in excess needed;

3.1.4.e.3.B. Documentation accounting for all samples of hazardous waste from the waste stream which have been sent for or have undergone treatability studies including the date each previous sample from the waste stream was shipped, the quantity of each previous shipment, the laboratory or testing facility to which it was shipped, what treatability study processes were conducted on each sample shipped, and the available results of each study;

3.1.4.e.3.C. A description of the technical modifications or change in specifications which will be evaluated and the expected results;

3.1.4.e.3.D. If such further study is being required due to equipment or mechanical failure, the applicant must include information regarding the reason for the failure or breakdown and also include what procedures or equipment improvements have been made to protect against further breakdowns; and

3.1.4.e.3.E. Such other information that the chief considers necessary.

3.1.4.f. Samples Undergoing Treatability Studies at Laboratories and Testing Facilities. Samples undergoing treatability studies at the laboratory or testing facility conducting such treatability studies, to the extent such facilities are not otherwise subject to the requirements of these regulations, are not subject to the requirements of this Section, Sections 5, 6, 7, 8, 9, 10, or 11 of these regulations or to the notification requirements under Section 4 of these regulations provided that the conditions of Sections 3.1.4.f.1 through 3.1.4.f.11 of these regulations are met. A mobile treatment unit (MTU) may qualify as a testing facility subject to Section 3.1.4.f of these regulations. Where a group of MTUs are located at the same site, the limitations specified in these regulations apply to the entire group of MTUs collectively.

3.1.4.f.1. No less than forty five (45) days before conducting treatability studies, the facility notifies the chief in writing that it intends to conduct treatability studies;

3.1.4.f.2. The laboratory or testing facility conducting the study has an EPA Identification Number;

3.1.4.f.3. No more than a total of two hundred fifty kilograms (250 kg) of "as received" hazardous waste is subjected to initiation of treatment in all treatability studies in a single day. "As received" waste refers to the waste as received in the shipment from the generator or sample collector.

3.1.4.f.4. The quantity of "as received" hazardous waste stored at the facility for the purpose of evaluation in studies does not exceed one thousand kilograms (1,000 kg), the total of which can include five hundred kilograms (500 kg) of soils, water, or debris contaminated with acute hazardous waste or one kilogram (1 kg) of acute hazardous waste. This quantity limitation does not include:

3.1.4.f.4.A. Treatability study residues; and

3.1.4.f.4.B. Treatment materials (including nonhazardous solid waste) added to "as received" hazardous waste.

3.1.4.f.5. No more than ninety (90) days have elapsed since the treatability study for the sample was completed, or no more than one (1) year has elapsed since the generator or sample collector shipped the sample to the laboratory or testing facility, whichever date first occurs.

3.1.4.f.6. The treatability study does not involve the placement of hazardous waste on the land or open burning of hazardous waste.

3.1.4.f.7. The facility maintains records for three (3) years following completion of each study that shows compliance with the treatment rate limits and the storage time and quantity limits. The following specific information must be included for each treatability study conducted:

3.1.4.f.7.A. The name, mailing address, and EPA Identification Number of the generator or sample collector of each hazardous waste sample;

3.1.4.f.7.B. The date the shipment was received;

3.1.4.f.7.C. The quantity of waste accepted;

3.1.4.f.7.D. The quantity of "as received" waste in storage each day;

3.1.4.f.7.E. The date the treatment study was initiated and the amount of "as received" waste introduced to treatment each day;

3.1.4.f.7.F. The date the treatability study was concluded; and

3.1.4.f.7.G. The date any unused sample or residues generated from the study were returned to the generator or sample collector or, if sent to a designated facility, the name and the EPA Identification Number of that facility.

3.1.4.f.8. The facility keeps on site a copy of the treatability study contract and all shipping papers associated with transport of treatability study samples to and from the facility for a period ending three (3) years from the completion date of each treatability study.

3.1.4.f.9. The facility prepares and submits a report to the chief by March 15 of every year that estimates the number of studies and the amount of waste expected to be used in these studies during the current year and includes the following information for the previous calendar year:

3.1.4.f.9.A. The name, mailing address, and EPA Identification Number of the facility conducting the studies;

3.1.4.f.9.B. The types (by process) of treatability studies conducted;

3.1.4.f.9.C. The names and mailing addresses of persons for whom studies have been conducted (including their EPA Identification Numbers);

3.1.4.f.9.D. The total quantity of waste in storage each day;

3.1.4.f.9.E. The quantity and types of waste subjected to treatability studies;

3.1.4.f.9.F. When each treatability study was conducted; and

3.1.4.f.9.G. The final disposition of residues and unused samples from each study.

3.1.4.f.10. The facility determines whether any unused sample or residues generated by the study are hazardous waste under Section 3.1.3 of these regulations, and if so, whether such wastes are subject to regulatory procedures under these regulations, unless the residues and unused samples are returned to the sample originator under the exemption in Section 3.1.4.e of these

regulations.

3.1.4.f.11. The facility notifies the chief by letter when the facility is no longer planning to conduct any treatability studies at the site.

3.1.5. (Reserved).

3.1.6. Requirements for Recyclable Materials.

3.1.6.a. Hazardous wastes that are recycled are subject to the requirements for generators, transporters, and storage facilities of Sections 3.1.6.d through 3.1.6.f of these regulations, except for the materials listed in Sections 3.1.6.b and 3.1.6.c of these regulations. Hazardous wastes that are recycled will be known as "recyclable materials".

3.1.6.b. The following recyclable materials are not subject to the requirements of Section 3.1.6 of these regulations but are regulated under Sections 9.3 through 9.7 of these regulations and all applicable provisions of Section 11 of these regulations:

3.1.6.b.1. Recyclable materials used in a manner constituting disposal (Section 9.3 of these regulations);

3.1.6.b.2. Hazardous wastes burned for energy recovery in boilers and industrial furnaces (Section 9.4 of these regulations);

3.1.6.b.3. (Reserved).

3.1.6.b.4. Recycled materials from which precious metals are reclaimed (Section 9.6 of these regulations);

3.1.6.b.5. Spent lead-acid batteries that are being reclaimed (Section 9.7 of these regulations).

3.1.6.c. The following recyclable materials are not subject to regulation under Sections 4 through 8 and Section 11 of these regulations and are not subject to the notification requirements of ~~Section 10 of the State Act~~:

3.1.6.c.1. Reclaimed industrial ethyl alcohol;

3.1.6.c.2. Used batteries (or used battery cells) returned to a battery manufacturer for regeneration;

3.1.6.c.3. Used oil that exhibits one or more of the characteristics of hazardous waste but is recycled in some other manner than being burned for energy recovery;

3.1.6.c.4. Scrap metal;

3.1.6.c.5. Fuels produced from the refining of oil bearing hazardous wastes along with normal process streams at a petroleum refining facility, if such wastes result from normal petroleum refining, production, and transportation practices;

3.1.6.c.6. Oil reclaimed from hazardous waste resulting from normal petroleum refining, production, and transportation practices which oil is to be refined along with normal process streams at the petroleum refining facility; or

3.1.6.c.7. Coke from the iron and steel industry that contains hazardous waste from the iron and steel production process.

3.1.6.d. Generators and transporters of recyclable materials shall comply with all applicable provisions of Sections 4, 5, and 6 of these regulations, except as provided in Sections 3.1.6.a through 3.1.6.c of these regulations. Generators and transporters of recyclable materials are also subject to the applicable provisions of Title 157, Department of Highways, Series 7 (157 C.S.R. 7) and Title 150, Public Service Commission, Series 11 (150 C.S.R. 11).

3.1.6.e. Owners or operators of facilities that store recyclable materials before they are recycled are regulated under all applicable provisions of Sections 4, 7, 8.1 through 8.10, 8.13, 11, and 13 of these regulations, except as provided in Sections 3.1.6.a through 3.1.6.c. of these regulations. The recycling process itself is exempt from these regulations.

3.1.6.f. Owners or operators of facilities that recycle recyclable materials without storing them before they are recycled are subject to the following requirements, except as provided in Sections 3.1.6.a through 3.1.6.c of these regulations:

3.1.6.f.1. Notification requirements of Section 4 of these regulations; and

3.1.6.f.2. Sections 8.5.2 and 8.5.3 of these regulations (concerning use of the manifest and manifest discrepancies).

3.1.6.g. Additional regulation of certain hazardous waste recycling activities may be imposed on a case-by-case basis in accordance with the provisions of Sections 3.1.6.g.1 and 3.1.6.g.2 of these regulations.

3.1.6.g.1. The director may decide on a case-by-case basis that persons accumulating or storing the recyclable materials

described in Section 3.1.6.b.4 of these regulations should be regulated under Sections 3.1.6.d through 3.1.6.f of these regulations. The basis for this decision is that the materials are being accumulated or stored in a manner that does not protect human health and the environment because the materials or their toxic constituents have not been adequately contained, or because the materials being accumulated or stored together are incompatible. In making this decision, the director will consider the following factors:

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

3.1.6.g.1.B. The method of accumulation or storage;

3.1.6.g.1.C. The length of time the materials have been accumulated or stored before being reclaimed;

3.1.6.g.1.D. Whether any contaminants are being released into the environment, or are likely to be so released; and

3.1.6.g.1.E. Other relevant factors.

3.1.6.g.2. Procedures for case-by-case regulation of hazardous waste recycling activities.

3.1.6.g.2.A. The director will use the following procedures when determining whether to regulate hazardous waste recycling activities described in Section 3.1.6.b.4 of these regulations under the provisions of Sections 3.1.6.d through 3.1.6.f of these regulations, rather than under the provisions of Section 9.6 of these regulations.

3.1.6.g.2.A.i. If a generator is accumulating the waste, the director will issue a notice setting forth the factual basis for the decision and stating that the person must comply with the applicable requirements of Sections 6.1, 6.3, 6.4, and 6.5 of these regulations. The notice will become final within thirty (30) days, unless the person served requests a public hearing to challenge the decision. Upon receiving such a request, the director will hold a public hearing. The director will provide notice of the hearing to the public and allow public participation at the hearing. The director will issue a final order after the hearing stating whether or not compliance with Section 6 of these regulations is required. The order becomes effective thirty (30) days after service of the decision unless the director specifies a later date or unless review by the director is requested. The order may be appealed to the director by any person who participated in the public hearing. The director may choose to grant or deny the appeal. Final agency action occurs when a final order is issued and agency review procedures are exhausted.

3.1.6.g.2.A.ii. If the person is accumulating the recyclable material at a storage facility, the notice will state that the person must obtain a permit in accordance with all applicable provisions of Section 11 of these regulations. The owner or operator of the facility must apply for a permit within no less than sixty (60) days and no more than six (6) months of notice, as specified in the notice. If the owner or operator of the facility wishes to challenge the director's decision, he may do so in his permit application, in a public hearing held on the draft permit, or in comments filed on the draft permit or on the notice of intent to deny the permit. The fact sheet accompanying the permit will specify the reasons for the agency's determination. The question of whether the director's decision was proper will remain open for consideration during the public comment period discussed under Section 11.25 of these regulations and in any subsequent hearing.

3.1.7. Residue of Hazardous Waste in Empty Containers.

3.1.7.a. Any hazardous waste remaining in either an empty container or an inner liner removed from an empty container, as defined in Sections 3.1.7.c through 3.1.7.e of these regulations is not subject to these regulations.

3.1.7.b. Any hazardous waste in either a container that is not empty or an inner liner removed from a container that is not empty, as defined in Sections 3.1.7.c through 3.1.7.e of these regulations, is subject to these regulations.

3.1.7.c. A container or inner liner removed from a container that has held any hazardous waste, except a waste that is a compressed gas or that is identified in Section 3.4.4.c of these regulations is empty if:

3.1.7.c.1. All wastes have been removed that can be removed using the practices commonly employed to remove materials from that type of container (e.g., pouring, pumping, and aspirating) and no more than 2.5 centimeters (one inch) of residue remain on the bottom of the container or inner liner;

3.1.7.c.2. No more than three percent (3%) by weight of the total capacity of the container remains in the container or inner liner if the container is less than or equal to one hundred and ten (110) gallons in size; or

3.1.7.c.3. No more than 0.3 percent by weight of the total capacity of the container remains in the container or inner liner if the container is greater than one hundred and ten (110) gallons in size.

3.1.7.d. A container that has held a hazardous waste that is a compressed gas is empty when the pressure in the container approaches atmospheric.

3.1.7.e. A container or an inner liner removed from a container that has held an acute hazardous waste identified in Section 3.4.4.c of these regulations is empty if:

3.1.7.e.1. The container or inner liner has been triple rinsed using a solvent capable of removing the commercial chemical product or manufacturing chemical intermediate;

3.1.7.e.2. The container or inner liner has been cleaned by another method that has been shown in the scientific literature, or by tests conducted by the generator, to achieve equivalent removal; or

3.1.7.e.3. In the case of a container, the inner liner that prevented contact of the commercial chemical product or manufacturing chemical intermediate with the container has been removed.

3.1.8. PCB Wastes Regulated Under the Toxic Substance Control Act.

3.1.8.a. The disposal of PCB-containing dielectric fluid and electric equipment containing such fluid authorized for use and regulated under 40 C.F.R. Part 761 and that are hazardous only because they fail the test for the Toxicity Characteristic (Hazardous Waste Codes D018 through D043 only) are exempt from regulation under Sections 3 through 8, and Sections 10, 11, 13, 15, and 16 of these regulations.

3.2. Criteria for Identifying the Characteristics of Hazardous Waste and for Listing Hazardous Waste.

3.2.1. Criteria for Identifying the Characteristics of Hazardous Waste.

3.2.1.a. The director shall identify and define a characteristic of hazardous waste upon determining that:

3.2.1.a.1. A waste that exhibits the characteristic may:

3.2.1.a.1.A. Cause, or significantly contribute to, an increase in mortality or an increase in serious irreversible or incapacitating reversible illness; or

3.2.1.a.1.B. Pose a substantial present or potential hazard to human health or the environment when it is improperly treated, stored, transported, disposed of, or otherwise managed; and

3.2.1.b. The characteristic can be:

3.2.1.b.1. Measured by an available standardized test method which is reasonably within the capability of generators of waste or private sector laboratories that are available to serve generators of waste; or

3.2.1.b.2. Reasonably detected by generators of waste through their knowledge of their waste.

3.2.2. Criteria for Listing Hazardous Waste.

3.2.2.a. The director may list a waste as being hazardous upon determining that the waste meets one of the following criteria:

3.2.2.a.1. It exhibits any of the characteristics of hazardous waste identified in Section 3.3. of these regulations;

3.2.2.a.2. It has been found to be fatal to humans in low doses or, in the absence of data on human toxicity, it has been shown in studies to have an oral LD-50 toxicity (rat) of less than fifty (50) milligrams per kilogram, an inhalation LC-50 toxicity (rat) of less than two (2) milligrams per liter, or a dermal LD-50 toxicity (rabbit) of less than two hundred (200) milligrams per kilogram or is otherwise capable of causing or significantly contributing to an increase in serious irreversible, or incapacitating irreversible, illness. (Waste listed in accordance with these criteria will be designated Acute Hazardous Waste.)

3.2.2.a.3. It contains any of the toxic constituents listed in Appendix VIII of these regulations, ~~unless~~ and, after considering any of the following factors, the director concludes that the waste is not capable of posing a substantial present or potential hazard to human health or the environment when improperly treated, stored, transported or disposed of, or otherwise managed:

3.2.2.a.3.A. The nature of the toxicity presented by the constituent;

3.2.2.a.3.B. The concentration of the constituent in the waste;

3.2.2.a.3.C. The potential of the constituent or any toxic degradation product of the constituent to migrate from the waste into the environment under the types of improper management considered in Section 3.2.2.a.3.G of these regulations;

3.2.2.a.3.D. The persistence of the constituent or any toxic degradation product of the constituent;

3.2.2.a.3.E. The potential for the constituent or any toxic degradation product of the constituent to degrade into non-harmful constituents at the rate of degradation;

3.2.2.a.3.F. The degree to which the constituent or any degradation product of the constituent bioaccumulates in ecosystems;

3.2.2.a.3.G. The plausible types of improper management to which the waste could be subjected;

3.2.2.a.3.H. The quantities of the waste generated at individual generation sites or on a regional or national basis;

3.2.2.a.3.I. The nature and severity of the human health and environmental damage that has occurred as a result of the improper management of wastes containing the constituent;

3.2.2.a.3.J. Action taken by other governmental agencies or regulatory programs based on the health or environmental hazard posed by the waste or waste constituent;

3.2.2.a.3.K. Such other factors as may be appropriate.

Note: Substances will be listed on Appendix VIII of these regulations, only if they have been shown in scientific studies to have toxic, carcinogenic, mutagenic, or teratogenic effects on humans or other life forms. Waste listed in accordance with these criteria will be designated Toxic Waste.

3.2.2.b. The director may list classes or types of wastes as hazardous waste if he has reason to believe that individual wastes, within the class or type of waste, typically or frequently are hazardous under the definition of hazardous waste found in W. Va. Code §20-5E-3(6).

3.2.2.c. The director will use the criteria for listing, specified in Section 3.2.2 of these regulations, to establish the exclusion limits referred to in Section 10.2.3 of these regulations.

3.3. Characteristics of Hazardous Waste.

3.3.1. General.

3.3.1.a. A waste as defined in Section 3.1.2 of these regulations which is not excluded from regulation as a hazardous waste under Section 3.1.4.b of these regulations is a hazardous waste if it exhibits any of the characteristics identified in Section 3.3 of these regulations.

Comment: Section 6.1.2 of these regulations sets forth the generator's responsibility to determine whether his waste exhibits one or more the characteristics identified in Section 3.3 of these regulations.

3.3.1.b. A hazardous waste which is identified by a characteristic in Section 3.3 of these regulations, ~~but is not listed as a hazardous waste in Section 3.4 of these regulations~~ is assigned the EPA hazardous waste number set forth in the respective characteristic in Section 3.3 of these regulations. This number shall be used in complying with the notification requirements of Section 4 of these regulations and ~~certain~~ all applicable record keeping and reporting requirements under Sections 5, 6, 7, 8, 10, and 11 of these regulations.

3.3.1.c. For purposes of Section 3.3 of these regulations, the director will consider a sample obtained using any of the applicable sampling methods specified in Appendix I of these regulations to be a representative sample within the meaning of Section 2 of these regulations.

3.3.2. Characteristic of Ignitability.

3.3.2.a. A waste exhibits the characteristic of ignitability if a representative sample of the waste has any of the following properties:

3.3.2.a.1. It is liquid, other than an aqueous solution containing less than twenty-four percent (24%) alcohol by volume, and has a flash point less than 60 degrees C (140 degrees F), as determined by a Pensky-Martens Closed Cup Tester, using the test method specified in ASTM Standards D-93-79 or D-93-80, or a Setaflash Closed Cup Tester, using the test method specified in ASTM Standard D-3278-78, or as determined by an equivalent method. ASTM Standards are available from the American Society for Testing and Materials (ASTM), 1916 Race Street, Philadelphia, PA 19103;

3.3.2.a.2. It is not a liquid and is capable under standard temperature and pressure of causing fire through friction, absorption of moisture, or spontaneous chemical changes and, when ignited, burns so vigorously and persistently that it creates a hazard;

3.3.2.a.3. It is an ignitable compressed gas as defined in ~~40~~ 49 C.F.R. §173.300 and as determined by the test method described in that regulation or an equivalent test method. (see Section 2 of these regulations);

3.3.2.a.4. It is an oxidizer as defined in ~~40~~ 49 C.F.R. ~~§173.51~~ §173.151;

Note: 49 C.F.R. §173.151 defines an oxidizer as a substance such as a chlorate, permanganate, inorganic peroxide, or a nitrate, that yields oxygen readily to stimulate the combustion of organic matter.

3.3.2.b. A waste that exhibits the characteristic of

~~ignitability, but is not listed as a hazardous waste by the Administrator or the director,~~ has the EPA Hazardous Waste Number of D001.

3.3.3. Characteristic of Corrosivity.

3.3.3.a. A waste exhibits the characteristic of corrosivity if a representative sample of the waste has either of the following properties:

3.3.3.a.1. It is aqueous and has a pH less than or equal to 2 or greater than or equal to 12.5, as determined by a pH meter using either the test method specified in SW-846, or an equivalent test method approved by the Administrator under the procedures set forth in 40 C.F.R. §§260.20 and 260.21;

3.3.3.a.2. It is a liquid and corrodes steel (SAE 1020) at a rate greater than 6.35 mm (0.250 inch) per year at a test temperature of 55 degrees C (130 degrees F) as determined by the test method specified in NACE (National Association of Corrosion Engineers) Standard TM-01-69 as standardized in SW-846, or an equivalent test method.

3.3.3.b. ~~A waste that exhibits the characteristics of corrosivity, but is not listed as a hazardous waste by the Administrator or director,~~ has the EPA Hazardous Waste Number of D002.

3.3.4. Characteristic of Reactivity.

3.3.4.a. A waste exhibits the characteristic of reactivity if a representative sample of the waste has any of the following properties:

3.3.4.a.1. It is normally unstable and readily undergoes violent changes without detonating;

3.3.4.a.2. It reacts violently with water;

3.3.4.a.3. It forms potentially explosive mixtures with water;

3.3.4.a.4. When mixed with water, it generates toxic gases, vapors, or fumes in a quantity sufficient to present a danger to human health or the environment;

3.3.4.a.5. It is a cyanide or sulfide bearing waste which, when exposed to pH conditions between 2 and 12.5, can generate toxic gases, vapors, or fumes in a quantity sufficient to present a danger to human health or the environment;

3.3.4.a.6. It is capable of detonation or explosive

reaction if it is subjected to a strong initiating source or if heated under confinement;

3.3.4.a.7. It is readily capable of detonation or explosive decomposition or reaction at standard temperature and pressure; or

3.3.4.a.8. It is a forbidden explosive as defined in 49 C.F.R. §173.51, a Class A explosive as defined in 49 C.F.R. §173.53, or a Class B explosive as defined in 49 C.F.R. §173.88.

3.3.4.b. A waste that exhibits the characteristic of reactivity, ~~but is not listed as a hazardous waste by the Administrator or director,~~ has the EPA Hazardous Waste Number of D003.

3.3.5. Toxicity Characteristic of ~~EP Toxicity~~.

3.3.5.a. A waste exhibits the characteristic of EP toxicity if, using the test methods described in Appendix II of these regulations or equivalent methods approved by the Administrator under the procedures set forth in 40 C.F.R. §§260.20 and 260.21, the extract from a representative sample of the waste contains any of the contaminants listed in Table II of these regulations at a concentration equal to or greater than the respective value given in that Table. Where the waste contains less than 0.5 percent filterable solids, the waste itself, after filtering, is considered to be the extract for the purposes of Section 3.3.5.a of these regulations.

3.3.5.b. A waste that exhibits the toxicity characteristic of ~~EP toxicity, but is not listed as a hazardous waste by the Administrator or director,~~ has the hazardous waste number specified in Table II of these regulations which corresponds to the toxic contaminant causing it to be hazardous.

3.4. Lists of Hazardous Wastes.

3.4.1. General.

3.4.1.a. A waste is a hazardous waste if it listed in Section 3.4 of these regulations unless it has been excluded from this list under Section 16 of these regulations.

3.4.1.b. The director will indicate his basis for listing the classes or types of wastes listed in Section 3.4 of these regulations by employing one or more of the following hazard codes: Ignitable Waste (I), Corrosive Waste (C), Reactive Waste (R), ~~EP Toxic~~ Toxicity Characteristic Waste (E), Acute Hazardous Waste (H), and Toxic Waste (T).

3.4.1.b.1. Appendix VII of these regulations

identifies the constituent which caused the director to list the waste as an ~~EP-Toxic~~ Toxicity Characteristic Waste (E) or Toxic Waste (T) in Sections 3.4.2 and 3.4.3 of these regulations.

3.4.1.c. Each hazardous waste listed in Section 3.4 of these regulations is assigned a Hazardous Waste Number which precedes the name of the waste. This number must be used in complying with the notification requirements of Section 4 of these regulations and certain record keeping and reporting requirements under Sections 6, 8, and 11 of these regulations.

3.4.1.d. The following hazardous wastes listed in Section 3.4.2 or 3.4.3 of these regulations are subject to the exclusion limits for acutely hazardous wastes established in Section 10.2.5 of these regulations: EPA Hazardous Waste Numbers F020, F021, F022, F023, F026, F027, and F028.

3.4.2. Hazardous Waste from Nonspecific Sources.

3.4.2.a. Hazardous waste from nonspecific sources are listed in Table III of these regulations.

3.4.3. Hazardous Waste from Specific Sources.

3.4.3.a. Hazardous waste from specific sources are listed in Table IV of these regulations.

3.4.4. Discarded Commercial Chemical Products, Off-Specification Species, Container Residues, and Spill Residues Thereof.

3.4.4.a The following materials or items are hazardous waste if and when they are discarded or intended to be discarded, as described in Section 3.1.2.a.1.A of these regulations, when they are ~~burned for purposes of energy recovery in lieu of their original intended use, when they are used to produce fuels in lieu of their original intended use, when they are applied to the land in lieu of their original intended use, or when they are contained in products that are applied to the land in lieu of their original intended use~~ mixed with waste oil or used oil or other material and applied to the land for dust suppression or road treatment, when they are otherwise applied to the land in lieu of their original intended use or when they are contained in products that are applied to the land in lieu of their original intended use, or when, in lieu of their original intended use, they are produced for use as (or as a component of) a fuel, distributed for use as a fuel, or burned as a fuel.

~~3.4.4.a-3.4.4.b.~~ Any commercial chemical product or manufacturing chemical intermediate having the generic name listed in Section ~~3.4.4.e or 3.4.4.f~~ or 3.4.4.g of these regulations.

~~3.4.4.b.~~3.4.4.c. Any off-specification commercial chemical product or manufacturing chemical intermediate which, if it met specifications, would have the generic name listed in Section ~~3.4.4.e~~ or 3.4.4.f or 3.4.4.g of these regulations.

~~3.4.4.e.~~3.4.4.d. Any residue remaining in a container or in an inner liner removed from a container that has held any commercial chemical product or manufacturing chemical intermediate having the generic name listed in Section ~~3.4.4.e~~ 3.4.4.f and 3.4.4.g of these regulations, unless the container is empty as defined in Section 3.1.7.e of these regulations.

Comment: Unless the residue is being beneficially used or reused, or legitimately recycled or reclaimed; or being accumulated, stored, transported, or treated prior to such use, re-use, recycling, or reclamation, the director considers the residue to be intended for discard and thus a hazardous waste. An Example of a legitimate re-use of the residue would be where the residue remains in the container and the container is used to hold the same commercial chemical product or manufacturing chemical product or manufacturing chemical intermediate it previously held. An Example of the discard of the residue would be where the drum is sent to a drum reconditioner who reconditions the drum but discards the residue.

~~3.4.4.d.~~3.4.4.e. Any residue or contaminated soil, water, or other debris resulting from the clean-up of a spill into or on any land or water of any commercial chemical product or manufacturing chemical intermediate having the generic name listed in Section ~~3.4.4.e~~ or 3.4.4.f or 3.4.4.g of these regulations, or any residue or contaminated soil, water or other debris resulting from the clean-up of a spill, into or on any land or water, of any off-specification chemical product and manufacturing chemical intermediate which, if it met specifications, would have the generic name listed in Section ~~3.4.4.e~~ or 3.4.4.f or 3.4.4.g of these regulations.

Comment: The phrase "commercial chemical product or manufacturing chemical intermediate having the generic name listed in..." refers to a chemical substance which is manufactured or formulated for commercial or manufacturing use which consists of the commercially pure grade of the chemical, any technical grades of the chemical that are produced or marketed, and all formulations in which the chemical is the sole active ingredient. It does not refer to a material, such as a manufacturing process waste, that contains any of the substances listed in Section ~~3.4.4.e~~ or 3.4.4.f or 3.4.4.g of these regulations. Where a manufacturing process waste is deemed to be a hazardous waste because it contains a substance listed in Section ~~3.4.4.e~~ or 3.4.4.f or 3.4.4.g of these regulations or will be identified as a hazardous waste by the characteristics set forth in 3.3 of these regulations.

~~3.4.4.e-3.4.4.f.~~ The commercial chemical products, manufacturing chemical intermediates or off-specification commercial chemical products or manufacturing chemical intermediates referred to in Sections ~~3.4.4.a through 3.4.4.d~~ 3.4.4.b through 3.4.4.e of these regulations, are identified as acute hazardous wastes (H) and are subject to the small quantity exclusion defined in Section 10.2.5 of these regulations. These wastes and their corresponding EPA hazardous waste numbers are listed in Table V of these regulations.

Comment: For the convenience of the regulated community the primary hazardous properties of these materials have been indicated by the letters T (Toxicity) and R (Reactivity). Absence of a letter indicates that the compound only is listed for acute toxicity.

~~3.4.4.f-3.4.4.g.~~ The commercial chemical products, manufacturing chemical intermediates, or off-specification commercial chemical products referred to in Sections ~~3.4.4.a through 3.4.4.d~~ 3.4.4.b through 3.4.4.e of these regulations, are identified as toxic wastes (T) unless otherwise designated and are subject to the small quantity exclusion defined in Section 10.2.1 of these regulations. These wastes and their corresponding EPA hazardous waste numbers are listed in Table VI of these regulations.

Comment: For the convenience of the regulated community, the primary hazardous properties of these materials have been indicated by the letters T (Toxicity), R (Reactivity), I (Ignitability), and C (Corrosivity). Absence of a letter indicates that the compound is only listed for toxicity.

§47-35-4. Notification of Hazardous Waste Activity Regulations.

4.1. General.

4.1.1. Applicability. Any person that engages in a hazardous waste activity in the State of West Virginia shall notify the chief of these activities, unless such activities are exempted from the requirements of these regulations.

4.1.2. Any person as described in Section 4.1.1 of these regulations that has notified the EPA or is subject to the requirements to notify EPA as specified in Volume 45 , Number 39 of the Federal Register, dated February 26, 1980, pages 12746 through 12754, is subject to the provisions of Section 4 of these regulations.

4.1.3. The purpose of Section 4 of these regulations is to provide a means for the State of West Virginia to utilize the information provided by all who complied with the notification requirements of EPA as described in Section 4.1.2 of these

regulations or all who initiated hazardous waste activities subsequent to the requirements of EPA as referenced above in Section 4.1.2 of these regulations shall notify the chief of their hazardous waste activities.

4.2. Notification.

4.2.1. Any person that notified EPA of hazardous waste activities as referenced above in Section 4.1 of these regulations shall provide a copy of that notification to the chief within thirty (30) days of the effective date of these regulations.

4.2.2. Any person involved in hazardous waste activities that did not comply with the notification requirements of EPA, as referenced above in Section 4.1 of these regulations, but is subject to those requirements shall notify the chief in writing of their hazardous waste activities within thirty (30) days of the effective date of these regulations. Notification may be accomplished by the use of EPA Form 8700-12 or the provision of the same information in any other manner selected by the notifier.

4.2.3. Any person exempted from the federal notification requirements but subject to West Virginia notification requirements as specified in Sections 3.1.6 and 10 of these regulations shall notify the chief in writing of their hazardous waste activities within ninety (90) days of the effective date of these regulations or the date of initiation of such activities, whichever is later. Notification may be accomplished by use of EPA Form 8700-12 or the provision of the same information in any other manner selected by the notifier.

4.2.4. One notification form is required for each generator.

4.2.5. A notification form is required for each storage, treatment, disposal, or other facility. However, if one facility site includes more than one storage, treatment, or disposal activity, only one notification form for the entire facility site is required.

4.2.6. Generators that store, treat, or dispose of hazardous waste on-site shall file a notification form for generation activities as well as storage, treatment, and disposal activities, unless such activities are exempted from the requirements of these regulations.

4.2.7. New generators and those initiating activities subsequent to the EPA notification period referenced in Section 4.1.2 of these regulations shall comply with the EPA identification number requirements and shall provide a copy of their application for an EPA identification number to the chief Administrator.

§47-35-5. Standards Applicable to Transporters of Hazardous Waste

by Air or Water or Both.

5.1. The director hereby adopts and incorporates by reference 40 C.F.R. Part 263, as published in the Code of Federal Regulations on the effective date specified in Section 1.5 of these regulations, insofar as such regulations relate to the transportation of hazardous waste by air and water.

Note: The use of railroads for the transportation of hazardous waste is regulated through West Virginia's Public Service Commission, Title 150, Series 11, "Rules and Regulations Governing the Transportation of Hazardous Waste by Rail" (150 C.S.R. 11). The use of State highways for the transportation of hazardous waste is regulated under the West Virginia Division of Highways, Title 157, Series 7, "Transportation of Hazardous Wastes upon the Roads and Highways" (157 C.S.R. 7).

5.2. Whenever the term Administrator or Regional Administrator is used, the term shall have the meaning of the director of the Division of Natural Resources.

§47-35-6. Standards Applicable to Generators of Hazardous Waste.

6.1. Purpose, Scope, and Applicability.

6.1.1. General.

6.1.1.a. Generators that generate more than one hundred kilograms (100 kg) of hazardous waste, as identified or listed in Section 3 of these regulations, in any calendar month or generate acutely hazardous waste in quantities greater than the amounts listed in Section 10.2.5 of these regulations are subject to all Sections of these regulations, except as otherwise provided in Sections 6 and 10.1 of these regulations.

6.1.1.b. A generator who treats, stores, or disposes of hazardous waste on-site must only comply with the following subsections of Section 6 of these regulations with respect to that waste: Section 6.1.2 of these regulations for determining whether his waste is hazardous; Section 6.1.3 of these regulations for obtaining an EPA identification number; Sections ~~6.1.4.e and 6.1.4.d~~ 6.4.1.c and 6.4.1.d of these regulations for record keeping; Section 6.4.4 of these regulations for additional reporting; Section 6.5.2 of these regulations for farmers, if applicable; and Section 6.3.5 of these regulations for accumulation of hazardous waste.

Note: The provisions of Section 6.3.5 of these regulations are applicable to on-site accumulation of hazardous waste by generators. Therefore, the provisions of Section 6.3.5 of these regulations apply to owners or operators who are shipping hazardous wastes generated at the facility or wastes stored at a

non-permitted area of the facility while awaiting on-site treatment or disposal.

Note: A generator who treats, stores or disposes of hazardous waste on-site must comply with the applicable standards and permit requirements set forth in Sections 7, 8, 9, 11, 12 and 13 of these regulations. However, a generator satisfying the provisions of Section 6.3.5 of these regulations may accumulate hazardous waste on-site for ninety (90) days or less and is not required to comply with the applicable standards and permit requirements set forth in Sections 7, 8, 9, 11, 12, and 13 of these regulations.

6.1.1.c. Any person who imports hazardous waste into West Virginia shall comply with the standards applicable to generators established in Section 6 of these regulations.

6.1.1.d. A farmer who generates waste pesticides which are hazardous wastes and who complies with all the requirements of Section 6.5.2 of these regulations is not required to comply with the standards of this Section and Sections 7, 8, 9, 10, and 11 of these regulations with respect to such pesticides.

6.1.1.e. A person who generates a hazardous waste, as defined in Section 3 of these regulations, is subject to the compliance requirements and penalties prescribed in Sections 14, 15, and 16 of the State Act if he does not comply with the requirements of Section 6 of these regulations.

6.1.1.f. An owner or operator who initiates a shipment of hazardous waste from a treatment, storage, or disposal facility must comply with the generator standards established in Section 6 of these regulations.

6.1.2. Hazardous Waste Determination.

6.1.2.a. A person who generates a waste, as defined in Section 3.1.2 of these regulations, shall determine if that waste is a hazardous waste using the following method:

~~6.1.2.a.~~ 6.1.2.b. He shall first determine if the waste is excluded from regulation under Section 3.1.4 of these regulations;

~~6.1.2.b.~~ 6.1.2.c. He shall then determine if the waste is listed as a hazardous waste in Section 3.4 of these regulations;

Note: Even if the waste is listed, the generator still has an opportunity under 40 C.F.R. §260.22 and Section 16.2 of these regulations to demonstrate that the waste from his particular facility or operation is not a hazardous waste.

~~6.1.2.c.~~ 6.1.2.d. For purposes of compliance with 40 C.F.R.

Part 268, or if the waste is not listed as a hazardous waste in Section 3.4 of these regulations, the generator shall determine whether the waste is identified in Section 3.3 of these regulations by either:

~~6.1.2.e.1.6.1.2.d.1.~~ Testing the waste according to the methods set forth in Section 3.3 of these regulations, or according to an equivalent method; or

~~6.1.2.e.2.6.1.2.d.2.~~ Applying knowledge of the hazard characteristics of the waste in light of the materials or the processes used.

~~6.1.2.d.6.1.2.e.~~ Generator may elect to voluntarily declare his wastes as hazardous and subject to these regulations.

6.1.3. EPA Identification Numbers.

6.1.3.a. A generator shall not treat, store, dispose of, transport, or offer for transportation hazardous waste without having received an EPA identification number from the Administrator.

Note: The generator shall submit the request to the chief. Upon receipt of the request, the chief will submit the request to EPA. In turn, EPA shall notify the chief of the assigned EPA Identification Number and it shall be the responsibility of the chief to notify the generator.

6.1.3.b. A generator who has not received an EPA identification number may obtain one by applying to the Administrator using EPA Form 8700-12. Upon receiving the request, the Administrator will assign an EPA identification number to the generator.

6.1.3.c. A generator shall not offer his hazardous waste to transporters or to treatment, storage, or disposal facilities that have not received an EPA identification number.

6.2. The Manifest.

6.2.1. General Requirements.

6.2.1.a. A generator who transports, or offers for transportation, hazardous waste for off-site treatment, storage, or disposal must prepare a manifest, OMB Control Number ~~2000-0404~~ 2050-0039 on EPA Form 8700-22, and, if necessary, EPA Form 8700-22A, according to the requirements adopted in Appendix XIV of these regulations.

6.2.1.b. A generator must designate on the manifest one facility which is permitted to handle the waste described on the

manifest.

6.2.1.c. A generator shall insert on the manifest on Item 16 ("Generator Certification") the following waste minimization certification in addition to the certification which already exists at Item 16:

"Unless I am a small quantity generator who has been exempted by statute or regulation from the duty to make a waste minimization certification under Section 3002(b) of RCRA, I also certify that I have a program in place to reduce the volume and toxicity of waste generated to the degree I have determined to be economically practicable and I have selected the method of treatment, storage, or disposal currently available to me which minimizes the present and future threat to human health and the environment."

6.2.1.d. A generator may also designate on the manifest one alternate facility which is permitted to handle his waste in the event an emergency prevents delivery of the waste to the primary designated facility.

6.2.1.e. If the transporter is unable to deliver the hazardous waste to the designated facility or the alternate facility, the generator must either designate another facility or instruct the transporter to return the waste.

6.2.1.f. The requirements of this Section do not apply to hazardous waste produced by generators of greater than one hundred kilograms (100 kg) but less than one thousand kilograms (1,000 kg) in a calendar month:

6.2.1.f.1. The waste is reclaimed under a contractual agreement pursuant to which:

6.2.1.f.1.A. The type of waste and frequency of shipments are specified in the agreement;

6.2.1.f.1.B. The vehicle used to transport the waste to the recycling facility and to deliver regenerated material back to the generator is owned and operated by the reclaimer of the waste; and

6.2.1.f.2. The generator maintains a copy to the reclamation agreement in his files for a period of at least three (3) years after termination or expiration of the agreement.

6.2.2. Acquisition of Manifest.

6.2.2.a. If the state to which the shipment is manifested (consignment state) supplies the manifest and requires its use, then the generator must use that manifest.

6.2.2.b. If the consignment state does not supply the manifest, but the state in which the generator is located (generator state) supplies the manifest and requires its use, then the generator must use the state's manifest.

6.2.2.c. If neither the generator state nor consignment state supplies the manifest, then the generator may obtain the manifest from any source.

6.2.3. Number of Copies. The manifest consists of at least the number of copies which will allow for distribution as follows:

6.2.3.a. The generator will retain a copy;

6.2.3.b. Each transporter will receive a copy;

6.2.3.c. The hazardous waste regulatory agency of the state in which the waste was generated will receive a copy; and

6.2.3.d. The treatment, storage, or disposal facility will receive a copy.

6.2.3.e. The generator is responsible for sending copies to the chief. The chief shall receive a copy of the return manifest within thirty (30) days after the generator received the return copy.

6.2.4. Use of the Manifest.

6.2.4.a. The generator must:

6.2.4.a.1. Sign the manifest certification by hand;

6.2.4.a.2. Obtain the handwritten signature of the initial transporter and date of acceptance of the manifest; and

6.2.4.a.3. Retain one copy, in accordance with Section 6.4.1.a of these regulations.

6.2.4.b. The generator must give the transporter remaining copies of the manifest.

6.2.4.c. For shipments of hazardous waste within the United States solely by water (bulk shipments only), the generator must send three (3) copies of the manifest dated and signed in accordance with Section 6.2 of these regulations to the owner or operator of the designated facility or the last water (bulk shipment) transporter to handle the waste in the United States if exported by water. Copies of the manifest are not required for each transporter.

6.2.4.d. For rail shipments of hazardous waste within the

United States which originate at the site of generation, the generator must send at least three (3) copies of the manifest dated and signed in accordance with Section 6 of these regulations to:

6.2.4.d.1. The next non-rail transporter, if any;

6.2.4.d.2. The designated facility if transported solely by rail; or

6.2.4.d.3. The last rail transporter to handle the waste in the United States if exported by rail.

6.2.4.e. For shipments of hazardous waste to a designated facility in an authorized State which has not yet obtained authorization to regulate that particular waste as hazardous, the generator must assure that the designated facility agrees to sign and return the manifest to the generator, and that any out-of-state transporter signs and forwards the manifest to the designated facility.

6.3. Pre-Transport Requirements.

6.3.1. Packaging. Before transporting hazardous waste or offering hazardous waste for transportation off-site, a generator shall package the waste in accordance with the applicable DOT regulations on packaging under 49 C.F.R. Parts 173, 178, and 179.

6.3.2. Labeling. Before transporting or offering hazardous waste for transportation off-site, a generator shall label the waste in accordance with the applicable DOT regulations on labeling under 49 C.F.R. Part 172.

6.3.3. Marking.

6.3.3.a. Before transporting or offering hazardous waste for transportation off-site, a generator shall mark each package of hazardous waste in accordance with the applicable DOT regulations on hazardous materials under 49 C.F.R. Part 172;

6.3.3.b. Before transporting hazardous waste or offering hazardous waste for transportation off-site, a generator shall mark each container of one hundred and ten (110) gallons or less used in such transportation with the following words and information displayed in accordance with the requirements of 49 C.F.R. §172.304:

6.3.3.b.1. "HAZARDOUS WASTE - Federal Law Prohibits Improper Disposal. If found, contact the nearest police or public safety authority or the U.S. Environmental Protection Agency."

6.3.3.b.2. Generator's name and address.

6.3.3.b.3. Manifest document number.

6.3.4. Placarding. Before transporting hazardous waste or offering hazardous waste for transportation off-site, the generator shall placard or offer the initial transporter the appropriate placards according to DOT regulations for hazardous materials under Subpart F of 49 C.F.R. Part 172.

6.3.5. Accumulation Time.

6.3.5.a. Except small quantity generators as provided in Sections 10.1.3 through 10.1.5, 10.2.5, and 10.2.6 of these regulations, a generator may accumulate hazardous waste on-site for ninety (90) days or less without a permit or without having interim status provided that:

6.3.5.a.1. The waste is placed in containers and the generator complies with Subpart I of 40 C.F.R. Part 265, or the waste is placed in tanks and the generator complies with Subpart J of 40 C.F.R. Part 265 (excluding 40 C.F.R. §§265.197(c) and 265.200). In addition, such a generator is exempt from all the requirements in Subparts G and H of 40 C.F.R. Part 265 (except for 40 C.F.R. §§265.111 and 265.114);

6.3.5.a.2. The date upon which each period of accumulation begins is clearly marked and visible for inspection on each container;

6.3.5.a.3. Each container is properly labeled and marked according to Sections 6.3.2 and 6.3.3 of these regulations;

6.3.5.a.4. While being accumulated, on site, each container and tank is labeled or marked clearly with the words "Hazardous Waste"; and

6.3.5.a.5. The generator complies with the requirements for owners or operators in Subparts C and D of 40 C.F.R. Part 265, ~~and with~~ 40 C.F.R. §265.16 and 40 C.F.R. §268.7(a)(4).

6.3.5.b. A generator who accumulates hazardous waste for more than ninety (90) days is an operator of a storage facility and is subject to the applicable requirements of Sections 4, 8, and 12 of these regulations, the permit requirements of Section 11 of these regulations and 40 C.F.R. Part 265 unless he has been granted an extension to the ninety (90) day period. Such an extension may be granted by the chief if hazardous wastes must remain on-site for longer than ninety (90) days due to unforeseen, temporary, and uncontrollable circumstances. An extension of up to thirty (30) days may be granted at the discretion of the chief on a case-by-case basis. Before the end of ninety (90) days, or any extension period granted by the chief (not to exceed thirty (30) days), the

generator must either transport all such hazardous waste off-site to a designated facility, or, if held on-site for more than ninety (90) days, place such hazardous waste in an on-site facility that is either permitted under Section 11 of these regulations or under 40 C.F.R. Part 270 or which has interim status or which is authorized to manage hazardous waste by a state with a hazardous waste program approved by EPA.

6.3.5.c. Satellite Area Accumulation.

6.3.5.c.1. A generator may accumulate as much as fifty-five (55) gallons of hazardous waste or one quart of acutely hazardous waste listed in Section 3.4.4.e of these regulations in containers at or near any point of generation where wastes initially accumulate, which is under the control of the operator of the process generating the waste, without a permit or interim status and without complying with Section 6.3.5.a of these regulations, provided he:

6.3.5.c.1.A. Complies with 40 C.F.R. §§265.171, 265.172, and 265.173(a); and

6.3.5.c.1.B. Marks the containers either with the words "Hazardous Waste" or with other words that identify the contents of the containers.

6.3.5.c.2. A generator who accumulates either hazardous waste or acutely hazardous waste listed in Section 3.4.4.e of these regulations in excess of the amounts listed in Section 6.3.5.c.1 of these regulations at or near any point of generation must, with respect to that amount of excess waste, comply within three (3) days with Section 6.3.5.a of these regulations or other applicable provisions of these regulations. During the three-day period, the generator must continue to comply with Sections 6.3.5.c.1 of these regulations. The generator must mark each container holding the excess accumulation of hazardous waste with the date the excess amount of hazardous waste began accumulating.

6.4. Record Keeping and Reporting.

6.4.1. Record Keeping.

6.4.1.a. A generator shall keep on-site, a copy of each manifest signed in accordance with Section 6.2.4.a of these regulations for three (3) years or until he receives a signed copy from the designated facility which received the waste. This signed copy must be retained as a record for at least three (3) years from the date that the waste was accepted by the initial transporter.

6.4.1.b. A generator shall keep on-site, a copy of each annual or biennial report and exception report for a period of at

least three (3) years from the due date of the report.

Comment: The purpose of requiring a copy of both annual and biennial reports is to indicate that annual reports filed before the effective date of the biennial reporting requirement are within the scope of this recordkeeping requirement for the three-year retention period which follows the effective date of the amendment to Section 6.4.2.a of these regulations, which adopted the biennial reporting requirement in place of the former annual reporting requirement.

6.4.1.c. A generator shall keep on-site, records of any test results, waste analyses, or other determinations made in accordance with Section 6.1.2 of these regulations for at least three (3) years from the date that the waste was last sent to on-site or off-site treatment, storage, or disposal.

6.4.1.d. The periods or retention referred to in Section 6.4 of these regulations are extended automatically during the course of any unresolved enforcement action regarding the regulated activity or as requested by the chief or director.

6.4.2. ~~Annual~~ Biennial Reporting.

6.4.2.a. A generator who ships hazardous waste off-site shall submit ~~an annual~~ a biennial report to the chief on a form prescribed by him, no later than March 1 of each even numbered year for the preceding calendar year. Such report must include, at least, the following information:

6.4.2.a.1. The EPA identification number, name and address of the generator;

6.4.2.a.2. The calendar years covered by the report;

6.4.2.a.3. The EPA identification number, name, and address for each off-site treatment, storage, or disposal facility to which waste was shipped during the previous year; for exported shipments, the report must give the name and address of the foreign facility;

6.4.2.a.4. The name and EPA identification number of each transporter used during the reporting year;

6.4.2.a.5. A description, EPA hazardous waste number, DOT hazard class, and quantity of each hazardous waste shipped off-site. This information must be listed by EPA identification number of each off-site facility to which waste was shipped;

6.4.2.a.6. A description of the efforts undertaken during the year to reduce the volume and toxicity of waste generated;

6.4.2.a.7. A description of the changes in volume and toxicity of waste actually achieved during the year in comparison to previous years to the extent such information is available for years prior to 1984; and

6.4.2.a.8. The certification signed by the generator or authorized representative.

6.4.2.b. Any generator who treats, stores, or disposes of hazardous waste on-site shall submit a annual biennial report covering those wastes in accordance with the provisions of Sections 8 and 11 of these regulations and 40 C.F.R. Part 265. Reporting for exports of hazardous waste not stored or treated before exportation is not required on the biennial report form. A separate annual report requirement is set forth under Section 6.5 of these regulations.

6.4.3. Exception Reporting.

6.4.3.a. A generator of greater than one thousand kilograms (1,000 kg) of hazardous waste in a calendar month shall submit an exception report who does not receive a copy of the manifest with the handwritten signature of the owner or operator of the facility within thirty-five (35) days of the date the waste was accepted by the initial transporter shall contact the transporter or the owner or operator of the designated facility, or both, to determine the status of the hazardous waste.

6.4.3.b. A generator of greater than one thousand kilograms (1,000 kg) of hazardous waste in a calendar month shall submit an exception report to the chief if he has not received a copy of the manifest with the handwritten signature of the owner or operator of the designated facility within forty-five (45) days of the date the waste was accepted by the initial transporter. The exception report must include:

6.4.3.b.1. A legible copy of the manifest for which the generator does not have confirmation of delivery;

6.4.3.b.2. A cover letter signed by the generator or his authorized representative explaining the efforts taken to locate the hazardous waste and the results of those efforts; and

6.4.3.b.3. In case of interstate shipments which originated in the state for delivery to a designated facility in another state, an additional copy of the exception report will be provided to the chief for transmittal to that state or EPA as provided for in 40 C.F.R. §271.128(b)(8).

6.4.3.c. A generator of greater than one hundred kilograms (100 kg) but less than one thousand kilograms (1,000 kg) of hazardous waste in a calendar month who does not receive a copy

of the manifest with the hand written signature of the owner or operator of the designated facility within sixty (60) days of the date the waste was accepted by the initial transporter must submit a legible copy of the manifest, with some indication that the generator has not received confirmation of delivery to the Chief.

~~6.4.3.e.~~ 6.4.3.d. For each manifest that shows a quantity discrepancy of more than ten percent (10%) between the initial and final weights, documentation showing that the variance has been resolved between the a generator of greater than one thousand kilograms (1,000 kg) of hazardous waste in a calander month and the treatment, storage, or disposal facility shall be attached to the chief's copy of the manifest.

6.4.4. Additional Reporting. The chief, as he deems necessary, may require generators to furnish additional reports concerning the quantities and disposition of hazardous wastes identified or listed in Section 3 of these regulations.

6.5. Special Conditions.

6.5.1. International Shipments.

6.5.1.a. Any person who exports hazardous waste to a foreign country or imports hazardous waste from a foreign country into West Virginia shall comply with 40 C.F.R. Part 262 and Section 6.5 of these regulations.

6.5.1.b. When shipping hazardous waste outside the United States the generator shall:

6.5.1.b.1. Notify the chief and the Administrator in writing four (4) weeks before the initial shipment of hazardous waste to each country in each calendar year. The waste shall be identified by its EPA hazardous waste identification number and its DOT shipping description. The name and address of the foreign consignee shall be included in the notice;

6.5.1.b.2. Send the original of the notice to the Office of International Activities (A-106), U.S. Environmental Protection Agency, Washington D.C. 20460, and one copy to the chief;

6.5.1.b.3. Require that the foreign consignee confirm the delivery of the waste in the foreign country. A copy of the manifest, signed by the foreign consignee, may be used for this purpose;

6.5.1.b.4. Meet the requirements under Section 6.2.2 of these regulations for the manifest, except that:

6.5.1.b.4.A. In place of the name, address, and EPA

identification number of the designated facility, the name and address of the foreign consignee shall be used;

6.5.1.b.4.B. The generator shall identify the point of departure from the United States through which the waste shall travel before entering a foreign country.

6.5.1.c. A generator shall file an exception report, if:

6.5.1.c.1. He has not received a copy of the manifest signed by the transporter stating the date and place of departure from the United States within forty-five (45) days from the date it was accepted by the initial transporter; or

6.5.1.c.2. Within ninety (90) days from the date the waste was accepted by the initial transporter, the generator has not received written confirmation from the foreign consignee that the hazardous waste was received.

6.5.1.d. When importing hazardous waste, a person shall meet all requirements of Section 6.2.2 of these regulations for the manifest except that:

6.5.1.d.1. In place of the generator's name, address, and EPA identification number, the name and address of the foreign generator, and the importer's name, address, and EPA identification number shall be used; and

6.5.1.d.2. In place of the generator's signature on the certification statement, the U.S. importer or his agent shall sign and date the certification and obtain the signature of the initial transporter.

6.5.2. Farmers. A farmer disposing of waste pesticides from his own use which are hazardous wastes is not required to comply with the standards in Section 6 of these regulations or other standards in Section 7, 8, 11, or 12 of these regulations, or 40 C.F.R. Parts 265 for those wastes, provided he triple rinses each empty pesticide container in accordance with Section 3.1.7.e of these regulations and disposes of the pesticide residues on his own farm in a manner consistent with the disposal instructions on the pesticide label.

§47-35-7. Land Disposal Restrictions.

7.1. The director hereby adopts and incorporates by reference the provisions contained in Part 268 of 40 C.F.R. as published in the Code of Federal Regulations with the following modifications:

7.1.1. Wherever the term Administrator or Regional Administrator is used, the term shall have the meaning of the director of the Division of Natural Resources.

7.1.2. Wherever the term Environmental Protection Agency or EPA is used, the shall have the meaning of the Division of Natural Resources.

§47-35-8. Standards for Owners and Operators of Hazardous Waste Treatment, Storage, and Disposal Facilities; Liability Coverage.

8.1. General, Purpose, Scope, and Applicability.

8.1.1. The purpose of Section 8 of these regulations is to establish minimum standards which define the acceptable management of hazardous waste.

8.1.2. The standards in Section 8 of these regulations apply to owners and operators of all facilities which treat, store, or dispose of hazardous waste except as Section 8.1.5 of these regulations provides otherwise. In addition to the standards in Section 8 of these regulations, the regulations in Title 45, Air Pollution Control Commission, Series 25 (45 C.S.R. 25) apply to management facilities which may emit hazardous waste or the constituents thereof to the atmosphere including incineration facilities except as Section 8.1.5 of these regulations provides otherwise. For purposes of Section 8 of these regulations, the following persons are considered to be incinerating hazardous waste:

8.1.2.a. Owners or operators of hazardous waste incinerators as defined in Section 2 of these regulations; and

8.1.2.b. Owners or operators of boilers or industrial furnaces used to destroy the wastes.

8.1.3. The requirements of Section 8 of these regulations apply to a person disposing of hazardous waste by means of underground injection only to the extent that they are required to comply with certain portions of Section 8 of these regulations under the underground injection control program established pursuant to the Water Pollution Control Act.

8.1.4. The requirements of Section 8 of these regulations 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 hazardous waste management permit by rule granted to such a person under Section 11.8 of these regulations.

8.1.5. The requirements of Section 8 of these regulations do not apply to:

8.1.5.a. The owner or operator of a facility managing recyclable materials described in Section 3.1.6.b and 3.1.6.c of these regulations (except in cases or situations in which the

requirements of Section 3 of these regulations are referred to in Section 9 of these regulations);

8.1.5.b. A generator accumulating waste on-site in compliance with Section 6.3.5 of these regulations provided the applicable requirements of Sections 3.1.6 and 10 of these regulations are complied with;

8.1.5.c. A farmer disposing of waste pesticides from his own use in compliance with Section 6.5.2 of these regulations;

8.1.5.d. The owner or operator of a totally enclosed treatment facility as defined in Section 2 of these regulations;

8.1.5.e. The owner or operator of an elementary neutralization unit or a wastewater treatment unit as defined in Section 2 of these regulations;

8.1.5.f. A transporter storing manifested shipments of hazardous waste in containers meeting the requirements of Section 6.3.1 of these regulations at a transfer facility for a period of ten (10) days or less;

8.1.5.g. Except as provided in Section 8.1.5.g.2 of these regulations, a person engaged in treatment or containment activities during immediate response to any of the situations listed in Section 8.1.5.g.1 of these regulations.

8.1.5.g.1. Immediate response situations include:

8.1.5.g.1.A. A discharge of hazardous waste;

8.1.5.g.1.B. An imminent and substantial threat of a discharge of a hazardous waste; or

8.1.5.g.1.C. A discharge of a material which, when discharged, becomes a hazardous waste.

8.1.5.g.2. An owner or operator of a facility otherwise regulated by Section 8.1.5 of these regulations must comply with all applicable requirements of Sections 8.3 and 8.4 of these regulations.

8.1.5.g.3. Any person who is covered by Section 8.1.5.g.1 of these regulations and who continues or initiates hazardous waste treatment or containment activities after the immediate response is over is subject to all applicable requirements of the State Act.

8.1.5.h. The addition of absorbent material to hazardous waste in a container or the addition of hazardous waste to absorbent material in a container, provided that these actions

occur at the time hazardous waste is first placed in the container and Sections 8.2.8.b, 8.7.2, and 8.7.3 of these regulations are complied with.

8.1.6. Relation to Interim Status Standards. A facility owner or operator shall comply with the requirements of Section 10 of the State Act, Section 11.3.4 of these regulations, and the corresponding federal requirements of Subpart G of 40 C.F.R. Part 270 in lieu of the regulations of Section 8 of these regulations until final administrative disposition of the permit application is made, except as otherwise noted in these regulations.

8.1.7. Imminent Hazard Section. Notwithstanding any other provisions of these regulations, enforcement actions may be brought pursuant to Section 17 of the State Act.

8.2. General Facility Standards.

8.2.1. Applicability. The regulations in Section 8.2 of these regulations apply to owners and operators of all hazardous waste facilities, except as provided in Section 8.1 of these regulations.

8.2.2. Identification Number. Every facility owner or operator must apply to EPA for an EPA identification number in accordance with the EPA notification procedures.

8.2.3. Required Notices.

8.2.3.a. The owner or operator of a facility that has arranged to receive hazardous waste from a foreign source must notify the chief in writing at least four (4) weeks in advance of the date the waste is expected to arrive at the facility. Notice of subsequent shipments of the same waste from the foreign source is not required.

8.2.3.b. The owner or operator of a facility that receives hazardous waste from an off-site source (except where the owner or operator is also the generator) must inform the generator in writing that the facility has the appropriate permit(s) for and will accept, the waste the generator is shipping. The owner or operator must keep a copy of this written notice as part of the operating record.

8.2.3.c. Before transferring ownership or operation of a facility during its operating life, or of a disposal facility during the post-closure period, the owner or operator must notify the new owner or operator in writing of all applicable requirements.

8.2.3.d. An owner's or operator's failure to notify the new owner or operator of the requirements of Section 8 of these

regulations in no way relieves the new owner or operator of the obligation to comply with all applicable requirements.

8.2.4. General Waste Analysis.

8.2.4.a. Before an owner or operator treats, stores, or disposes of any hazardous waste or nonhazardous waste if applicable under Section 8.6.4.e of these regulations, a detailed chemical and physical analysis of a representative sample of the waste must be obtained. The method of analysis may be found in SW-846 as defined in Section 2 of these regulations. Appendix III of these regulations contain the analytical procedures contained in SW-846.

8.2.4.a.1. At a minimum, the analysis must contain all the information which must be known to treat, store, or dispose of the waste in accordance with the requirements of Section 8 of these regulations or with the conditions of a permit issued under Section 11 of these regulations.

Comment: Section 11.5 of these regulations requires that the waste analysis plan be submitted with Part B of the permit application.

8.2.4.a.2. The analysis may include data developed under Section 3 of these regulations, and existing published or documented data on the hazardous waste or on hazardous waste generated from similar processes.

Comment: For example, the facility's records of analyses performed on the waste before the effective date of these regulations, or studies conducted on hazardous waste generated from processes similar to that which generated the waste to be managed at the facility, may be included in the data base required to comply with Section 8.2.4.a of these regulations. The owner or operator of an off-site facility may arrange for the generator of the hazardous waste to supply part of the information required by Section 8.2.4.a of these regulations, except as otherwise specified under 40 C.F.R. §§268.7(b) and (c). If the generator does not supply the information, and the owner or operator chooses to accept a hazardous waste, the owner or operator is responsible for obtaining the information required to comply with this Section.

8.2.4.a.3. The facility's records of analyses performed on the waste before the effective date of these regulations, or studies conducted on hazardous waste generated from processes similar to that which generated the waste to be managed at the facility, may be included in the data base required to comply with Section 8.2.4.a.1 of these regulations. The owner or operator of an off-site facility may arrange for the generator of the hazardous waste to supply part or all of the information required by Section 8.2.4.a.1 of these regulations, except as otherwise specified in 40 C.F.R. §§268.7(b) and (c). If the

generator does not supply the information, and the owner or operator chooses to accept a hazardous waste, the owner or operator is responsible for obtaining the information required to comply with Section 8.2.4 of these regulations.

8.2.4.a.4. The analysis must be repeated as necessary to ensure that it is accurate and up-to-date. At a minimum, the analysis must be repeated:

8.2.4.a.4.A. When the owner or operator is notified, or has reason to believe, that the process or operation generating the hazardous waste or nonhazardous waste if applicable under Section 8.6.4.e of these regulations, has changed; and

8.2.4.a.4.B. For off-site facilities, when the results of the inspection required in Section 8.2.4.a.5 of these regulations indicate that the hazardous waste received at the facility does not match the waste designated on the accompanying manifest or shipping paper.

8.2.4.a.5. The owner or operator of an off-site facility must inspect and, if necessary, analyze each hazardous waste movement received at the facility to determine whether it matches the identity of the waste specified on the accompanying manifest or shipping paper.

8.2.4.b. The owner or operator must develop and follow a written waste analysis plan which describes the procedures which will comply with Section 8.2.4.a of these regulations. This plan must be kept at the facility. At a minimum, the plan must specify:

8.2.4.b.1. The parameters for which each hazardous waste, or nonhazardous waste if applicable under Section 8.6.4.e of these regulations will be analyzed and the rationale for the selection of the parameters (i.e., how analysis for these parameters will provide sufficient information on the waste's properties to comply with Section 8.2.4.a of these regulations);

8.2.4.b.2. The test methods which will be used to test for these parameters;

8.2.4.b.3. The sampling method which will be used to obtain a representative sample of the waste to be analyzed. A representative sample may be obtained using either:

8.2.4.b.3.A. One of the sampling methods described in Appendix I of these regulations; or

8.2.4.b.3.B. An equivalent sampling method.

8.2.4.b.4. The frequency which the initial analysis of the waste will be reviewed or repeated to ensure that the analysis

is accurate and up-to-date.

8.2.4.b.5. For off-site facilities, the waste analyses that hazardous waste generators have agreed to supply.

8.2.4.b.6. Where applicable, the methods which will be used to meet the additional waste analysis requirements for specific waste management methods as specified in Sections 8.2.8 and 8.11.15 of these regulations and in Title 45, Air Pollution Control Commission, Series 25 (45 C.S.R. 25) and under 40 C.F.R. Part 268.7.

8.2.4.b.7. For surface impoundments exempted from land disposal restrictions under 40 C.F.R. §268.4(a), the procedures and schedules for:

8.2.4.b.7.A. The sampling of impoundment contents;

8.2.4.b.7.B. The analysis of test data; and,

8.2.4.b.7.C. The annual removal of residues which are not delisted under 40 C.F.R. §260.22 or which exhibit a characteristic of hazardous waste and either:

8.2.4.b.7.C.i. Do not meet applicable treatment standards of 40 C.F.R. Part 268, Subpart D; or

8.2.4.b.7.C.ii. Where no treatment standards have been established;

8.2.4.b.7.C.ii.1. Such residues are prohibited from land disposal under 40 C.F.R. §268.32 or RCRA Section 3004(d); or

8.2.4.b.7.C.ii.2. Such residues are prohibited from land disposal under 40 C.F.R. §268.33(f).

8.2.4.c. For off-site facilities, the waste analysis plan required in Section 8.2.4.b of these regulations must also specify the procedures which will be used to inspect and, if necessary, analyze each movement of hazardous waste received at the facility to ensure that it matches the identity of the waste designated on the accompanying manifest or shipping paper. At a minimum, the plan must describe:

8.2.4.c.1. The procedures which will be used to determine the identity of each movement of waste managed at the facility; and

8.2.4.c.2. The sampling method which will be used to obtain a representative sample of the waste to be identified, if the identification method includes sampling.

8.2.5. Security.

8.2.5.a. The owner or operator must prevent the unknowing entry, and minimize the possibility for the unauthorized entry, of persons or livestock onto the active portion of the facility unless it can be demonstrated to the chief that:

8.2.5.a.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 the facility;

8.2.5.a.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 Section 8 of these regulations;

8.2.5.a.3. The owner or operator who wishes to make the demonstration referred to above must do so with Part B of the permit application.

8.2.5.b. Unless the owner or operator has made a successful demonstration under Sections 8.2.5.a.1 and 8.2.5.a.2 of these regulations, a facility must have:

8.2.5.b.1. A twenty-four (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

8.2.5.b.2.A. An artificial or natural physical barrier (e.g., a fence in good repair or a fence combined with a cliff), which completely surrounds the active portions of the facility; and

8.2.5.b.2.B. A means to control entry, at all times, through the gates or other entrances to the active portion of the facility (e.g., an attendant, television monitors, locked entrance, or controlled roadway access to the facility).

8.2.5.b.3. The requirements of Section 8.2.5.b of these regulations 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 Section 8.2.5.b.1 or 8.2.5.b.2 of these regulations.

8.2.5.c. Unless the owner or operator has made a successful demonstration under Sections 8.2.5.a.1 and 8.2.5.a.2 of these regulations, a sign with the legend, "DANGER - UNAUTHORIZED PERSONNEL KEEP OUT," must be posted at each entrance to the active portion of a facility, and at other locations, in sufficient

numbers to be seen from any approach to this active portion. The legend must be written in English and in any other language predominant in the area surrounding the facility, and must be legible from a distance of at least twenty-five (25) feet. Existing signs with a legend other than "DANGER - UNAUTHORIZED PERSONNEL KEEP OUT" may be used if the legend on the sign indicates that only authorized personnel are allowed to enter the active portion, and that entry onto the active portion can be dangerous.

8.2.6. General Inspection Requirements.

8.2.6.a. The owner or operator must inspect the facility for malfunctions and deterioration, operator errors, and discharges which 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.

8.2.6.b. Inspection Schedule.

8.2.6.b.1. The owner or operator must develop and follow a written schedule for inspecting monitoring equipment, safety and emergency equipment, security devices, and operating and structural equipment (such as dikes and sump pumps) that are important to preventing, detecting, or responding to environmental or human health hazards.

8.2.6.b.2. This schedule must be kept at the facility.

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

8.2.6.b.4. The frequency of inspection may vary for the items on the schedule. However, it should be based on the rate of possible deterioration of the equipment and the probability of an environmental or human health incident if the deterioration or malfunction or any operator error goes undetected between inspections. Areas subject to spills, such as loading and unloading areas, must be inspected daily when in use. At a minimum, the inspection must include the terms and frequencies called for in 40 C.F.R. §263.347 and Sections 8.7.6, 8.8.5, ~~8.8.4~~, ~~8.8.6~~, 8.9.5, 8.10.3, ~~8.10.4~~, 8.10.5, 8.11.3, and 8.14.3 of these regulations, where applicable.

8.2.6.b.5. A copy of the inspection schedule as required by Section 8.2.6.b of these regulations must be submitted to the chief with Part B of the permit application to ensure that it adequately protects human health and the environment. As part of this review, the chief may modify or amend the schedule as may be

necessary.

8.2.6.c. The owner or operator must remedy any deterioration or malfunction of equipment or structures which the inspection reveals to ensure that the problem does not lead to an environmental or human health hazard. A schedule for remedial action may be allowed by the chief. Where a hazard is imminent or has already occurred, remedial action must be taken immediately.

8.2.6.d. The owner or operator must record inspections in an inspection log or summary. These records must be kept for the life of the facility. At a minimum, these records must include the date and time of the inspection, the name of the inspector, a notation of the observations made, and the date and nature of any repairs or other remedial actions.

8.2.7. Personnel Training.

8.2.7.a. Training Program.

8.2.7.a.1. Facility personnel must successfully complete a program of classroom instruction or on-the-job training that teaches them to perform their duties in a way that ensures the facility's compliance with the requirements of Section 8 of these regulations. The owner or operator must ensure that this program includes all the elements described in the document required under Section 8.2.7.d.3 of these regulations.

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

8.2.7.a.3. At a minimum, the training program must be designed to ensure that the facility personnel are able to respond effectively to an emergency by familiarizing them with emergency procedures, emergency equipment and emergency systems, including where applicable:

8.2.7.a.3.A. Procedures for using, inspecting, repairing, and replacing facility emergency and monitoring equipment;

8.2.7.a.3.B. Key parameters for automatic waste feed cutoff systems;

8.2.7.a.3.C. Communications or alarm systems;

8.2.7.a.3.D. Response to fires or explosions;

8.2.7.a.3.E. Response to groundwater contamination

incidents; and

8.2.7.a.3.F. Shutdown of operations.

8.2.7.a.4. An outline of the training program required by Section 8.2.7.a of these regulations and a description of how the training program is designed to meet actual job tasks, must be submitted to the chief with Part B of the permit application.

8.2.7.b. Facility personnel must successfully complete the program required in Section 8.2.7.a of these regulations within six (6) months after the date of their employment or assignment to a facility, or to a new position at a facility, whichever is later. Employees hired after the effective date of these regulations must not work in unsupervised positions until they have completed the requirements of Section 8.2.7.a of these regulations.

8.2.7.c. Facility personnel must take part in an annual review of the initial training required in Section 8.2.7.a of these regulations.

8.2.7.d. The owner or operator must maintain the following documents and records at the facility:

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

8.2.7.d.2. A written job description for each position listed under Section 8.2.7.d.1. of these regulations. This description may be consistent in its degree of specificity with descriptions for other similar positions in the same company location or bargaining unit, but must include the requisite skill, education, or other qualifications and duties of employees assigned to each position.

8.2.7.d.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 Section 8.2.7.d.1 of these regulations.

8.2.7.d.4. Records that document that the training or job experience required under Section 8.2.7.a, 8.2.7.b, and 8.2.7.c of these regulations has been given to, and completed by, facility personnel.

8.2.7.e. Training records on current personnel must be kept until closure of the facility; training records on former employees must be kept for three (3) years from the date the employee last worked at the facility. Personnel training records may accompany personnel transferred within the same company.

8.2.8. General Requirements for Ignitable, Reactive, or Incompatible Wastes.

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

8.2.8.b. Where specifically required by other sections of these regulations, the owner or operator of a facility that treats, stores, or disposes ignitable or reactive waste, or mixes incompatible wastes and other materials, must take precautions to prevent reactions which:

8.2.8.b.1. Generate extreme heat or pressure, fire or explosions, or violent reactions;

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

8.2.8.b.3. Produce uncontrolled flammable fumes or gases in sufficient quantities to pose a risk of fire or explosions;

8.2.8.b.4. Damage the structural integrity of the device or facility; or

8.2.8.b.5. Through other like means threaten human health or the environment.

8.2.8.c. When required to comply with Sections 8.2.8.a and 8.2.8.b of these regulations, the owner or operator must document that compliance. This documentation may be based on references to published scientific or engineering literature, data from trial tests (e.g., bench scale or pilot scale tests), waste analyses (as specified in Section 8.2.4 of these regulations), or the results of the treatment of similar wastes by similar treatment processes and under similar operating conditions.

8.3. Preparedness and Prevention.

8.3.1. Applicability. The regulations in Section 8.3 of these regulations apply to owners and operators of all hazardous waste management facilities except as Section 8.1 of these

regulations provides otherwise.

8.3.2. Design and Operation of Facility. Facilities shall be designed, constructed, maintained, and operated to minimize the possibility of fire, explosion, or any unplanned sudden or non-sudden release of hazardous waste or hazardous waste constituents to air, soil, or State waters which could threaten human health or the environment.

8.3.3. Required Equipment. All facilities shall be equipped with the following, unless it can be demonstrated to the chief in accordance with Section 11.5 of these regulations at the time of submission of Part B of the permit application, that none of the hazards posed by the waste handled at the facility could require a particular kind of equipment specified below:

8.3.3.a. An internal communications or alarm system capable of providing immediate emergency instruction (voice or signal) to facility personnel.

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

8.3.3.c. Portable fire extinguishers, fire control equipment, spill control equipment, and decontamination equipment.

8.3.3.d. Water at adequate volume and pressure to supply expected fire fighting demands, foam producing equipment, automatic sprinklers, or water spray systems.

8.3.4. Testing and Maintenance of Equipment. All required facility communications or alarms systems, fire protection equipment, spill control equipment, and decontamination equipment shall be tested and maintained as necessary to assure its proper operation in time of emergency. A record of tests or inspections will be maintained on a log at the facility or other reasonably accessible and convenient location.

8.3.5. Access to Communications or Alarm Systems.

8.3.5.a. Whenever hazardous waste is being poured, mixed, spread, or otherwise handled, all personnel involved in the operation shall have immediate access to an internal alarm or emergency communication device, either directly or through visual or voice contact with another employee, unless such device is not required under Section 8.3.3 of these regulations.

8.3.5.b. If there is ever just one employee on the premises while the facility is operating, there must be immediate

access to a device, such as a telephone (immediately available at the scene of operation) or a hand-held two-way radio, capable of summoning external emergency assistance, unless the chief has ruled that such device is not required under Section 8.3.3 of these regulations.

8.3.6. Required Aisle Space. The owner or operator shall maintain aisle space to allow the unobstructive movement of personnel, fire protection equipment, spill control equipment, and decontamination equipment to any area of the facility operation in an emergency, unless it can be demonstrated to the chief in accordance with Section 11.5 of these regulations that aisle space is not needed for any of these purposes.

Comment: Any owner or operator who wishes to make the demonstration referred to above must do so with Part B of the permit application.

8.3.7. Arrangements With Local Authorities.

8.3.7.a. The owner or operator shall attempt to make the following arrangements, as appropriate, for the type of waste handled at the facility and the potential need for the services of these organizations.

8.3.7.a.1. Arrangements to familiarize police, fire departments, and emergency response teams with the layout of the facility, properties of hazardous waste handled at the facility and associated hazards, places where facility personnel would normally be working, entrances to and roads inside the facility, and possible evacuation routes.

8.3.7.a.2. Where more than one police or fire department might respond to an emergency, agreements designating primary emergency authority to a specific police and a specific fire department, and agreements with any others to provide support to the primary emergency authority.

8.3.7.a.3. Agreements with state emergency response teams, emergency response contractors, and equipment suppliers.

8.3.7.a.4. Arrangements to familiarize local hospitals with the properties of hazardous waste handled at the facility and types of injuries or illnesses which could result from fire, explosions, or releases at the facility.

8.3.7.b. Where state or local authorities decline to enter into such arrangements, the owner or operator shall document the refusal in the operating record.

8.4. Contingency Plan and Emergency Procedures.

8.4.1. Applicability. The regulations of Section 8.4 of these regulations apply to owners and operators of all hazardous waste facilities except as Section 8.1 of these regulations provides otherwise.

8.4.2. Purpose and Implementation of Contingency Plan.

8.4.2.a. Each owner or operator shall have a contingency plan for the 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 release of hazardous waste or hazardous waste constituents to air, soil, or State waters.

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

8.4.3. Content of Contingency Plan.

8.4.3.a. The contingency plan shall describe the actions that facility personnel shall take to comply with Sections 8.4.2 and 8.4.7 of these regulations in response to fires, explosions, or any unplanned sudden or non-sudden release of hazardous waste or hazardous waste constituents to air, soil, or State waters.

8.4.3.b. The owner or operator has already prepared a Spill Prevention, Control, and Countermeasures (SPCC) Plan in accordance with 40 C.F.R. Part 112 or 1510, or some other emergency or contingency plan. amendments to the plan need only to incorporate hazardous waste management provisions that are sufficient to comply with the requirements of Section 8.4 of these regulations.

8.4.3.c. The plan shall describe arrangements agreed to by local police departments, fire departments, hospitals, contractors, and State and local emergency response teams to coordinate emergency services, as required.

8.4.3.d. The plan shall list names, addresses, and office and home phone numbers of all persons qualified to act as emergency coordinators and this list shall be kept up-to-date. Where more than one person is listed, one shall be named a primary emergency coordinator and others shall be listed in the order in which they will assume responsibilities as alternates. For new facilities, the list is to be supplied at the time of certification.

8.4.3.e. The plan shall include a list of all required emergency equipment at the facility. 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.

8.4.3.f. 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 releases of hazardous waste, hazardous waste constituents, or fires.

8.4.4. Copies of Contingency Plan. A copy of the contingency plan and all revisions to the plan shall be:

8.4.4.a. Maintained at the facility;

8.4.4.b. Submitted to all local police departments, fire departments, hospitals, and State and local emergency response teams that may be called upon to provide emergency services.

Comment: The contingency plan must be submitted to the chief with Part B of the permit application under Section 11 of these regulations and, after modification or approval, will become a condition of the permit.

8.4.5. Amendment of Contingency Plan. The contingency plan shall be reviewed, and immediately amended if necessary, whenever:

8.4.5.a. The facility permit is revised;

8.4.5.b. The plan fails in an emergency;

8.4.5.c. The facility changes in its design, construction operation, maintenance, or other circumstances -- in a way that materially increases the potential for fires, explosions, or releases of hazardous waste or hazardous waste constituents, or changes the response necessary in an emergency;

8.4.5.d. The list of emergency coordinators changes; or

8.4.5.e. The list of emergency equipment changes.

Comment: A change in the lists of facility emergency coordinators or equipment in the contingency plan constitutes a modification under Section 11.20 of these regulations, to the facility permit to which the plan is a condition.

8.4.6. Emergency Coordinator. At all times, there shall be at least one employee either on the facility premises or on call (i.e., available to respond to an emergency by reaching the facility within a short period of time) and able to reach the area in a short time, with the responsibility for coordinating all emergency response measures. This emergency coordinator shall be

thoroughly familiar with all aspects of the facility 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, the person shall have the authority to commit the resources needed to carry out the contingency plan.

8.4.7. Emergency Procedures.

8.4.7.a. Whenever there is an imminent or actual emergency situation, the emergency coordinator, or the designee when the emergency coordinator is on call, shall immediately:

8.4.7.a.1. Activate internal facility alarms or communication systems, where applicable, to notify all affected facility personnel; and

8.4.7.a.2. Notify appropriate state or local agencies with designated response roles if their help is needed.

8.4.7.b. If there is a release, fire, or explosion, the emergency coordinator shall immediately identify the character, exact sources, amount, and areal extent of any released materials. This may be done by observation or review of facility records or manifests and, if necessary, by chemical analysis.

8.4.7.c. Concurrently, the emergency coordinator shall assess possible hazards to human health or the environment that may result from the release, fire, or explosion. This assessment shall consider both direct and indirect effects of the release, fire, or explosion (e.g., the effect of any toxic, irritating, or asphyxiating gases that are generated, or the effects of any hazardous surface water runoff from water or chemical agents used to control fire and heat-induced explosions).

8.4.7.d. If the emergency coordinator determines that the facility has had a release, fire, or explosion which could threaten human health or to the environment outside the facility the finding shall be reported as follows:

8.4.7.d.1. If the assessment indicates that evacuation of local areas may be advisable, immediate notification shall be given to appropriate local authorities. The emergency coordinator shall be available to help appropriate officials decide whether local areas should be evacuated;

8.4.7.d.2. The emergency coordinator shall immediately notify the County director for the office of emergency services designated as the on-scene coordinator for that area and the Division's Emergency Notification Number 1-800-642-3074. The notification shall include:

8.4.7.d.2.A. Name and telephone number of notifier;

8.4.7.d.2.B. Name and address of facility;

8.4.7.d.2.C. Time and type of incident;

8.4.7.d.2.D. Name and quantity of material(s) involved to the extent known;

8.4.7.d.2.E. The extent of injuries, if any; and

8.4.7.d.2.F. The possible hazards to human health or the environment outside the facility.

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

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

8.4.7.g. Immediately after an emergency, the emergency coordinator shall provide for treating, storing, or disposing of recovered waste, contaminated soil or waters, or any other material that results from a release, fire, or explosion at the facility.

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

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

8.4.7.h.2. All emergency equipment listed in the contingency plan is clean and fit for its intended use before operations are resumed.

8.4.7.i. The owner or operator shall notify the chief that the facility is in compliance with Sections 8.4.7.f through 8.4.7.j of these regulations before operations are resumed in the affected area(s) of the facility.

8.4.7.j. The owner or operator shall note in the operating record the time, date, and details of any incident that requires implementing the contingency plan. Within fifteen (15) days after the incident, a written report shall be submitted to the chief. The report shall include:

8.4.7.j.1. Name, address, and telephone number of the owner or operator;

8.4.7.j.2. Name, address, and telephone number of the facility;

8.4.7.j.3. Date, time, and type of incident;

8.4.7.j.4. Name and quantity of material(s) involved;

8.4.7.j.5. The extent of injuries, if any;

8.4.7.j.6. An assessment of actual or potential hazards to human health or the environment, where this is applicable;

8.4.7.j.7. Estimated quantity and disposition of recovered material that resulted from the incident;

8.4.7.j.8. Measures taken to prevent recurrence of the emergency; and

8.4.7.j.9. Such other information specifically requested by the chief which is reasonably necessary and relevant to the purpose of an operating record.

8.5. Manifest System, Record Keeping, and Reporting.

8.5.1. Applicability. The regulations in Section 8.5 of these regulations apply to owners and operators of both on-site and off-site facilities, except as Section 8.1 of these regulations provides otherwise. Sections 8.5.2, 8.5.3, and 8.5.7 of these regulations do not apply to owners and operators of on-site facilities that do not receive a hazardous waste from off-site sources. Section 8.5.4.b of these regulations only applies to permittees who treat, store, or dispose of hazardous wastes on-site where such wastes were generated.

8.5.2. Use of the Manifest System.

8.5.2.a. If a facility receives hazardous waste accompanied by a manifest, the owner or operator, or his agent, must:

8.5.2.a.1. Sign and date each copy of the manifest, to certify that the hazardous waste covered by the manifest was received;

8.5.2.a.2. Note any significant discrepancies in the manifest as defined in Section 8.5.3 of these regulations on each copy of the manifest;

8.5.2.a.3. Immediately give the transporter at least one copy of the signed manifest;

8.5.2.a.4. Within thirty (30) days after the delivery, send a copy of the manifest to the generator; and

8.5.2.a.5. Retain at the facility a copy of each manifest for at least three (3) years from the date of delivery.

8.5.2.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, must:

8.5.2.b.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;

8.5.2.b.2. Note any significant discrepancies (as defined in Section 8.5.3 of these regulation) in the manifest or shipping paper (if the manifest has not been received) on each copy of the manifest or shipping paper;

8.5.2.b.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);

8.5.2.b.4. Within thirty (30) days after the delivery, send a copy of the signed and dated manifest to the generator; however, if the manifest has not been received within thirty (30) days after delivery, the owner or operator, or his agent, must send a copy of the shipping paper signed and dated to the generator; and

8.5.2.b.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 (3) years from the date of delivery.

8.5.2.c. Whenever a shipment of hazardous waste is initiated from a facility, the owner or operator of that facility must comply with the requirements of Section 6 of these regulations.

8.5.3. Manifest Discrepancies. Manifest discrepancies are differences between the quantity or type of hazardous waste designated on the manifest or shipping paper and the quantity or type of hazardous waste a facility actually receives.

8.5.3.a. Significant discrepancies in quantity are:

8.5.3.a.1. For bulk waste, variations greater than ten percent (10%) in weight; and

8.5.3.a.2. For batch waste, any variation in piece count, such as a discrepancy of one drum in a truckload.

8.5.3.b. 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.

8.5.3.c. Upon discovery of a significant discrepancy, the owner or operator must attempt to reconcile the discrepancy with the waste generator or transporter (e.g., with telephone conversations). If the discrepancy is not resolved within fifteen (15) days after receiving the waste, the owner or operator must immediately submit to the chief a letter describing the discrepancy and attempts to reconcile it and a copy of the manifest or shipping paper at issue.

8.5.4. Operating Record.

8.5.4.a. The owner or operator shall keep a written operating record at the facility.

8.5.4.b. The following information shall be recorded, as it becomes available, and maintained in the operating record until closure of the facility:

8.5.4.b.1. A description and the quantity of each hazardous waste received and the method(s) and date(s) or its treatment, storage, or disposal at the facility, as required by Appendix X of these regulations;

8.5.4.b.2. The location of each hazardous waste within the facility and the quantity of each location. For disposal facilities, the location and quantity of each hazardous waste must be recorded on a map or diagram of each cell or disposal area. For all facilities, this information must include cross-references to specific manifest document numbers, if the waste was accompanied by a manifest;

8.5.4.b.3. Records and results of waste analyses performed as specified in Sections 8.2.4 and 8.2.8 of these regulations;

8.5.4.b.4. Summary reports and details of all incidents that require implementing the contingency plan, as required by Section 8.4.7.j of these regulations;

8.5.4.b.5. Records and results of inspections as required by ~~Section 8.2.6~~ Sections 8.2.4, 8.2.8, and 8.11.15 of

these regulations and 40 C.F.R. §§268.4(a) and 268.7.

8.5.4.b.6. Monitoring, testing, or analytical data where required by Sections ~~8.8.2, 8.8.4, 8.8.6,~~ 8.9.5, ~~8.10.4,~~ 8.10.5, 8.11.3, 8.11.10, 8.12.7, 8.12.9, 8.12.11, 8.13, and 8.14.3 of these regulations;

8.5.4.b.7. Monitoring, testing, or analytical data where required by Title 45, Air Pollution Control Commission, Series 25, Section 9 (45 C.S.R. 25 §9);

8.5.4.b.8. All closure cost estimates and, for disposal facilities, all post-closure cost estimates; ~~and~~

8.5.4.b.9. A certification by the permittee no less often than annually that the permittee has a program in place to reduce the volume and toxicity of hazardous waste that he generates to the degree determined by the permittee to be economically practicable and that the proposed method of treatment, storage, or disposal is that practicable method currently available to the permittee which minimizes the present and future threat to human health and the environment;

8.5.4.b.10. Records of the quantities (and date of placement) for each shipment of hazardous waste placed in land disposal units under an extension to the effective date of any land disposal restriction granted pursuant to 40 C.F.R. §268.5, a petition pursuant to 40 C.F.R. §268.6, or a certification under 40 C.F.R. §268.8, and the applicable notice required by a generator under 40 C.F.R. §268.7(a);

8.5.4.b.11. For an off-site treatment facility, a copy of the notice, and the certification and demonstration, if applicable, required by the generator or the owner or operator under 40 C.F.R. §§268.7 or 268.8;

8.5.4.b.12. For an on-site treatment facility, the information contained in the notice (except the manifest number), and the certification and demonstration if applicable, required by the generator or the owner or operator under 40 C.F.R. §§268.7 or 268.8;

8.5.4.b.13. For an off-site land disposal facility, a copy of the notice, and the certification and demonstration if applicable, required by the generator or the owner or operator of a treatment facility under 40 C.F.R. §§268.7 or 268.8, whichever is applicable; and

8.5.4.b.14. For an on-site land disposal facility, the information contained in the notice required by the generator or owner or operator of a treatment facility under 40 C.F.R. §268.7, except for the manifest number, and the certification and

demonstration if applicable, required under 40 C.F.R. §268.8, whichever is applicable.

8.5.4.b.15. For an off-site storage facility, a copy of the notice, and the certification and demonstration if applicable, required by the generator or the owner or operator under 40 C.F.R. §§268.7 or 268.8; and

8.5.4.b.16. For an on-site storage facility, the information contained in the notice (except the manifest number), and the certification and demonstration if applicable, required by the generator or the owner or operator under 40 C.F.R. §§268.7 or 268.8.

8.5.5. Availability, Retention, and Disposition of Records.

8.5.5.a. All records, including plans required under Section 8 of these regulations, shall be furnished upon request and made available at reasonable times for inspection by the chief or any authorized representative, employee or agent of the division.

8.5.5.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 chief.

8.5.5.c. A copy of records of waste disposal locations and quantities under Section 8.5.4.b.2 of these regulations shall be submitted to the chief and the appropriate land authority upon closure of the facility.

8.5.6. ~~Annual~~ Biennial Report. The owner or operator shall prepare and submit a single copy of an ~~annual~~ a biennial report for the preceding year (January 1 - December 31) to the chief by March of each even year. A form prescribed by the chief shall be used for this report. The ~~annual~~ biennial report shall cover facility activities during the previous calendar year and shall include the following information:

8.5.6.a. The EPA identification number, name, and address of the facility;

8.5.6.b. The calendar year covered by the report;

8.5.6.c. For off-site facilities, the EPA identification number of each hazardous waste generator from which the facility received hazardous waste during the previous year; for imported shipments, the report shall give the name and address of the foreign generator;

8.5.6.d. A description and the quantity of each hazardous waste the facility received during the year. For off-site

facilities, this information shall be listed by the EPA identification number of each generator;

8.5.6.e. The method of treatment, storage, or disposal for each hazardous waste;

8.5.6.f. Groundwater monitoring data on a form prescribed by the chief;

8.5.6.g. The most recent closure cost estimate and, for disposal facilities, the most recent post-closure cost estimate; and

8.5.6.h. The certification signed by the owner or operator of the facility or an authorized representative.

8.5.7. Unmanifested Waste Report. If a facility accepts for treatment, storage, or disposal any hazardous waste from an off-site source without an accompanying manifest or shipping paper and if the waste is not excluded from the manifest requirement by Section 10 of these regulations, then the owner or operator shall prepare and submit a single copy of a report to the chief within fifteen (15) days after receiving the waste, on a form prescribed by the chief. The report must be designated "Unmanifested Waste Report" and shall include the following information:

8.5.7.a. The EPA identification number, name and address of the facility;

8.5.7.b. The date the facility received the waste;

8.5.7.c. The EPA identification number, name and address of the generator and the transporter, if available;

8.5.7.d. A description and the quantity of each unmanifested hazardous waste the facility received;

8.5.7.e. The method of treatment, storage, or disposal for each hazardous waste;

8.5.7.f. The certification signed by the owner or operator of the facility or an authorized representative; and

8.5.7.g. A brief explanation of why the waste was unmanifested, if known.

Comment: Small quantities of hazardous waste are excluded from regulation under Section 8.5.7 of these regulations and do not require a manifest. Where a facility receives unmanifested hazardous wastes, the owner or operator must obtain from each generator a certification that the waste qualifies for exclusion. Otherwise, the owner or operator is required to file an

unmanifested waste report for the hazardous waste movement.

8.5.8. Additional Reports. In addition to submitting the ~~annual~~ biennial report and unmanifested waste reports, the owner or operator shall also report to the chief:

8.5.8.a. Releases, fires, and explosions as specified in Section 8.4.7 of these regulations;

8.5.8.b. Facility closure as specified in Section 8.6 of these regulations; and

8.5.8.c. As otherwise required by Sections 8.9, 8.10, 8.11, 8.12, and 8.13 of these regulations.

8.6. Closure and Post-Closure.

8.6.1. Applicability. Except as Section 8.1 of these regulations provides otherwise:

8.6.1.a. Sections 8.6.2 through 8.6.6, 15.3, and 15.4 of these regulations (which concern closure) apply to owners and operators of all hazardous waste management facilities; and

8.6.1.b. Sections 8.6.7 through 8.6.9, 15.3, and 15.4 of these regulations (which concern post-closure care) apply to the owners and operators of:

8.6.1.b.1. All hazardous waste disposal facilities;

8.6.1.b.2. Waste piles and surface impoundments from which the owner or operator intends to remove that wastes at closure to the extent that these Sections are made applicable to such facilities in Sections 8.9.7 and 8.10.9 of these regulations; and

8.6.1.b.3. Tank systems that are required under Section 8.8.8 of these regulations to meet the requirements for landfills.

8.6.2. Closure Performance Standard. The owner or operator must close the facility in a manner that:

8.6.2.a. Minimizes the need for further maintenance;

8.6.2.b. Controls, minimizes, or eliminates, to the extent necessary to protect human health and the environment, post-closure escape of hazardous waste, hazardous constituents, leachate, contaminated runoff, or hazardous waste decomposition products to the State Waters or to the atmosphere; and

8.6.2.c. Complies with the closure requirements of

Section 8.6.2 of these regulations including, but not limited to, the requirements of Sections 8.7.10, 8.8.8, 8.9.7, 8.10.9, 8.11.11, 8.12.11, 8.14.2, 8.14.3, and 8.14.4 of these regulations and Title 45, Air Pollution Control Commission, Series 25, Section 24.01 (45 C.S.R. 25 §24.01).

8.6.3. Closure Plan; Amendment of Plan.

8.6.3.a. Written Plan.

8.6.3.a.1. The owner or operator of a hazardous waste management facility must have a written closure plan. In addition, certain surface impoundments from which the owner or operator intends to remove or decontaminate the hazardous waste at partial or final closure are required by Section 8.9.7.c of these regulations to have a contingent closure plan. The plan must be submitted with Part B of the permit application in accordance with Section 11.5.1 of these regulations and approved by the chief as part of the permit issuance procedures under Section 11 of these regulations and will become a condition of the permit.

8.6.3.a.2. The chief's approval of the plan must ensure that the approved closure plan is consistent with Sections 8.6.2 through 8.6.6 of these regulations, the applicable requirements of Sections 8.7.10, 8.8.8, 8.9.7, 8.9.10, 8.10.9, 8.11.11, 8.12.11, 8.13, 8.14.2, and 13 of these regulations, and the requirements of Title 45, Air Pollution Control Commission, Series 25, Section 24.01 (45 C.S.R. 25 §24.01). Until final closure is completed and certified, a copy of the approved plan and all revisions of the plan must be furnished to the chief upon request (including request by mail).

8.6.3.b. Content of Plan. The plan must identify steps necessary to perform partial or final closure, or both, of the facility at any point during its active life. The closure plan must include at least:

8.6.3.b.1. A description of how each hazardous waste management unit at the facility will be closed in accordance with Section 8.6.2 of these regulations;

8.6.3.b.2. A description of how final closure of the facility will be conducted in accordance with Section 8.6.2 of these regulations. The description must identify the maximum extent of the operations which will be unclosed during the active life of the facility;

8.6.3.b.3. An estimate of the maximum inventory of hazardous waste ever on-site over the active life of the facility and a detailed description of the methods to be used during partial closures and final closure including, but not limited to, methods for removing, transporting, treating, storing, or disposing of all

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

8.6.3.b.4. A detailed description of the steps needed to remove or decontaminate all hazardous waste residues and contaminated containment system components, equipment, structures, and soils during partial or final closure including, but not limited to, procedures for cleaning equipment and removing contaminated soils, methods for sampling and testing surrounding soils, and criteria for determining the extent of decontamination required to satisfy the closure performance standards;

8.6.3.b.5. A detailed description of other activities necessary during the closure period to ensure that all partial closures and final closure satisfy the closure performance standards including, but not limited to, groundwater monitoring, leachate collection, and run-on and runoff control; and

8.6.3.b.6. A schedule for closure of each hazardous waste management unit and for final closure of the facility. The schedule must include, at a minimum, the total time required to close each hazardous waste management unit and the time required for intervening closure activities which will allow tracking of the progress of partial and final closure. For example, in the case of a landfill unit, estimates of the time required to treat or dispose of all hazardous waste inventory and the time required to place a final cover must be included.

8.6.3.b.7. For facilities that use trust funds to establish financial assurance under Section 13 of these regulations, and that are expected to close prior to the expiration of the permit, the closure plan must also include an estimate of the expected year of final closure.

8.6.3.c. Amendment of Plan. The owner or operator must submit a written notification or request for a permit modification to authorize a change in operating plans, facility design, or the approved closure plan in accordance with the procedures in Section 11 of these regulations. The written notification or request must include a copy of the amended closure plan for review or approval by the chief.

8.6.3.c.1. The owner or operator may submit a written notification or request to the chief for a permit modification to amend the closure plan at any time prior to the notification of partial or final closure of the facility.

8.6.3.c.2. The owner or operator must submit a written notification of or request for a permit modification to authorize a change in the approved closure plan whenever:

8.6.3.c.2.A. Changes in operating plans or facility

design affect the closure plan;

8.6.3.c.2.B. There is a change in the expected year of closure, if applicable; or

8.6.3.c.2.C. In conducting partial or final closure activities, unexpected events require a modification of the approved closure plan.

8.6.3.c.3. The owner or operator must submit a written notification of or a request for a permit modification including a copy of the amended closure plan for review or approval at least sixty (60) days prior to the proposed change in facility design or operation, or no later than sixty (60) days after an unexpected event has occurred which has affected the closure plan.

8.6.3.c.4. If an unexpected event occurs during the partial or final closure period, the owner or operator must request a permit modification no later than thirty (30) days after the unexpected event.

8.6.3.c.5. An owner or operator of a surface impoundment who intends to remove all hazardous waste at closure and who is not otherwise required to prepare a contingent closure plan under Section 8.9.7.c of these regulations must submit an amended closure plan to the chief no later than sixty (60) days from the date that the owner or operator or the chief determines that the hazardous waste management unit must be closed as a landfill, subject to the requirements of Section 8.11.11 of these regulations, or no later than thirty (30) days from that date if the determination is made during partial or final closure.

8.6.3.c.6. The owner or operator of a waste pile who intends to remove all hazardous waste at closure must submit an amended closure plan to the chief no later than sixty (60) days from the date that the owner or operator or the chief determines that the hazardous waste management unit must be closed as a landfill, subject to the requirements of Section 8.11.11 of these regulations, or no later than thirty (30) days from that date if the determination is made during partial or final closure.

8.6.3.c.7. The chief will approve, disapprove, or modify the amended plan in accordance with the procedures in Section 11 of these regulations. In accordance with Section 11.5.1 of these regulations, the approved closure plan will become a condition of any permit issued.

8.6.3.c.8. The chief may request modifications to the plan under the conditions described in Section 8.6.3.c.2 of these regulations. The owner or operator must submit the modified plan within sixty (60) days of the chief's request, or within thirty (30) days if the change in facility conditions occurs during

partial or final closure. Any modifications requested by the chief will be approved in accordance with the procedures in Section 11 of these regulations.

8.6.3.d. Notification of Partial Closure and Final Closure.

8.6.3.d.1. The owner or operator must notify the chief in writing at least sixty (60) days prior to the date on which he expects to begin closure of a surface impoundment, a waste pile, or a land treatment or landfill unit or the final closure of a facility with such a unit. The owner or operator must notify the chief in writing at least forty-five (45) days prior to the date on which he expects to begin final closure of a facility with only treatment or storage tanks, container storage, or incinerator units to be closed.

8.6.3.d.2. The date when he "expects to begin closure" must be either:

8.6.3.d.2.A. No later than thirty (30) days after the date on which any hazardous waste management unit receives the known final volume of hazardous waste or, if there is a reasonable possibility that the hazardous waste management unit will receive additional hazardous wastes, no later than one (1) year after the date on which the unit received the most recent volume of hazardous waste. If an owner or operator of a hazardous waste management unit can demonstrate to the chief that the hazardous waste management unit or facility has the capacity to receive additional hazardous wastes and that he has taken and will continue to take all steps to prevent threats to human health and the environment, including compliance with all applicable permit requirements, the chief may approve an extension to this one-year limit; or

8.6.3.d.2.B. For units meeting the requirements of Section 8.6.4.e of these regulations, no later than thirty (30) days after the date on which the hazardous waste management unit receives the known final volume of nonhazardous wastes, or if there is a reasonable possibility that the hazardous waste management unit will receive additional nonhazardous wastes, no later than one (1) year after the date on which the unit received the most recent volume of nonhazardous wastes. If the owner or operator can demonstrate to the chief that the hazardous waste management unit has the capacity to receive additional nonhazardous wastes and he has taken, and will continue to take, all steps to prevent threats to human health and the environment, including compliance with all applicable permit requirements, the chief may approve an extension to this one-year limit.

8.6.3.d.3. If the facility's permit is terminated, or if the facility is otherwise ordered by judicial decree or final order under Section 3008 of RCRA, to cease receiving hazardous

wastes or to close, then the requirements of Section 8.6.3.d of these regulations do not apply. However, the owner or operator must close the facility in accordance with the deadline established in Section 8.6.4 of these regulations.

8.6.3.e. Removal of Wastes and Decontamination or Dismantling of Equipment. Nothing in Section 8.6.3 of these regulations shall preclude the owner or operator from removing hazardous wastes and decontaminating or dismantling equipment in accordance with approved partial or final closure plan at any time before or after notification of partial or final closure.

8.6.4. Closure; Time Allowed for Closure.

8.6.4.a. Within ninety (90) days after receiving the final volume of hazardous wastes, or final volume of nonhazardous wastes if the owner or operator complies with all applicable requirements in Sections 8.6.4.e and 8.6.4.f of these regulations, at a hazardous waste management unit or facility, the owner or operator must treat, remove from the unit or facility, or dispose of on-site, all hazardous wastes in accordance with the approved closure plan. The chief may approve a longer period if the owner or operator complies with all applicable requirements for requesting a modification of the permit and demonstrates that:

8.6.4.a.1. The activities required to comply with this subsection will, of necessity, take longer than ninety (90) days to complete; or

8.6.4.a.2.A. The hazardous waste management unit or facility has the capacity to receive additional hazardous wastes, or has the capacity to receive nonhazardous wastes if the owner or operator complies with Section 8.6.4.e and 8.6.4.f of these regulations;

8.6.4.a.2.B. There is a reasonable likelihood that he or another person will recommence operation of the hazardous waste management unit or facility within one (1) year; and

8.6.4.a.2.C. Closure of the hazardous waste management unit or facility would be incompatible with continued operation of the site; and

8.6.4.a.3. He has taken, and will continue to take, all steps to prevent threats to human health and the environment, including compliance with all applicable permit requirements.

8.6.4.b. The owner or operator must complete partial and final closure activities in accordance with the approved closure plan and within one hundred and eighty (180) days after receiving the final volume of hazardous wastes, or the final volume of nonhazardous wastes if the owner or operator complies with all

applicable requirements in Sections 8.6.4.e and 8.6.4.f of these regulations, at the hazardous waste management unit or facility. The chief may approve an extension to the closure period if the owner or operator complies with all applicable requirements for requesting a modification to the permit and demonstrates that:

8.6.4.b.1. The partial or final closure activities will, of necessity, take longer than one hundred and eighty (180) days to complete; or

8.6.4.b.2.A. The hazardous waste management unit or facility has the capacity to receive additional hazardous wastes, or has the capacity to receive nonhazardous wastes if the owner or operator complies with Sections 8.6.4.e and 8.6.4.f of these regulations;

8.6.4.b.2.B. There is reasonable a likelihood that he or another person will recommence operation of the hazardous waste management unit or facility within one (1) year; and

8.6.4.b.2.C. Closure of the hazardous waste management or facility would be incompatible with continued operation of the site; and

8.6.4.b.3. He has taken and will continue to take all steps to prevent threats to human health and the environment from the unclosed but not operating hazardous waste management unit or facility including compliance with all applicable permit requirements.

8.6.4.c. Notwithstanding the provisions of Section 8.6.4.b of these regulations, the owner or operator of a surface impoundment used for disposal of hazardous waste ceasing the receipt of hazardous waste prior to November 8, 1988 need not close such surface impoundment within one hundred and eighty (180) days after receiving the final volume of hazardous waste but may continue to receive waste provided that the owner or operator can satisfy the chief that the following requirements are or will be met:

8.6.4.c.1. The owner or operator of such surface impoundment will complete closure activities in accordance with the approved closure plan and within one hundred and eighty (180) days after receiving the final volume of waste at the surface impoundment. The chief may approve a longer period if the owner or operator complies with all applicable requirements for requesting a modification of the permit and demonstrates that the closure activities will, of necessity, take longer than one hundred and eighty (180) days to complete;

8.6.4.c.2. The owner or operator has a hazardous waste management permit with an approved closure plan for such facility

requiring compliance with all applicable provisions of these regulations as though it were an operating hazardous waste surface impoundment;

8.6.4.c.3. The owner or operator institutes approved operating procedures designed to minimize the head created by any liquid in the surface impoundment; and either

8.6.4.c.4. The owner or operator makes a demonstration which is approved by the chief under Section 8.9.2.i.4 of these regulations; or

8.6.4.c.5. The surface impoundment contains a liner which is either:

8.6.4.c.5.A. A synthetic liner for which there is no evidence of leakage;

8.6.4.c.5.B. A liner of compacted material at least three (3) feet thick with a permeability of no more than 1×10^{-7} centimeters per second; or

8.6.4.c.5.C. If the owner or operator demonstrates to the chief and the chief finds for the surface impoundment that alternative design and operating practices, together with location characteristics, will prevent the migration of any hazardous constituents into the groundwater or surface water beyond the point of compliance at least as effectively as such liners.

8.6.4.d. The demonstration referred to in Sections 8.6.4.a, 8.6.4.b, and 8.6.4.c.1 of these regulations must be made as follows:

8.6.4.d.1. The demonstrations in Section 8.6.4.a of these regulations must be made at least thirty (30) days prior to the expiration of the ninety (90) day period in Section 8.6.4.a of these regulations; and

8.6.4.d.2. The demonstration in Sections 8.6.4.b and 8.6.4.c.1 of these regulations must be made at least thirty (30) days prior to the expiration of the one hundred eighty (180) day period in Section 8.6.4.b of these regulations, unless the owner or operator is otherwise subject to the deadlines under Section 8.6.4.e of these regulations.

8.6.4.e. The chief may allow an owner or operator to receive only nonhazardous wastes in a landfill, land treatment, or surface impoundment until after the final receipt of hazardous wastes at that unit if:

8.6.4.e.1. The owner or operator requests a permit modification in compliance with all applicable requirements in

Section 11 of these regulations and if the permit modification request demonstrates that:

8.6.4.e.1.A. The unit has the existing design capacity as indicated on the Part A application to receive nonhazardous wastes; and

8.6.4.e.1.B. There is a reasonable likelihood that the owner or operator or another person will receive nonhazardous wastes in the unit within one (1) year after the final receipt of hazardous wastes; and

8.6.4.e.1.C. The nonhazardous wastes will not be incompatible with any remaining wastes in the unit, or with the facility design and operating requirements of the unit or facility under this part; and

8.6.4.e.1.D. Closure of the hazardous waste management unit would be incompatible with continued operation of the unit or facility; and

8.6.4.e.1.E. The owner or operator is operating and will continue to operate in compliance with all applicable permit requirements; and

8.6.4.e.2. The request to modify the permit includes an amended waste analysis plan, groundwater monitoring and response program, human exposure assessment required under RCRA Section 3019, and closure and post-closure plans, and updated cost estimates and demonstrations of financial assurance for closure and post-closure care as necessary and appropriate, to reflect any changes due to the presence of hazardous constituents in the nonhazardous wastes, and changes in closure activities, including the expected year of closure if applicable under Section 8.6.3.b.7 of these regulations, as a result of the receipt of nonhazardous wastes following the final receipt of hazardous wastes; and

8.6.4.e.3. The request to modify the permit includes revisions, as necessary and appropriate, to affected conditions of the permit to account for the receipt of nonhazardous wastes following receipt of the final volume of hazardous wastes; and

8.6.4.e.4. The request to modify the permit and the demonstrations referred to in Sections 8.6.4.e.1 and 8.6.4.e.2 of these regulations are submitted to the chief no later than one hundred and twenty (120) days prior to the date on which the owner or operator of the facility receives the known final volume of hazardous wastes at the unit, or no later than ninety (90) days after the effective date of these regulations, whichever is later.

8.6.4.f. In addition to the requirements in Section 8.6.4.e. of these regulations, an owner or operator of a hazardous

waste surface impoundment that is not in compliance with the liner and leachate collection system requirements in 42 U.S.C. 3004(o) (1) and 3005(j) (1) or 42 U.S.C. 3004(o) (2) or (3) or 3005(j) (2), (3), (4) or (13) must:

8.6.4.f.1. Submit with the request to modify the permit:

8.6.4.f.1.A. A contingent corrective measures plan;
and

8.6.4.f.1.B. A plan for removing hazardous wastes in compliance with Section 8.6.4.f.2 of these regulations; and

8.6.4.f.2. Remove all hazardous wastes from the unit by removing all hazardous liquids, and removing all hazardous sludges to the extent practicable without impairing the integrity of the liner(s), if any.

8.6.4.f.3. Removal of hazardous wastes must be completed no later than ninety (90) days after the final receipt of hazardous wastes. The chief may approve an extension to this deadline if the owner or operator demonstrates that the removal of hazardous wastes will, of necessity, take longer than the allotted period to complete and that an extension will not pose a threat to human health and the environment.

8.6.4.f.4. If a release that is a statistically significant increase (or decrease in the case of pH) over background concentrations or constituents specified in the permit or that exceeds the facility's groundwater protection standard at the point of compliance, if applicable, is detected in accordance with the requirements in Section 8.13.8 of these regulations, the owner or operator of the unit:

8.6.4.f.4.A. Must implement corrective measures in accordance with the approved contingent corrective measures plan required by Section 8.6.4.f.1 of these regulations no later than one (1) year after detection of the release, or approval of the contingent corrective measures plan, whichever is later;

8.6.4.f.4.B. May continue to receive wastes at the unit following detection of the release only if the approved corrective measures plan includes a demonstration that continued receipt of wastes will not impede corrective action; and

8.6.4.f.4.C. May be required by the chief to implement corrective measures in less than one (1) year or to cease the receipt of wastes until corrective measures have been implemented if necessary to protect human health and the environment.

8.6.4.f.5. During the period of corrective action, the owner or operator shall provide semi-annual reports to the chief that describe the progress of the corrective action program, compile all groundwater monitoring data, and evaluate the effect of the continued receipt of nonhazardous wastes on the effectiveness of the corrective action.

8.6.4.f.6. The chief may require the owner or operator to commence closure of the unit if the owner or operator fails to implement corrective action measures in accordance with the approved contingent corrective measures plan within one (1) year as required in Section 8.6.4.f.4 of these regulations, or fails to make substantial progress in implementing corrective action and achieving the facility's groundwater protection standard or background levels if the facility has not yet established a groundwater protection standard.

8.6.4.f.7. If the owner or operator fails to implement corrective measures as required in Section 8.6.4.f.4 of these regulations, or if the chief determines that substantial progress has not been made pursuant to Section 8.6.4.f.6 of these regulations he shall:

8.6.4.f.7.A. Notify the owner or operator in writing that the owner or operator must begin closure in accordance with the deadlines under Section 8.6.4.a and 8.6.4.b of these regulations and provide a detailed statement of reasons for this determination, and

8.6.4.f.7.B. Provide the owner or operator and the public, through a newspaper notice, the opportunity to submit written comments on the decision no later than twenty (20) days after the date of the notice.

8.6.4.f.7.C. If the chief receives no written comments, the decision will become final five (5) days after the close of the comment period. The chief will notify the owner or operator that the decision is final, and that a revised closure plan, if necessary, must be submitted within fifteen (15) days of the final notice and that closure must begin in accordance with the deadlines under Sections 8.6.4.a and 8.6.4.b of these regulations.

8.6.4.f.7.D. If the chief receives written comments on the decision, he shall make a final decision within thirty (30) days after the end of the comment period, and provide the owner or operator in writing and the public through a newspaper notice, a detailed statement of reasons for the final decision. If the chief determines that substantial progress has not been made, closure must be initiated in accordance with the deadlines under Section 8.6.4.a and 8.6.4.b of these regulations.

8.6.4.f.7.E. The final determinations made by the

chief under Sections 8.6.4.f.7.C and 8.6.4.f.7.D of these regulations are not subject to administrative appeal.

8.6.5. Disposal or Decontamination of Equipment, Structures and Soils. During the partial and final closure periods, all contaminated equipment, structures, and soils must be properly disposed of or decontaminated unless otherwise specified in Section 8.8.8, 8.9.7, 8.10.9, 8.11.11, or 8.12.11 of these regulations. By removing any hazardous wastes or hazardous constituents during partial or final closure, the owner or operator may become a generator of hazardous waste and must handle that waste in accordance with all applicable requirements of Section 6 of these regulations.

8.6.6. Certification of Closure. Within sixty (60) days of completion of closure of each hazardous waste surface impoundment, waste pile, and land treatment or landfill unit, and within sixty (60) days of the completion of final closure, the owner or operator must submit to the chief by registered mail a certification that the hazardous waste management unit or facility has been closed in accordance with the specifications in the approved closure plan. The certification must be signed by the owner or operator and by an independent registered professional engineer. Documentation supporting the independent registered professional engineer's certification must be furnished to the chief upon request until he releases the owner or operator from the financial assurance requirements for closure under Section 13 of these regulations.

8.6.7. Post-Closure Care and Use of Property.

8.6.7.a. Except as provided in Section 8.6.7.a.2 of these regulations, post-closure care for each hazardous waste management unit subject to the requirements of Section 8.6.7 through 8.6.9 and 15.4 of these regulations must begin after the completion of closure of the unit and continue for thirty (30) years after that date.

8.6.7.a.1. Post-closure care must consist of at least the following:

8.6.7.a.1.A. Groundwater monitoring and reporting as applicable;

8.6.7.a.1.B. Maintenance of monitoring and waste containment systems as applicable; and

8.6.7.a.1.C. All applicable post-closure regulations of Sections 8.9, 8.10, 8.11, 8.12, and 8.13 of these regulations.

8.6.7.a.2. Any time preceding partial closure of a hazardous waste management unit subject to post-closure care

requirements or final closure, or any time during the post-closure period for a particular unit, the chief may, in accordance with the permit modification procedures in Section 11 of these regulations:

8.6.7.a.2.A. Shorten the post-closure care period applicable to the hazardous waste management unit or facility if all disposal units have been closed if he finds that the reduced period is sufficient to protect human health and the environment. For example, leachate or groundwater monitoring results, characteristics of hazardous waste, application of advanced technology, or alternative disposal, treatment, or re-use techniques indicate that the hazardous waste management unit or facility is secure; or

8.6.7.a.2.B. Extend the post-closure care period applicable to the hazardous waste management unit or facility if he finds that the extended period is necessary to protect human health and the environment. For example, leachate or groundwater monitoring results indicate a potential for migration of hazardous wastes at levels which may be harmful to human health and the environment.

8.6.7.b. The chief may require at partial and final closure the continuation of any of the security requirements of Section 8.2.5 of these regulations during part or all of the post-closure period when:

8.6.7.b.1. Hazardous wastes may remain exposed after completion of partial or final closure; or

8.6.7.b.2. Is necessary to reduce a threat to human health or the environment.

8.6.7.c. Post-closure use of property on or in which hazardous wastes remain after closure must never be allowed to disturb the integrity of the final cover, liner(s), or any other components of any containment system, or the function of the facility's monitoring systems, unless the chief finds that the disturbance:

8.6.7.c.1. Is necessary to the proposed use of the property, and will not increase the potential hazard to human health or the environment; or

8.6.7.c.2. Access by the public or domestic livestock may pose a hazard to human health.

8.6.7.d. All post-closure care activities must be in accordance with the provisions of the approved post-closure plan as specified in Section 8.6.8 of these regulations.

8.6.8. Post-Closure Plan; Amendment of Plan.

8.6.8.a. Written Plan. The owner or operator of a hazardous waste disposal unit must have a written post-closure plan. In addition, certain surface impoundments from which the owner or operator intends to remove or decontaminate the hazardous wastes at partial or final closure are required by Section 8.9.7.c of these regulations to have a contingent post-closure plan. Owners or operators of surface impoundments not otherwise required to prepare contingent post-closure plans and owners and operators of waste piles must submit a post-closure plan to the chief within ninety (90) days from the date that the owner or operator or the chief determines that the hazardous waste management unit must be closed as a landfill subject to the requirements of Sections 8.6.7 through 8.6.8 and 15.4 of these regulations. The plan must be submitted with Part B of the permit application in accordance with Section 11.5.1 of these regulations and will become a condition of the permit.

8.6.8.b. For each hazardous waste management unit subject to the requirements of Section 8.6.8 of these regulations, the post-closure plan must identify the activities that will be carried on after closure of each disposal unit and frequency of these activities, and include at least:

8.6.8.b.1. A description of the planned groundwater monitoring activities and frequencies at which they will be performed;

8.6.8.b.2. A description of the planned maintenance activities and frequencies at which they will be performed to ensure:

8.6.8.b.2.A. The integrity of the cap and final cover or other containment systems; and

8.6.8.b.2.B. The functioning of the monitoring equipment; and

8.6.8.b.3. The name, address, and telephone number of the person or office to contact about the hazardous waste disposal unit or facility during the post-closure care period.

8.6.8.c. Until the final closure of a facility, a copy of the approved post-closure plan must be furnished to the chief upon request, including request by mail. After final closure has been certified, the person or office specified in Section 8.6.8.b.3 of these regulations must keep the approved post-closure plan during the remainder of the post-closure period.

8.6.8.d. Amendment of Plan. The owner or operator must submit a written notification of or request for a permit modification to authorize a change in the approved post-closure plan in accordance with Section 11 of these regulations. The

written request must include a copy of the amended post-closure plan for review or approval by the chief.

8.6.8.d.1. The owner or operator may submit a written notification or request to the chief for a permit modification to amend the post-closure plan at any time during the active life of the facility or during the post-closure care period.

8.6.8.d.2. The owner or operator must submit a written notification of or request for a permit modification to authorize a change in the approved post-closure plan whenever:

8.6.8.d.2.A. Changes in operating plans or facility design affect the approved post-closure plan;

8.6.8.d.2.B. There is a change in the expected year of final closure, if applicable; or

8.6.8.d.2.C. Events which occur during the active life of the facility, including partial and final closures, affect the approved post-closure plan.

8.6.8.d.3. The owner or operator must submit a written request for a permit modification at least sixty (60) days prior to the proposed change in facility design or operation, or no later than sixty (60) days after an unexpected event has occurred which has affected the post-closure plan. The owner or operator of a surface impoundment that intends to remove all hazardous waste at closure and is not otherwise required to submit a contingent post-closure plan under Section 8.9.7.c of these regulations and owners and operators of waste piles must submit a post-closure plan to the chief no later than ninety (90) days after the date that the owner or operator or the chief determines that the hazardous waste management unit must be closed as a landfill, subject to the requirements of Section 8.11.11 of these regulations. The chief will approve, disapprove, or modify this plan in accordance with the procedures in Section 11 of these regulations and the approved post-closure plan will become a part of the permit.

8.6.8.d.4. The chief may request modifications to the plan under the conditions described in Section 8.6.8.d.2 of these regulations. The owner or operator must submit a modified plan no later than sixty (60) days after the chief's request, or no later than ninety (90) days if the unit is a waste pile or a surface impoundment not previously required to prepare a contingent post-closure plan. Any modification requested by the chief will be approved, disapproved, or modified in accordance with the procedures in Section 11 of these regulations.

8.6.9. Certification of Completion of Post-Closure Care. No later than sixty (60) days after completion of the established post-closure care period for each hazardous waste disposal unit,

the owner or operator must submit to the chief by registered mail, a certification that the post-closure care period for the hazardous waste disposal unit was performed in accordance with the specifications in the approved post-closure plan. The certification must be signed by the owner or operator and an independent registered professional engineer. Documentation supporting the independent registered professional engineer's certification must be furnished to the chief upon request until he releases the owner or operator from the financial assurance requirements for post-closure care under Section 13 of these regulations.

8.7. Use and Management of Containers.

8.7.1. Applicability. The regulations in Section 8.7 of these regulations apply to owners and operators of all hazardous waste management facilities that store containers of hazardous waste, except as Section 8.1 of these regulations provides otherwise.

Comment: Under Sections 3.1.7 and 3.4.4.c of these regulations 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 Section 3.1.7 of these regulations. In that event, management of the container is exempt from the requirements of Section 8.7 of these regulations.

8.7.2. Conditions of Containers. If a container holding hazardous waste is not in good condition (e.g., severe rusting or apparent structural defects) or if it begins to leak, the owner or operator must transfer the hazardous waste from this container to a container that is in good condition or manage the waste in some other way that complies with the requirements of these regulations.

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

8.7.4. Management of Containers.

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

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

8.7.5. (Reserved).

8.7.6. Inspections. At least weekly, the owner or operator

must inspect areas where containers are stored, looking for leaking containers and for deterioration of containers and the containment system caused by corrosion or other factors.

Comment: See Section 8.2.6.c and Section 8.7.2 of these regulations for remedial action required if deterioration or leaks are detected.

8.7.7. Containment.

8.7.7.a. Container storage areas must have a containment system that is designed and operated in accordance with Section 8.7.7.b of these regulations, except as otherwise provided by Section 8.7.7.c of these regulations.

8.7.7.b. A containment system must be designed and operated as follows:

8.7.7.b.1. A base must underlie the containers which is free of cracks or gaps and is sufficiently impervious to contain leaks, spills and accumulated precipitation until the collected material is detected and removed;

8.7.7.b.2. The base must be sloped or the containment system must be otherwise designed and operated to drain and remove liquids resulting from leaks, spills, or precipitation, unless the containers are elevated or are otherwise protected from contact with accumulated liquids;

8.7.7.b.3. The containment system must have sufficient capacity to contain ten percent (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;

8.7.7.b.4. Run-on into the containment system must be prevented unless the chief waives this requirement in the permit after determining that the collection system has sufficient excess capacity in addition to that required in Section 8.7.7.b.3 of these regulations to contain any run-on which might enter the system; and

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

8.7.7.b.6. If the collected material is a hazardous waste under Section 3 of these regulations, it must be managed as a hazardous waste in accordance with all applicable requirements. If the collected material is discharged through a point source to State waters, it is subject to the Water Pollution Control Act and regulations promulgated thereunder.

8.7.7.c. Storage areas that store containers holding only wastes that do not contain free liquids need not have a containment system defined by Section 8.7.7.b of these regulations, except as provided by Section 8.7.7.d of these regulations or provided that:

8.7.7.c.1. The storage area is sloped or otherwise designed and operated to drain and remove liquid resulting from precipitation; and

8.7.7.c.2. The containers are elevated or are otherwise protected from contact with accumulated liquid.

8.7.7.d. Storage areas that store containers holding the wastes listed in Section 8.7.7.d.1 of these regulations that do not contain free liquids must have a containment system defined by Section 8.7.7.b of these regulations.

8.7.7.d.1. EPA Hazardous Waste Numbers F020, F021, F022, F023, F026, F027, and F028 as listed in Table III of these regulations.

8.7.8. Special Requirements for Ignitable or Reactive Wastes. Containers holding ignitable or reactive waste must be located at least fifteen (15) meters (50 feet) from the facility's property line.

8.7.9. Special Requirements for Incompatible Wastes.

8.7.9.a. Incompatible wastes, or incompatible wastes and other materials, must not be placed in the same container, unless Section 8.2.8 of these regulations is complied with.

8.7.9.b. Hazardous waste must not be placed in an unwashed container that previously held an incompatible waste or material.

8.7.9.c. A storage container holding a hazardous waste that is incompatible with any waste or other material stored nearby in other containers, piles, open tanks, or surface impoundments must be separated from the other materials or protected from them by means of a dike, berm, wall, or other device.

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

Comment: At closure, as throughout the operating period, unless the owner or operator can demonstrate in accordance with Section 3.1.2.d of these regulations that the waste removed from the containment system is not a hazardous waste, the owner or

operator becomes a generator of hazardous waste and must manage it in accordance with all applicable requirements.

8.8. Tanks.

8.8.1. Applicability. The requirements of Section 8.8 of these regulations apply to owners and operators of facilities that use tank systems for storing or treating hazardous waste, except as otherwise provided in Section 8.8.1.a, 8.8.1.b, or 8.1.2 of these regulations.

8.8.1.a. Tanks systems that are used to store or treat hazardous waste which contains no free liquids and are situated inside a building with an impermeable floor are exempted from the requirements in Section 8.8.4 of these regulations. To demonstrate the absence or presence of free liquids in the stored or treated waste, EPA Method 9095 (Paint Filter Liquids Test) as described in SW-846 must be used.

8.8.1.b. Tank systems, including sumps, as defined in Section 2 of these regulations, that serve as part of a secondary containment system to collect or contain releases of hazardous wastes are exempted from the requirements in Section 8.8.4.a of these regulations.

8.8.2. Assessment of Existing Tank System's Integrity.

8.8.2.a. For each existing tank system that does not have secondary containment meeting the requirements of Section 8.8.4 of these regulations, the owner or operator must determine that the tank system is not leaking or unfit for use. Except as provided in Section 8.8.2.c of these regulations, the owner or operator must obtain and keep on file at the facility a written assessment reviewed and certified by an independent, qualified registered professional engineer, in accordance with Section 11.7.4 of these regulations, that attests to the tank system's integrity.

8.8.2.b. This assessment must determine that the tank system is adequately designed and has sufficient structural strength and compatibility with the waste(s) to be stored or treated, to ensure that it will not collapse, rupture, or fail. At a minimum, this assessment must consider the following:

8.8.2.b.1. Design standard(s), if available, according to which the tank and ancillary equipment were constructed;

8.8.2.b.2. Hazardous characteristics of the waste(s) that have been and will be handled;

8.8.2.b.3. Existing corrosion protection measures;

8.8.2.b.4. Documented age of the tank system, if

available (otherwise, an estimate of the age); and

8.8.2.b.5. Results of a leak test, internal inspection, or other tank integrity examination such that:

8.8.2.b.5.A. For non-enterable underground tanks, the assessment must include a leak test that is capable of taking into account the effects of temperature variations, tank end deflections, vapor pockets, and high water table effects; and

8.8.2.b.5.B. For other than non-enterable underground tanks and for ancillary equipment, this assessment must include either a leak test, as described above, or other integrity examination, that is certified by an independent, qualified registered professional engineer, in accordance with Section 11.7.4 of these regulations, that addresses cracks, leaks, corrosion, and erosion.

Note: The practices described in the American Petroleum Institute (API) Publication, "Guide for Inspection of Refinery Equipment," Chapter XIII, "Atmospheric and Low-Pressure Storage Tanks," 4th Edition, 1981, may be used where applicable as guidelines in conducting other than a leak test.

8.8.2.c. Tank systems that store or treat materials that become hazardous wastes must conduct this assessment within twelve (12) months after the date that the waste becomes a hazardous waste.

8.8.2.d. If as a result of the assessment conducted in accordance with Section 8.8.2.a of these regulations a tank system is found to be leaking or unfit for use, the owner or operator must comply with the requirements of Section 8.8.7 of these regulations.

8.8.3. Design and Installation of New Tank Systems or Components.

8.8.3.a. Owners or operators of new tank systems or components must obtain and submit to the chief, at the time of submittal of Part B information, a written assessment, reviewed and certified by an independent, qualified registered professional engineer, in accordance with Section 11.7.4 of these regulations, attesting that the tank system has sufficient structural integrity and is acceptable for the storing and treating of hazardous waste. The assessment must show that the foundation, structural support, seams, connections, and pressure controls (if applicable) are adequately designed and that the tank system has sufficient structural strength, compatibility with the waste(s) to be stored or treated, and corrosion protection to ensure that it will not collapse, rupture, or fail. This assessment which will be used by the chief to review and approve or disapprove the acceptability of the tank system design, must include, at a minimum, the following

information:

8.8.3.a.1. Design standard(s) according to which the tank(s) and/or ancillary equipment are constructed;

8.8.3.a.2. Hazardous characteristics of the waste(s) to be handled;

8.8.3.a.3. For new tank systems or components in which the external shell of a metal tank or any external metal component of the tank system will be in contact with the soil or with water, a determination by a corrosion expert of:

8.8.3.a.3.A. Factors affecting the potential for corrosion, including but not limited to:

8.8.3.a.3.A.i. Soil moisture content;

8.8.3.a.3.A.ii. Soil pH;

8.8.3.a.3.A.iii. Soil sulfides level;

8.8.3.a.3.A.iv. Soil resistivity;

8.8.3.a.3.A.v. Structure to soil potential;

8.8.3.a.3.A.vi. Influence of nearby underground metal structures (e.g., piping);

8.8.3.a.3.A.vii. Existence of stray electric current; and

8.8.3.a.3.A.viii. Existing corrosion-protection measures (e.g., coating, cathodic protection); and

8.8.3.a.3.B. The type and degree of external corrosion protection that is needed to ensure the integrity of the tank system during the use of the tank system or component, consisting of one or more of the following:

8.8.3.a.3.B.i. Corrosion-resistant materials of construction such as special alloys or fiberglass reinforced plastic;

8.8.3.a.3.B.ii. Corrosion-resistant coating (such as epoxy or fiberglass) with cathodic protection (e.g., impressed current or sacrificial anodes); and

8.8.3.a.3.B.iii. Electrical isolation devices (e.g., insulating joints, flanges);

Note: The practices described in the National

Association of Corrosion Engineers (NACE) Standard, "Recommended Practice (RP-02-85) - Control of External Corrosion on Metallic, Buried, Partially Buried, or Submerged Liquid Storage Systems," and the American Petroleum Institute (API) Publication 1632, "Cathodic Protection of Underground Petroleum Storage Tanks and Piping Systems," may be used where applicable as guidelines in providing corrosion protection for tank systems.

8.8.3.a.4. For underground tank system components that are likely to be adversely affected by vehicular traffic, a determination of design or operational measures that will protect the tank system against potential damage; and

8.8.3.a.5. Design considerations to ensure that:

8.8.3.a.5.A. Tank foundations will maintain the load of the full tank;

8.8.3.a.5.B. Tank systems will be anchored to prevent flotation or dislodgement where the tank system is placed in a saturated zone, or is located within a seismic fault zone subject to the standards of Section 12.1.1 of these regulations; and

8.8.3.a.5.C. Tank systems will withstand the effects of frost heave.

8.8.3.b. The owner or operator of a new tank system must ensure that proper handling procedures are adhered to in order to prevent damage to the system during installation. Prior to covering, enclosing, or placing a new tank system or component in use, an independent, qualified installation inspector or an independent, qualified registered professional engineer, either of whom is trained and experienced in the proper installation of tank systems or components, must inspect the system for the presence of any of the following items:

8.8.3.b.1. Weld breaks;

8.8.3.b.2. Punctures;

8.8.3.b.3. Scrapes of protective coatings;

8.8.3.b.4. Cracks;

8.8.3.b.5. Corrosion; or

8.8.3.b.6. Other structural damage, inadequate construction, or inadequate installation.

8.8.3.c. All discrepancies discovered during the inspection under Section 8.8.3.b of these regulations must be

remedied before the tank system is covered, enclosed or placed in use.

8.8.3.d. New tank systems or components that are placed underground and that are backfilled must be provided with a backfill material that is a noncorrosive, porous, homogeneous substance and that is installed so that the backfill is placed completely around the tank and compacted to ensure that the tank and piping are fully and uniformly supported.

8.8.3.e. All new tanks and ancillary equipment must be tested for tightness prior to being covered, enclosed, or placed in use. If a tank system is found not to be tight, all repairs necessary to remedy the leak(s) in the system must be performed prior to the tank system being covered, enclosed, or placed into use.

8.8.3.f. Ancillary equipment must be supported and protected against physical damage and excessive stress due to settlement, vibration, expansion, or contraction.

Note: The piping system installation procedures described in American Petroleum Institute (API) Publication 1615, "Installation of Underground Petroleum Storage Systems," November, 1979, or ANSI Standard B31.3. "Petroleum Refinery Piping" and ANSI Standard B31.4. "Liquid Petroleum Transportation Piping System" may be used where applicable as guidelines for proper installation of piping systems.

8.8.3.g. The owner or operator must provide the type and degree of corrosion protection recommended by an independent corrosion expert, based on the information provided under Section 8.8.3.a.3 of these regulations, or other corrosion protection if the chief believes other corrosion protection is necessary to ensure the integrity of the tank system during the use of the tank system. The installation of a corrosion protection system that is field-fabricated must be supervised by an independent corrosion expert to ensure proper installation.

8.8.3.h. The owner or operator must obtain, and keep on file at the facility, written statements by those persons required to certify the design of the tank system and supervise the installation of the tank system in accordance with the requirements of Sections 8.8.3.a through 8.8.3.f of these regulations that attest that the tank system was properly designed and installed and that repairs pursuant to Sections 8.8.3.a and 8.8.3.d of these regulations were performed. These written statements must also include the certification statement as required in Section 11.7.4 of these regulations.

8.8.4. Containment and Detection of Releases.

8.8.4.a. In order to prevent the release of hazardous waste or hazardous constituents to the environment, secondary containment that meets the requirements of Section 8.8.4 of these regulations must be provided (except as provided in Sections 8.8.4.f and 8.8.4.g of these regulations):

8.8.4.a.1. For all new tank systems or components, prior to their being put into service;

8.8.4.a.2. (Reserved);

8.8.4.a.3. For those tank systems of known and documented age, within two (2) years after April 1, 1988 or when the tank system has reached fifteen (15) years of age, whichever comes later.

8.8.4.a.4. For those existing tank systems for which the age cannot be documented, within eight (8) years of April 1, 1988; but if the age of the facility is greater than seven (7) years, secondary containment must be provided by the time the facility reaches fifteen (15) years of age or within two (2) years of April 1, 1988, whichever comes later;

8.8.4.a.5. For tank systems that store or treat materials that become hazardous wastes subsequent to April 1, 1988, within the time intervals required in Sections 8.8.4.a.1 through 8.8.4.a.4 of these regulations, except that the date that a material becomes a hazardous waste must be used in place of April 1, 1988.

8.8.4.b. Secondary containment systems must be:

8.8.4.b.1. Designed, installed, and operated to prevent any migration of wastes or accumulated liquid out of the system to the soil, groundwater, or surface water at any time during the use of the tank system; and

8.8.4.b.2. Capable of detecting and collecting releases and accumulated liquids until the collected material is removed.

8.8.4.c. To meet the requirements of Section 8.8.4.b of these regulations, secondary containment systems must be at a minimum:

8.8.4.c.1. Constructed of or lined with materials that are compatible with the wastes to be placed in the tank system and must have sufficient strength and thickness to prevent failure owing to pressure gradients (including static head and external hydrological forces), physical contact with the waste to which it is exposed, climatic conditions, and the stress of daily operation (including stresses from nearby vehicular traffic);

8.8.4.c.2. Placed on a foundation or base capable of providing support to the secondary containment system, resistance to pressure gradients above and below the system, and capable of preventing failure due to settlement, compression, or uplift;

8.8.4.c.3. Provided with a leak detection system that is designed and operated so that it will detect the failure of either the primary or secondary containment structure or the presence of any release of hazardous waste or accumulated liquid in the secondary containment system within twenty-four (24) hours, or the earliest practicable time if the owner or operator can demonstrate to the chief that existing detection of a release within twenty-four (24) hours; and

8.8.4.c.4. Sloped or otherwise designed or operated to drain and remove liquids resulting from leaks, spills, or precipitation. Spilled or leaked waste and accumulated precipitation must be removed from the secondary containment system within twenty-four hours, or in as timely a manner as is possible to prevent harm to human health and the environment if the owner or operator can demonstrate to the chief that removal of the released waste or accumulated precipitation cannot be accomplished within twenty-four (24) hours.

8.8.4.c.5. For EPA Hazardous Waste Numbers F020, F021, F022, F023, F026, F027, and F028, the contingency plan, as described under Section 8.4 of these regulations, must include the procedures for responding to a spill or leak of these wastes from tanks into the containment system. These procedures shall include measures for immediate removal of the waste from the system and replacement or repair of the leaking tank.

Note: If the collected material is a hazardous waste under Section 3.1.2 of these regulations, it is subject to management as a hazardous waste in accordance with all applicable requirements of these regulations. If the collected material is discharged through a point source to waters of the United States, it is subject to the requirements of CWA Sections 301, 304, and 402; if discharged to a POTW, it is subject to the requirements of CWA Section 307. If the collected material is released to the environment, it may be subject to the reporting requirements of 40 C.F.R. Part 302.

8.8.4.d. Secondary containment for tanks must include one or more of the following devices:

8.8.4.d.1. A liner (external to the tank);

8.8.4.d.2. A vault;

8.8.4.d.3. A double-walled tank; or

8.8.4.d.4. An equivalent device as approved by the chief.

8.8.4.e. In addition to the requirements of Sections 8.8.4.b through 8.8.4.d of these regulations, secondary containment systems must satisfy the following requirements:

8.8.4.e.1. External liner system must be:

8.8.4.e.1.A. Designed or operated to contain one hundred percent (100%) of the capacity of the largest tank within its boundary;

8.8.4.e.1.B. Designed or operated to prevent run-on or infiltration of precipitation into the secondary containment system unless the collection system has sufficient excess capacity to contain run-on or infiltration. Such additional capacity must be sufficient to contain precipitation from a 25-year, 24-hour rainfall event;

8.8.4.e.1.C. Free of cracks or gaps; and

8.8.4.e.1.D. Designed and installed to surround the tank completely and to cover all surrounding earth likely to come into contact with the waste if the waste is released from the tank(s) (i.e., capable of preventing lateral as well as vertical migration of the waste).

8.8.4.e.2. Vault systems must be:

8.8.4.e.2.A. Designed or operated to contain one hundred percent (100%) of the capacity of the largest tank within its boundary;

8.8.4.e.2.B. Designed or operated to prevent run-on or infiltration or precipitation into the secondary containment system unless the collection system has sufficient excess capacity to contain run-on or infiltration. Such additional capacity must be sufficient to contain precipitation from a 24-year, 24-hour rainfall event;

8.8.4.e.2.C. Constructed with chemical-resistant water stops in place at all joints (if any);

8.8.4.e.2.D. Provided with an impermeable interior coating or lining that is compatible with the stored waste and will prevent migration of waste into the concrete;

8.8.4.e.2.E. Provided with a means to protect against the formation of and ignition of vapors within the vault, of the waste being stored or treated:

8.8.4.e.2.E.i. Meets the definition of ignitable waste under Section 3.3.2 of these regulations; or

8.8.4.e.2.E.ii. Meets the definition of reactive waste under Section 3.3.4 of these regulations, and may form an ignitable or explosive vapor; and

8.8.4.e.2.F. Provided with an exterior moisture barrier or be otherwise designed or operated to prevent migration of moisture into the vault if the vault is subject to hydraulic pressure.

8.8.4.e.3. Double-walled tanks must be:

8.8.4.e.3.A. Designed as an integral structure (i.e., an inner tank completely enveloped within an outer shell) so that any release from the inner tank is contained by the outer shell;

8.8.4.e.3.B. Protected, if constructed of metal, from both corrosion of the primary tank interior and of the external surface of the outer shell; and

8.8.4.e.3.C. Provided with a built-in continuous leak detection system capable of detecting a release within twenty-four (24) hours, or at the earliest practicable time if the owner or operator can demonstrate to the chief, and the chief concludes, that the existing detection technology or site conditions would not allow detection of a release within twenty-four (24) hours.

Note: The provisions outlined in the Steel Tank Institute's (STI) "Standard for Dual Wall Underground Steel Storage Tanks" may be used as guidelines for aspects of the design of underground steel double-walled tanks.

8.8.4.f. Ancillary equipment must be provided with secondary containment (e.g., trench, jacketing, doublewalled piping) that meets the requirements of Sections 8.8.4.b and 8.8.4.c of these regulations except for:

8.8.4.f.1. Aboveground piping -- exclusive of flanges, joints, valves, and other connections -- that are visually inspected for leaks on a daily basis;

8.8.4.f.2. Welded flanges, welded joints, and welded connections that are visually inspected for leaks on a daily basis;

8.8.4.f.3. Sealless or magnetic coupling pumps and sealless valves that are visually inspected for leaks on a daily basis; and

8.8.4.f.4. Pressurized aboveground piping systems with

automatic shut-off devices (e.g., excess flow check valves, flow metering shutdown devices, loss of pressure activated shut-off devices) that are visually inspected for leaks on a daily basis.

8.8.4.g. The owner or operator may obtain a variance from the requirements of Section 8.8.4 of these regulations if the chief finds, as a result of a demonstration by the owner or operator, that alternative design and operating practices together with location characteristics will prevent the migration of any hazardous waste or hazardous constituents into the groundwater or surface water at least as effectively as secondary containment during the active life of the tank system or that, in the event of a release that does migrate to groundwater or surface water, no substantial present or potential hazard will be posed to human health or the environment. New underground tank systems may not, per a demonstration in accordance with Section 8.8.4.g.2 of these regulations, be exempted from the secondary containment requirements of Section 8.8.4 of these regulations.

8.8.4.g.1. In deciding whether to grant a variance based on a demonstration of equivalent protection of groundwater and surface water, the chief will consider:

8.8.4.g.1.A. The nature and quantity of the wastes;

8.8.4.g.1.B. The proposed alternate design and operation;

8.8.4.g.1.C. The hydrogeologic setting of the facility, including the thickness of soils present between the tank system and groundwater; and

8.8.4.g.1.D. All other factors that would influence the quality and mobility of the hazardous constituents and the potential for them to migrate to groundwater or surface water.

8.8.4.g.2. In deciding whether to grant a variance based on a demonstration of no substantial present or potential hazard, the chief will consider:

8.8.4.g.2.A. The potential adverse effects on groundwater, surface water, and land quality taking into account:

8.8.4.g.2.A.i. The physical and chemical characteristics of the waste in the tank system, including its potential for migration;

8.8.4.g.2.A.ii. The hydrogeological characteristics of the facility and surrounding land;

8.8.4.g.2.A.iii. The potential for health risks caused by human exposure to waste constituents;

8.8.4.g.2.A.iv. The potential for damage to wildlife, crops vegetation, and physical structures caused by exposure to waste constituents; and

8.8.4.g.2.A.v. The persistence and permanence of the potential adverse effects;

8.8.4.g.2.B. The potential adverse effects of a release on groundwater quality, taking into account:

8.8.4.g.2.B.i. The quantity and quality of groundwater and the direction of groundwater flow;

8.8.4.g.2.B.ii. The proximity and withdrawal rates of groundwater users;

8.8.4.g.2.B.iii. The current and future uses of groundwater in the area; and

8.8.4.g.2.B.iv. The existing quality of groundwater, including other sources of contamination and their cumulative impact on the groundwater quality;

8.8.4.g.2.C. The potential adverse effects of a release on surface water quality, taking into account:

8.8.4.g.2.C.i. The quantity and quality of groundwater and the direction of groundwater flow;

8.8.4.g.2.C.ii. The patterns of rainfall in the region;

8.8.4.g.2.C.iii. The proximity of the tank system to surface waters;

8.8.4.g.2.C.iv. The current and future uses of surface waters in the area and any water quality standards established for those surface waters; and

8.8.4.g.2.C.v. The existing quality of surface water, including other sources of contamination and the cumulative impact on surface water quality; and

8.8.4.g.2.D. The potential adverse effects of a release on the land surrounding the tank system, taking into account:

8.8.4.g.2.D.i. The patterns of rainfall in the region; and

8.8.4.g.2.D.ii. The current and future uses of the surrounding land.

8.8.4.g.3. The owner or operator of a tank system, for which a variance from secondary containment had been granted in accordance with the requirements of Section 8.8.4.g.1 of these regulations, at which a release of hazardous waste has occurred from the primary tank system but has not migrated beyond the zone of engineering control, as established in the variance, must:

8.8.4.g.3.A. Comply with the requirements of Section 8.8.7 of these regulations, except as provided in Section 8.8.7.d of these regulations;

8.8.4.g.3.B. Decontaminate or remove contaminated soil to the extent necessary to:

8.8.4.g.3.B.i. Enable the tank system for which the variance was granted to resume operation with the capability for the detection of the releases at least equivalent to the capability it had prior to the release; and

8.8.4.g.3.B.ii. Prevent the migration of hazardous waste or hazardous constituents to groundwater or surface water; and

8.8.4.g.3.C. If contaminated soil cannot be removed or decontaminated in accordance with Section 8.8.4.g.3.B of these regulations, comply with the requirement of Section 8.8.8.b of these regulations.

8.8.4.g.4. The owner or operator of a tank system, for which a variance from secondary containment had been granted in accordance with the requirements of Section 8.8.4.g.1 of these regulations, at which a release of hazardous waste has occurred from the primary tank system and has migrated beyond the zone of engineering control, as established in the variance, must:

8.8.4.g.4.A. Comply with the requirements of Sections 8.8.7.a through 8.8.7.d of these regulations;

8.8.4.g.4.B. Prevent the migration of hazardous waste or hazardous constituents to groundwater or surface water, if possible, and decontaminate or remove contaminated soil. If contaminated soil cannot be decontaminated or removed or if groundwater has been contaminated, the owner or operator must comply with the requirements of Section 8.8.8.b of these regulations; and

8.8.4.g.4.C. If repairing, replacing, or reinstalling the tank system, provide secondary containment in accordance with the requirements of Sections 8.8.4.a through 8.8.4.f of these regulations or reapply for a variance from secondary containment and meet the requirements for new tank systems in Section 8.8.3 of these regulations if the tank system is

replaced. The owner or operator must comply with these requirements even if contaminated soil can be decontaminated or removed and groundwater or surface water has not been contaminated.

8.8.4.h. The following procedures must be followed in order to request a variance from secondary containment:

8.8.4.h.1. The chief must be notified in writing by the owner or operator that he intends to conduct and submit a demonstration for a variance from secondary containment as allowed in Section 8.8.4.g of these regulations according to the following schedule:

8.8.4.h.1.A. For existing tank systems, at least twenty-four (24) months prior to the date that secondary containment must be provided in accordance with Section 8.8.4.a of these regulations;

8.8.4.h.1.B. For new tank systems, at least thirty (30) days prior to entering into a contract for installation;

8.8.4.h.2. As part of the notification, the owner or operator must also submit to the chief a description of the steps necessary to conduct the demonstration and a timetable for completing each of the steps. The demonstration must address each of the factors listed in Section 8.8.4.g.1 or 8.8.4.g.2 of these regulations;

8.8.4.h.3. The demonstration for a variance must be completed within one hundred and eighty (180) days after notifying the chief of an intent to conduct the demonstration; and

8.8.4.h.4. If a variance is granted under Section 8.8.4.h of these regulations, the chief will require the permittee to construct and operate the tank system in the manner that was demonstrated to meet the requirements for the variance.

8.8.4.i. All tank systems, until such time that secondary containment that meets the requirements of Section 8.8.4 of these regulations is provided, must comply with the following:

8.8.4.i.1. For non-enterable underground tanks, a leak test that meets the requirements of Section 8.8.2.b.5 of these regulations or other tank integrity method, as approved or required by the chief, must be conducted at least annually;

8.8.4.i.2. For other than non-enterable underground tanks, the owner or operator must either conduct a leak test as in Section 8.8.4.i.1 of these regulations or develop a schedule and procedure for an assessment of the overall condition of the tank system by an independent, qualified registered professional engineer. The schedule and procedure must be adequate to detect

obvious cracks, leaks, and corrosion or erosion that may lead to cracks and leaks. The owner or operator must remove the stored waste from the tank, if necessary, to allow the condition of all internal tank surfaces to be assessed. The frequency of the assessments must be based on the material of construction of the tank and its ancillary equipment, the age of the system, the type of corrosion or erosion protection used, the rate of corrosion or erosion observed during the previous inspection, and the characteristics of the waste being stored or treated;

8.8.4.i.3. For ancillary equipment a leak test or other integrity assessment, as approved by the chief, must be conducted at least annually;

Note: The practices described in the American Petroleum Institute (API) Publication "Guide for Inspection of Refinery Equipment," Chapter XIII, "Atmospheric and Low-Pressure Storage Tanks," 4th Edition, 1981, may be used where applicable as guidelines for assessing the overall condition of the tank system.

8.8.4.i.4. The owner or operator must maintain on file at the facility a record of the results of the assessments conducted in accordance with Sections 8.8.4.i.1 through 8.8.4.i.3 of these regulations;

8.8.4.i.5. If a tank system or component is found to be leaking or unfit for use as a result of the leak test or assessment made pursuant to Sections 8.8.4.i.1 through 8.8.4.i.3 of these regulations, the owner or operator must comply with the requirements of Section 8.8.7 of these regulations.

8.8.5. General Operating Requirements.

8.8.5.a. Hazardous waste or treatment reagents must not be placed in a tank system if they could cause the tank, its ancillary equipment, or the containment system to rupture, leak, corrode, or otherwise fail.

8.8.5.b. The owner or operator must use appropriate controls and practices to prevent spills and overflows from tank or containment systems. These include at a minimum:

8.8.5.b.1. Spill prevention controls (e.g., check valves, dry disconnect couplings);

8.8.5.b.2. Overfill prevention controls (e.g., level sensing devices, high level alarms, automatic feed cutoff, or bypass to a standby tank); and

8.8.5.b.3. Maintenance of sufficient freeboard in uncovered tanks to prevent overtopping by wind or wave action or by precipitation.

8.8.5.c. The owner or operator must comply with the requirements of Section 8.8.7 of these regulations if a leak or spill occurs in the tank system.

8.8.6. Inspections.

8.8.6.a. The owner or operator must develop and follow a schedule and procedure for inspecting overfill controls.

8.8.6.b. The owner or operator must inspect at least once every operating day:

8.8.6.b.1. Aboveground portions of the tank system, if any, to detect corrosion or releases of waste;

8.8.6.b.2. Data gathered from monitoring and leak detection equipment (e.g., pressure or temperature gauges, monitoring wells) to ensure that the tank system is being operated according to its design; and

8.8.6.b.3. The construction materials and the area immediately surrounding the externally accessible portion of the tank system, including the secondary containment system (e.g., dikes), to detect erosion or signs of releases of hazardous waste (e.g., wet spots, dead vegetation).

Note: Section 8.2.6.c of these regulations requires the owner or operator to remedy any deterioration or malfunction he finds. Section 8.8.7 of these regulations requires the owner or operator to notify the chief within twenty-four (24) hours of confirming a leak. Also 40 C.F.R. Part 302 may require the owner or operator to notify the National Response Center of a release.

8.8.6.c. The owner or operator must inspect cathodic protection systems if present according to, at a minimum, the following schedule to ensure that they are functioning properly:

8.8.6.c.1. The proper operation of the cathodic protection system must be confirmed within six (6) months after initial installation and annually thereafter; and

8.8.6.c.2. All sources of impressed current must be inspected or tested, or both, at least bimonthly (i.e., every other month).

Note: The practices described in the National Association of Corrosion Engineers (NACE) Standard, "Recommended Practice (RP-02-85) Control of External Corrosion on Metallic Buried, Partially Buried, or Submerged Liquid Storage Systems," and the American Petroleum Institute (API) Publication 1632, "Cathodic Protection of Underground Petroleum Storage Tanks and Piping Systems," may be used, where applicable, as guidelines in

maintaining and inspecting cathodic protection systems.

8.8.6.d. The owner or operator must document in the operating record of the facility an inspection of those items in Sections 8.8.6.a through 8.8.6.c of these regulations.

8.8.7. Response to Leaks or Spills and Disposition of Leaking or Unfit-For-Use Tank Systems. A tank system or secondary containment system from which there has been a leak or spill, or which is unfit for use, must be removed from service immediately, and the owner or operator must satisfy the following requirements:

8.8.7.a. Cessation of use and prevention of flow or addition of wastes. The owner or operator must immediately stop the flow of hazardous waste into the tank system or secondary containment system and inspect the system to determine the cause of the release.

8.8.7.b. Removal of waste from tank system or secondary containment system.

8.8.7.b.1. If the release was from the tank system, the owner or operator must, within twenty-four (24) hours after detection of the leak or, if the owner or operator demonstrates that it is not possible, at the earliest practicable time, remove as much of the waste as is necessary to prevent further release of hazardous waste to the environment and to allow inspection and repair of the tank system to be performed.

8.8.7.b.2. If the material released was to a secondary containment system, all released materials must be removed within twenty-four (24) hours or in as timely a manner as is possible to prevent harm to human health and the environment.

8.8.7.c. Containment of visible releases to the environment. The owner or operator must immediately conduct a visual inspection of the release and, based upon that inspection:

8.8.7.c.1. Prevent further migration of the leak or spill to the soil or surface water; and

8.8.7.c.2. Remove and properly dispose of any visible contamination of the soil or surface water.

8.8.7.d. Notifications and Reports.

8.8.7.d.1. Any release to the environment, except as provided in Section 8.8.7.d.2 of these regulations, must be reported to the chief within twenty-four (24) hours of its detection.

8.8.7.d.2. A leak or spill of hazardous waste is

exempted from the requirements of Section 8.8.7.d of these regulations if it is:

8.8.7.d.2.A. Less than or equal to a quantity of one (1) pound; and

8.8.7.d.2.B. Immediately contained and cleaned up.

8.8.7.d.3. Within thirty (30) days of detection of a release to the environment, a report containing the following information must be submitted to the chief:

8.8.7.d.3.A. Likely route of migration of the release;

8.8.7.d.3.B. Characteristics of the surrounding soil, including soil composition, geology, hydrogeology, and climate;

8.8.7.d.3.C. Results of any monitoring or sampling conducted in connection with the release, if available. If sampling or monitoring data relating to the release are not available within thirty (30) days, these data must be submitted to the chief as soon as they become available;

8.8.7.d.3.D. Proximity to downgradient drinking water, surface water, and populated areas; and

8.8.7.d.3.E. Description of response actions taken or planned.

8.8.7.e. Provision of secondary containment, repair, or closure.

8.8.7.e.1. Unless the owner or operator satisfies the requirements of Sections 8.8.7.e.2 through 8.8.7.e.4 of these regulations, the tank system must be closed in accordance with Section 8.8.8 of these regulations.

8.8.7.e.2. If the cause of the release was a spill that has not damaged the integrity of the system, the owner or operator may return the system to service as soon as the released waste is removed and repairs, if necessary are made.

8.8.7.e.3. If the cause of the release was a leak from the primary tank system into the secondary containment system, the system must be repaired prior to returning the tank system to service.

8.8.7.e.4. If the source of the release was a leak to the environment from a component of a tank system without secondary containment, the owner or operator must provide the component of

the system from which the leak occurred with secondary containment that satisfies the requirements of Section 8.8.4 of these regulations before it can be returned to service, unless the source of the leak is an aboveground portion of a tank system that can be inspected visually. If the source is an aboveground component that can be inspected visually, the component must be repaired and may be returned to service without secondary containment as long as the requirements of Section 8.8.7.f of these regulations are satisfied. If a component is replaced to comply with the requirements of Section 8.8.7.e.4 of these regulations, that component must satisfy the requirements for new tank systems or components in Sections 8.8.3 and 8.8.4 of these regulations. Additionally, if a leak has occurred in any portion of a tank system component that is not readily accessible for visual inspection (i.e., the bottom of an inground or onground tank), the entire component must be provided with secondary containment in accordance with Section 8.8.4 of these regulations prior to being returned to use.

8.8.7.f. Certification of Major Repairs. If the owner or operator has repaired a tank system in accordance with Section 8.8.7.e of these regulations, and the repair has been extensive (e.g., installation of an internal liner or repair of a ruptured primary containment or secondary containment vessel), the tank system must not be returned to service unless the owner or operator has obtained a certification by an independent, qualified registered professional engineer, in accordance with Section 11.7.4 of these regulations, that the repaired system is capable of handling hazardous waste without release for the intended life of the system. This certification must be submitted to the chief within seven (7) days after returning the tank system to use.

Note: The chief may, on the basis of any information received that there is or has been a release of hazardous waste or hazardous constituents into the environment, issue an order under RCRA Sections 3004(w), 3008(h), or 7003(a) requiring corrective action or such other response as deemed necessary to protect human health or the environment.

Note: See Section 8.2.6.c of these regulations for the requirements necessary to remedy a failure. Also, 40 C.F.R. Part 302 may require the owner or operator to notify the National Response Center of certain releases.

8.8.8. Closure and Post-Closure Care.

8.8.8.a. At closure of a tank system, the owner or operator must remove or decontaminate all waste residues, contaminated containment system components (e.g., liners), contaminated soils, and structures and equipment contaminated with waste and manage them as hazardous waste, unless Sections 3.1.3.d.1 and 3.1.3.d.2 of these regulations apply. The closure plan, closure activities, cost estimates for closure, and financial

responsibility for tank systems must meet all of the requirements specified in Sections 8.6, 13, and 15 of these regulations.

8.8.8.b. If the owner or operator demonstrates that not all contaminated soils can be practicably removed or decontaminated as required in Section 8.8.8.a of these regulations, then the owner or operator must close the tank system and perform post-closure care in accordance with the closure and post-closure care requirements that apply to landfills (Section 8.11.11 of these regulations). In addition, for the purposes of closure, post-closure, and financial responsibility, such a tank system is then considered to be a landfill and the owner or operator must meet all of the requirements for landfills specified in Sections 8.6, 13, and 15 of these regulations.

8.8.8.c. If an owner or operator has a tank system that does not have secondary containment that meets the requirements of Sections 8.8.4.b through 8.8.4.f of these regulations and has not been granted a variance from the secondary containment requirements in accordance with Section 8.8.4.g of these regulations, then:

8.8.8.c.1. The closure plan for the tank system must include both a plan for complying with Section 8.8.8.a of these regulations and a contingent plan for complying with Section 8.8.8.b of these regulations.

8.8.8.c.2. A contingent post-closure plan for complying with Section 8.8.8.b of these regulations must be prepared and submitted as part of the permit application.

8.8.8.c.3. The cost estimates calculated for closure and post-closure care must reflect the costs of complying with the contingent closure plan and the contingent post-closure plan if those costs are greater than the costs of complying with the closure plan prepared for the expected closure under Section 8.8.8.a of these regulations.

8.8.8.c.4. Financial assurance must be based on the cost estimates in Section 8.8.8.c.3 of these regulations.

8.8.8.c.5. For the purposes of the contingent closure and post-closure plans, such a tank system is considered to be a landfill and the contingent plans must meet all of the closure, post-closure, and financial responsibility requirements for landfills under Sections 8.6, 13, and 15 of these regulations.

8.8.9. Special Requirements for Ignitable or Reactive Wastes.

8.8.9.a. Ignitable or reactive waste must not be placed in tank systems, unless:

8.8.9.a.1. The waste is treated, rendered, or mixed before or immediately after placement in the tank system so that:

8.8.9.a.1.A. The resulting waste, mixture, or dissolved material no longer meets the definition of ignitable or reactive waste under Section 3.3.2 or 3.3.4 of these regulations; and

8.8.9.a.1.B. Section 8.2.8.b of these regulations is complied with; or

8.8.9.a.2. The waste is stored or treated in such a way that it is protected from any material or conditions that may cause the waste to ignite or react; or

8.8.9.a.3. The tank system is used solely for emergencies.

8.8.9.b. The owner or operator of a facility where ignitable or reactive waste is stored or treated in a tank must comply with the requirements for the maintenance of protective distances between the waste management area and any public ways, streets, alleys, or an adjoining property line that can be built upon as required in Tables 2-1 through 2-6 of the National Fire Protection Association's "Flammable and Combustible Liquids Code" (1977 or 1981).

8.8.10. Special Requirements for Incompatible Wastes.

8.8.10.a. Incompatible wastes, or incompatible wastes and materials, must not be placed in the same tank system, unless Section 8.2.8 of these regulations is complied with.

8.8.10.b. Hazardous waste must not be placed in a tank system that has not been decontaminated and that previously held an incompatible waste or material, unless Section 8.2.8 of these regulations is complied with.

8.8.11. Special requirements for Hazardous Wastes, F020, F021, F022, F023, F026, F027, and F028.

8.8.11.a. In addition to the other requirements of Section 8.8 of these regulations, the following requirements apply to tanks storing or treating hazardous wastes F020, F021, F022, F023, F026, F027, and F028.

8.8.11.a.1. Tanks must have systems designed and operated to detect and contain spills or leaks. The design and operation of any secondary containment system must reflect consideration of all relevant factors, including:

8.8.11.a.1.A. Capacity of the Tanks. The secondary

containment system must be designed to contain one hundred percent (100%) of the capacity of the largest tank within its boundary;

8.8.11.a.1.B. Characteristics of the wastes stored or treated in the tank(s);

8.8.11.a.1.C. Method of collection of spills or leaks;

8.8.11.a.1.D. The design and construction materials of the tank(s) and secondary containment system; and

8.8.11.a.1.E. The need to prevent precipitation and run-on from entering into the system.

8.8.11.a.2. As part of the contingency plan required by Section 8.4 of these regulations, the owner or operator must specify such procedures as may be necessary to protect human health and the environment. These procedures shall include measures for the immediate removal of the waste from the system and replacement or repair of the leaking tank.

8.9. Surface Impoundments.

8.9.1. Applicability. The regulation in Section 8.9 of these regulations apply to owners and operators of facilities that use surface impoundments to treat, store, or dispose of hazardous waste, except as Section 8.1 of these regulations provides otherwise.

8.9.2. General Design Requirements.

8.9.2.a. A surface impoundment must be designed and constructed to provided maintenance of sufficient freeboard, and to prevent overtopping resulting from wave or wind action; normal and abnormal operation; malfunctions of level controllers, alarms, and other equipment; precipitation; human error; or any combination thereof. The freeboard shall not be less than sixty centimeters (60 cm) (2 feet) or an amount of freeboard other than sixty centimeters (60 cm) based on documentation acceptable to the chief that the specified amount of freeboard will prevent overtopping.

8.9.2.b. A surface impoundment must be designed and constructed so that any flow of waste into the impoundment can be immediately shut off in the event of overtopping or liner failure.

8.9.2.c. A surface impoundment must be designed and constructed to prevent discharge into or on the land, and to State waters (except discharges authorized by an NPDES permit during the life of the impoundment) by use of a liner system and leachate detection, collection and removal system which complies with Section 8.9.4 of these regulations.

8.9.2.d. Dikes must be designed and constructed with sufficient structural integrity to prevent massive failure without dependence on any liner system included in the surface impoundment design.

8.9.2.e. A leachate detection, collection, and removal system must be designed and constructed so that liquid will flow freely from the collection system to prevent the creation of pressure head within the collection system in excess of that necessary to cause the liquid to flow freely.

~~8.9.2.f. Existing facilities are exempt from the requirements outlined in Sections 8.9.2.c, 8.9.2.e, 8.9.4.a.1, 8.9.4.c, 8.9.4.d, 8.9.6, 8.9.10.c.2, and 8.9.10.d of these regulations, provided that Section 8.9.2.g of these regulations is complied with.~~

~~8.9.2.g. The owner or operator, in order to qualify for the exemption in Section 8.9.2.f of these regulations, must demonstrate that statistically significant increases of hazardous constituents do not occur in the groundwater or surface water during its active life and the post-closure period, except as provided in Section 8.9.2.i of these regulations.~~

8.9.2.h.8.9.2.f. If statistically significant increases of hazardous constituents are detected as outlined in Section 8.13.8.d of these regulations in the groundwater beneath the facility (including the regulated unit) the owner or operator must comply with the corrective action outlined in Section 8.13.9 of these regulations (if groundwater contamination has been determined).

8.9.2.i.8.9.2.g. If the owner or operator determines that the corrective action plan being implemented under Section 8.13.9 of these regulations is insufficient for causing cessation of hazardous waste constituents migration, then the unit must be closed. However, if it is determined that the corrective action will adequately arrest and remove the contamination, the owner may choose one of the four (4) options which will become part of the conditions of the permit:

8.9.2.i.1.8.9.2.g.1. Retrofit the unit with liners in accordance with Section 8.9.4.a.1 of these regulations;

8.9.2.i.2.8.9.2.g.2. Stop the leak;

8.9.2.i.3.8.9.2.g.3. Continue the operation of the unit, while concurrently developing and implementing an alternate treatment, storage or disposal method, for a period of five (5) years at which time the unit must be closed; or

8.9.2.i.4.8.9.2.g.4. Continue the operation of the

unit provided a demonstration can be made and approved by the chief that no adverse impact to human health or to the environment will result from the continued operation of the unit during the active life and closure and post-closure period, provided that the facility continues to comply with an approved corrective action program. Such demonstration must include and discuss the following:

~~8.9.2.i.4.A.8.9.2.g.4.A.~~ Potential adverse effects on groundwater quality, considering:

~~8.9.2.i.4.A.i.8.9.2.g.4.A.i.~~ The physical and chemical characteristics of the waste in the regulated unit, including its potential for migration;

~~8.9.2.i.4.A.ii.8.9.2.g.4.A.ii.~~ The hydrogeological characteristics of the facility and surrounding land;

~~8.9.2.i.4.A.iii.8.9.2.g.4.A.iii.~~ The quantity of groundwater and the direction of groundwater flow;

~~8.9.2.i.4.A.iv.8.9.2.g.4.A.iv.~~ The proximity and withdrawal rates of groundwater users;

~~8.9.2.i.4.A.v.8.9.2.g.4.A.v.~~ The current and future uses of the groundwater in the area;

~~8.9.2.i.4.A.vi.8.9.2.g.4.A.vi.~~ The existing quality of groundwater, including other sources of contamination and their cumulative impact on the groundwater quality;

~~8.9.2.i.4.A.vii.8.9.2.g.4.A.vii.~~ The potential for health risks caused by human exposure to hazardous constituents;

~~8.9.2.i.4.A.viii.8.9.2.g.4.A.viii.~~ The potential damage to wildlife, crops, vegetation, and physical structures caused by exposure to waste constituents; and

~~8.9.2.i.4.A.ix.8.9.2.g.4.A.ix.~~ The persistence and permanence of the potential adverse effects; and

~~8.9.2.i.4.B.8.9.2.g.4.B.~~ Potential adverse effects on hydraulically-connected surface water quality, considering:

~~8.9.2.i.4.B.i.8.9.2.g.4.B.i.~~ The volume and physical and chemical characteristics of the waste in the regulated unit;

~~8.9.2.i.4.B.ii.8.9.2.g.4.B.ii.~~ The hydrogeological characteristics of the facility and surrounding land;

~~8.9.2.i.4.B.iii~~8.9.2.g.4.B.iii. The quantity and quality of groundwater and the direction of groundwater flow;

~~8.9.2.i.4.B.iv~~8.9.2.g.4.B.iv. The patterns of rainfall in the region;

~~8.9.2.i.4.B.v~~8.9.2.g.4.B.v. The proximity of the regulated unit to surface waters;

~~8.9.2.i.4.B.vi~~8.9.2.g.4.B.vi. The current and future uses of surface waters in the area and any water quality standards established for those surface waters;

~~8.9.2.i.4.B.vii~~8.9.2.g.4.B.vii. The existing quality of surface water, including other sources of contamination and the cumulative impact on surface water quality;

~~8.9.2.i.4.B.viii~~8.9.2.g.4.B.viii. The potential for health risks caused by human exposure to waste constituents;

~~8.9.2.i.4.B.ix~~8.9.2.g.4.B.ix. The potential damage to wildlife, crops, vegetation, and physical structures caused by exposure to waste constituents; and

~~8.9.2.i.4.B.x~~8.9.2.g.4.B.x. The persistence and permanence of the potential adverse effects.

~~8.9.2.i.4.C~~8.9.2.i.4.C. In making any determination under Section 8.9.2.i of these regulations concerning the use of groundwater in the area around the facility, the chief will consider any identification of underground sources of drinking water and exempted aquifers made under Title 46, Water Resources Board, Series 9 (46 C.S.R. 9).

8.9.3. Operating Requirements.

8.9.3.a. A surface impoundment must be operated and maintained to prevent any overtopping resulting from wind and wave action; overfilling; normal and abnormal operation; malfunctions of level controllers, alarms, or other equipment; precipitation; human error; or any combination thereof.

8.9.3.b. A surface impoundment must be operated to maintain at least the amount of freeboard specified by the chief in the permit.

8.9.3.c. A leachate detection, collection, and removal system installed to comply with Section 8.9.4.a of these regulations must be operated so that leachate flows freely from the collection system and is removed as it accumulates or with sufficient frequency to prevent backwater within the collection system.

8.9.3.d. Earthen dikes must be kept free of:

8.9.3.d.1. Perennial woody plants with root systems which could affect the structural integrity of the dike; and

8.9.3.d.2. Burrowing mammals which could remove earthen materials upon which the structural integrity of the dike is dependent or creates leaks through burrows in the dike.

8.9.3.e. Run-on must be diverted away from a surface impoundment.

8.9.4. Specific Design Requirements.

~~8.9.4.a. A surface impoundment must be designed to prevent discharge into the land and State waters during its life and must have:~~

~~8.9.4.a.1. A double liner system that is designed, constructed, and installed to prevent any migration of wastes or leachate or both out of the impoundment to the adjacent subsurface, soil, or groundwater or surface water at any time during the operating life, closure, and post-closure period (where applicable) of the impoundment. The primary liner (i.e., the liner in contact with the waste) must be constructed of materials that prevent wastes or leachate or both from passing into the liner during the operating life, closure, and post-closure period (where applicable) of the facility. All liners must be:~~

~~8.9.4.a.1.A. Constructed of materials that are chemically resistant to the waste and leachate expected to be generated and of sufficient strength and thickness to prevent failure due to pressure gradients (including static head and external hydrogeologic forces), physical contact with the waste and leachate to which they are exposed, climatic conditions, the stress of installation, and the stress of daily operation. The liner will be tested for compatibility with the waste and leachate expected to be generated to determine possible effects on the liner materials prior to installation;~~

~~8.9.4.a.1.B. Placed upon a foundation or base capable of providing support to the liners and resistance to pressure gradients above and below the liners to prevent failure of the liners due to settlement, compression, or uplift;~~

~~8.9.4.a.1.C. Installed to cover all surrounding earth likely to be in contact with the waste and leachate;~~

~~8.9.4.a.1.D. Constructed to be free of lenses, cracks, channels, holes, or other structural nonconformities; and~~

~~8.9.4.a.1.E. If a soil-based or admixed liner is to~~

~~be used as the secondary liner (i.e., the liner underneath the primary liner), then such liner must be at least 90 centimeters (3 feet) thick with a maximum saturated hydraulic conductivity of no more than 1×10^{-7} cm/sec throughout the total thickness and area of the liner.~~

~~8.9.4.a.2. An impoundment (including the base of the lowermost liner components) which must be located at a minimum of three (3) feet above the highest known seasonal water table elevation. This three foot distance may be achieved by elevating the surface impoundment artificially or by the nonmechanical lowering of the water table at the location. However, no mechanical means (i.e., pumps) may be used to lower the water table. All plans for the alteration of the water level must be approved by the chief and will become a part of the hazardous waste management permit.~~

~~8.9.4.a.3. A leachate, detection, collection, and removal system beneath the liner(s) in contact with the waste (i.e., must be situated between the liners in the double liner system) to detect, contain, collect, and remove any discharge from the liner(s) in contact with the waste.~~

~~8.9.4.b. Earthen dikes must have a protective cover such as grass or rock to minimize wind and water erosion and to preserve the structural integrity of the dike.~~

~~8.9.4.c. A leachate detection, collection, and removal system beneath the liner in contact with the waste (i.e., must be situated between the liners in the double liner system) to detect, contain, collect, and remove any discharge from the liner in contact with the waste at any time during the operating life, closure, and the post closure period (where applicable) of the impoundment.~~

~~8.9.4.d. The owner or operator and a registered professional engineer must submit to the chief a certification that the facility has been designed and constructed in compliance with Section 8.9.4 of these regulations prior to the placement of wastes into the impoundment.~~

8.9.4.a. Any surface impoundment that is not covered by Section 8.9.4.c of these regulations or 40 C.F.R. §265.221 must have a liner for all portions of the impoundment except for existing portions of such impoundments). The liner must be designed, constructed, and installed to prevent any migration of wastes out of the impoundment to the adjacent subsurface soil or 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 Section 8.9.7.a

of these regulations. For impoundments that will be closed in accordance with Section 8.9.10.a, the liner must be constructed of materials that can prevent wastes from migrating into the liner during the active life of the facility. The liner must be:

8.9.4.a.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;

8.9.4.a.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

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

8.9.4.b. The owner or operator will be exempted from the requirements of Section 8.9.4.a of these regulations if the chief 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 into the groundwater or surface water at any future time. In deciding whether to grant an exemption, the chief will consider:

8.9.4.b.1. The nature and quantity of the wastes;

8.9.4.b.2. The proposed alternate design and operation;

8.9.4.b.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

8.9.4.b.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.

8.9.4.c. The owner or operator of each new surface impoundment, each new surface impoundment unit at an existing facility, each replacement of an existing surface impoundment unit, and each lateral expansion of an existing surface impoundment unit, must install two (2) or more liners and leachate collection system between such liners. The liners and leachate collection system must protect human health and the environment. The requirements of this Section shall apply with respect to all waste received after

issuance of the permit for units where the part B of the permit application is received by the chief. The requirement for the installation of two (2) or more liners in this Section may be satisfied by the installation of a top liner designed, operated, and constructed of materials to prevent the migration of any constituent into such liner during the period such facility remains in operation (including any post-closure monitoring period), and a lower liner designed, operated, and constructed to prevent the migration of any constituent through such liner during such period. For the purpose of the preceding sentence, a lower liner shall be deemed to satisfy such requirement if it is constructed of at least a 3-foot thick layer of recompacted clay or other natural material with a permeability of no more than 1×10^{-7} centimeter per second.

Note: For purposes of federal enforcement, the liner and leachate collection requirements of Section 8.9.4.c of these regulations were applicable on November 8, 1984.

8.9.4.d. Section 8.9.4.c of these regulations will not apply if the owner or operator demonstrates to the chief, and the chief finds for such surface impoundment, that alternative design and operating practices, together with location characteristics, will prevent the migration of any hazardous constituent into the groundwater or surface water at least as effectively as such liners and leachate collection systems.

8.9.4.e. The double liner requirement set forth in Section 8.9.4.c of these regulations may be waived by the chief for any monofill, if:

8.9.4.e.1. The monofill contains only hazardous wastes from foundry furnace emission controls or metal casting molding sand, and such wastes that do not contain constituents which would render the wastes hazardous for reasons other than the Toxicity Characteristic of Section 3.3.5 of these regulations; and

8.9.4.e.2.A.i. The monofill has at least one (1) liner for which there is no evidence that such liner is leaking. For the purpose of this Section, 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 soils, 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 Section 8.9.4.c of these regulations on the basis of a liner designed, constructed, installed, and operated to prevent hazardous waste from passing beyond the liner, at the closure of such impoundment, the owner or operator must remove or decontaminate all waste residues, all contaminated liner material, and contaminated soil to the extent practicable. If all

contaminated soil is not removed or decontaminated, the owner or operator of such impoundment will comply with appropriate post-closure requirements, including but not limited to groundwater monitoring and corrective action;

8.9.4.e.2.A.ii. The monofill is located more than one-quarter mile from an underground source of drinking water (as that term is defined in 40 C.F.R. §144.3); and

8.9.4.e.2.A.iii. The monofill is in compliance with generally applicable groundwater monitoring requirements for facilities with permits under RCRA Section 3005(c); or

8.9.4.e.2.B. 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.

8.9.4.f. A surface impoundment must be designed, constructed, maintained, and operated to prevent overtopping resulting from normal or abnormal operations; overfilling; wind and wave action; rainfall; run-on; malfunctions of level controllers, alarms, and other equipment; and human error.

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

8.9.4.h. The chief will specify in the permit all design and operating practices that are necessary to ensure that the requirements of this Section are satisfied.

8.9.5. Inspections and Testing.

8.9.5.a. During construction or installation, liner systems must be inspected for uniformity, damage and imperfections (e.g., holes, cracks, thin spots, and foreign materials).

8.9.5.a.1. Soil-based and admixed liner systems must be treated for compaction density, moisture content, and permeability, and inspected for imperfections including lenses, cracks, channels, root holes, or other structural non-conformities that may cause an increase in the permeability of the liner; and

8.9.5.a.2. Manufactured liner materials (e.g., membranes, sheets, and coatings) must be inspected to ensure tight seams and joints and the absence of tears or blisters.

8.9.5.a.3. Upon discovery of such imperfections, the repair of the liner must be completed prior to placement of the

wastes into the impoundment.

8.9.5.a.4. The leachate detection, collection, and removal system must be inspected for cracks, breaks, loose seams and joints, clogging, areas of structural stress, and any other faults or conditions which may result in collapse or failure of the system.

8.9.5.a.5. Results of such tests and repairs must be certified in writing by a registered professional engineer.

8.9.5.b. The owner or operator must inspect:

8.9.5.b.1. A surface impoundment, including the leachate detection, collection, and removal system, at least once each day to ensure compliance with Sections 8.9.3.a through 8.9.3.c of these regulations and to detect any leaks or other failures of the impoundment;

8.9.5.b.2. Each surface impoundment, including dikes, berms, and vegetation surrounding the dike, at least once a week and after storms to detect any evidence of or potential for leaks from the impoundment, erosion of dikes, and to ensure compliance with Section 8.9.3.d of these regulations.

8.9.5.c. The structural integrity of any dike, including that portion of any dike which provides freeboard, must be certified against massive failure by a registered professional engineer prior to the issuance or reissuance of a permit; or if the impoundment is not in service and has not been inspected and maintained as required under Section 8.9.5.b of these regulations, prior to being placed in service and after construction or prior to being returned to service.

8.9.5.c.1. In certifying the structural integrity of the dike it must be established that the dike will withstand:

8.9.5.c.1.A. The stress of the pressure head of liquids placed into the impoundment;

8.9.5.c.1.B. The weakening effect of earth materials being scoured due to leakage from the impoundment through and under the dike without relying on any liner system;

8.9.5.c.1.C. The weakening effect of earth materials being scoured due to leakage from the impoundment through and under the dike assuming leaks develop in the liner system; and

8.9.5.c.1.D. The weakening effect of any piping included in the impoundment's construction.

8.9.6. Liner System Repairs; Contingency Plans.

8.9.6.a. Whenever there is any indication of a possible failure of a liner system, that system must be inspected in accordance with the provisions of the liner system evaluation and repair plan required by Section 8.9.6.d of these regulations. Indications of possible failure of the liner system include at least an unplanned and non-sudden drop in liquid level in the impoundment, liquid detection in the leachate detection system, evidence of leakage or the potential for leakage in the dike, erosion of the dike, apparent or potential deterioration of the liner(s) based on observation or test samples of the liner materials, any mishandling of wastes placed in the impoundment, and foreign objects in the impoundment.

8.9.6.b. Whenever there is a positive indication of an unplanned sudden drop in liquid level in the impoundment, or active leakage through the dike, the impoundment must be removed from service.

8.9.6.c. If the surface impoundment must be removed from service as required by Section 8.9.6.b of these regulations, the owner or operator must:

8.9.6.c.1. Immediately shut off the flow or stop the addition of wastes into the impoundment;

8.9.6.c.2. Immediately contain any surface leakage which has occurred or is occurring and cause such leak(s) to be stopped;

8.9.6.c.3. Immediately notify the chief through the division's Emergency Notification Number 1-800-642-3074;

8.9.6.c.4. If all leaks specified in Section 8.9.6.b of these regulations, including leaks not evident at the surface, cannot be stopped by any other means, empty the impoundment;

8.9.6.c.5. Within fifteen (15) days after detecting the leak, submit to the chief a written report of the problem and the corrective measures taken; and

8.9.6.c.6. Take any other steps necessary to stop or prevent catastrophic failure.

8.9.6.d. As part of the contingency plan required in Section 8.4 of these regulations, the owner or operator must specify:

8.9.6.d.1. A procedure for complying with the requirements of Section 8.9.6.c of these regulations; and

8.9.6.d.2. A liner system repair plan describing testing and monitoring techniques; procedures to be followed to

evaluate the integrity of the liner system in the event of a possible failure; a schedule of actions to be taken in the event of a possible failure; and a description of the repair techniques to be used in the event of leakage due to liner system failure or deterioration which does not require the impoundment to be removed from service.

8.9.6.e. No surface impoundment that has been removed from service in accordance with Section 8.9.6.b of these regulations may be restored to service unless:

8.9.6.e.1. The liner system and the leachate detection, collection, and removal system have been required; and

8.9.6.e.2. The liner system and the leachate detection, collection, and removal system have been re-certified by a registered professional engineer as meeting the design specifications approved in the permit.

8.9.6.f. A surface impoundment that has been removed from service in accordance with Section 8.9.6.b of these regulations and that is not being repaired must be closed in accordance with Section 8.9.7 of these regulations.

8.9.6.g. All wastes removed from the impoundment must be managed as a hazardous waste in compliance with all applicable requirements. Any point source discharge to State waters is subject to the requirements of the Water Pollution Control Act and all regulations promulgated thereunder.

8.9.7. Closure.

8.9.7.a. At closure, all hazardous waste and hazardous waste residues must be removed from the impoundment, except as provided in Section 8.9.10 of these regulations. Any component of the surface impoundment or any appurtenant structures or equipment (e.g., liners, discharge platforms and pipes, baffles, skimmers, aerators, or other equipment) containing or contaminated with hazardous waste or hazardous waste residues must be decontaminated or removed.

8.9.7.b. At closure, as throughout the operating period, unless the owner or operator can demonstrate in accordance with these regulations that the waste removed from the surface impoundment is not a hazardous waste, the owner or operator becomes a generator of hazardous waste and must manage it in accordance with all applicable requirements.

8.9.7.c. An owner or operator who plans to close a surface impoundment exempted from the liner requirements pursuant to Section 8.9.2.f of these regulations must:

8.9.7.c.1. Prepare a contingent plan for complying with Sections 8.9.10.a.1, 8.9.10.a.2, and 8.9.10.b of these regulations in case not all contaminated subsoils can be practicably removed at closure; and

8.9.7.c.2. Prepare a contingent post-closure plan for complying with Section 8.9.10.c of these regulations, except Section 8.9.10.c.2 of these regulations, in case not all contaminated subsoils can be practicably removed at closure.

8.9.8. Special Requirements for Ignitable or Reactive Waste. Ignitable or reactive waste must not be placed in a surface impoundment unless the waste and impoundment satisfy all applicable requirements of 40 C.F.R. Part 268, and:

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

8.9.8.a.1. The resulting waste, mixture, or dissolution of material no longer meets the definition of ignitable or reactive waste under Section 3.3.2 or 3.3.4 of these regulations; and

8.9.8.a.2. Section 8.2.8 of these regulations is complied with;

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

8.9.8.c. The surface impoundment is used solely for emergencies.

8.9.9. Special Requirements for Incompatible Wastes.

8.9.9.a. Incompatible wastes, or incompatible wastes and other materials, must not be placed in the same surface impoundment, unless Section 8.2.8.b of these regulations is complied with.

8.9.10. Additional Requirements for Impoundments Used for Disposal of Hazardous Waste.

8.9.10.a. In addition to all other requirements of Section 8.9 of these regulations, when an owner or operator leaves wastes, waste residues, or contaminated materials in place in an impoundment upon closure, he must comply with the following as part of the closure procedures:

8.9.10.a.1. Eliminate the free liquids contained in the impoundment by removing the liquid wastes and by solidifying the remaining wastes and waste residues left in place; and

8.9.10.a.2. Stabilize the remaining wastes to a bearing capacity sufficient to support the final cover;

8.9.10.b. Prior to beginning the post-closure period, the owner or operator must cover the impoundment with a final cover designed and constructed to:

8.9.10.b.1. Provide long-term minimization of migration of liquids through the closed impoundment;

8.9.10.b.2. Function with minimum maintenance;

8.9.10.b.3. Promote drainage and minimize erosion or abrasion of the cover;

8.9.10.b.4. Accommodate settling and subsidence so that the cover's integrity is maintained; and

8.9.10.b.5. Have a permeability less than or equal to the least permeable component of the liner system or 1×10^{-7} cm/sec, whichever value is less;

8.9.10.c. After final closure, the owner or operator must comply with all post-closure requirements contained in Section 8.6.7, 8.6.8, 13, 15.1, and 15.3 of these regulations including maintenance and monitoring throughout the post-closure period (specified in the permit under Section 8.6.7 of these regulations). The owner or operator must:

8.9.10.c.1. Maintain the integrity and the effectiveness of the cover including making repairs to the cover as necessary to correct the effects of settling, subsidence, erosion, or other events;

8.9.10.c.2. Continue to operate the leachate collection and removal system for the entire post-closure period;

8.9.10.c.3. Maintain and monitor the groundwater monitoring system and comply with all other applicable requirements of Section 8.13 of these regulations; and

8.9.10.c.4. Prevent run-on and runoff from eroding or otherwise damaging the cover;

8.9.10.d. During the post-closure period, the owner or operator must:

8.9.10.d.1. Inspect daily and maintain the leachate detection, collection, and removal system. If leachate is detected in the detection system between the liners, the owner or operator must:

8.9.10.d.1.A. Immediately notify the chief through the division's Emergency Notification Number 1-800-642-3074; and

8.9.10.d.1.B. Within fifteen (15) days after detecting the leak, submit to the chief a written report of the problem and corrective measures taken.

8.9.10.d.2. Unless the owner or operator can demonstrate otherwise, the leachate must be managed as a hazardous waste in accordance with all regulations governing the generation of such wastes.

8.9.10.d.3. If it is determined that the liner(s) is leaking, the owner or operator must begin the remedial actions set forth in the contingency plan specified in the permit which shall at least include plans for repairing the breach in the liner and preventing the continued migration of the leachate.

8.9.11. Special requirements for hazardous wastes F020, F021, F022, F023, F026, F027, and F028.

8.9.11.a. Hazardous wastes F020, F021, F022, F023, F026, F027, and F028 must not be placed in a surface impoundment unless the owner or operator operates the surface impoundment in accordance with a management plan for these wastes that is approved by the chief pursuant to the standards set out under this Section, and in accordance with all other applicable requirements of these regulations. The factors to be considered are:

8.9.11.a.1. The volume, physical, and chemical characteristics of the waste, including their potential to migrate through the soil or to volatilize or escape into the atmosphere;

8.9.11.a.2. The attenuative properties of underlying and surrounding soils or other materials;

8.9.11.a.3. The mobilizing properties of other materials co-disposed with these wastes; and

8.9.11.a.4. The effectiveness of additional treatment, design, or monitoring techniques.

8.9.11.b. The chief may determine that additional design, operating, and monitoring requirements are necessary for surface impoundments managing hazardous wastes F020, F021, F022, F023, F026, F027, and F028 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.

8.10. Waste Piles.

8.10.1. Applicability.

8.10.1.a. The regulations in Section 8.10 of these regulations apply to owners and operators of facilities that store or treat hazardous waste in piles, except as Section 8.1 of these regulations provides otherwise.

8.10.1.b. (Reserved).

8.10.1.c. Owners and operators of waste piles used to treat or store only hazardous wastes that do not contain free liquids are not subject to regulation under Sections 8.10.2, 8.10.3, 8.10.4, 8.10.5, and 8.10.6 of these regulations with respect to such piles, provided that:

8.10.1.c.1. Liquids or materials containing free liquids are not placed in the pile;

8.10.1.c.2. The pile is inside or under a structure that provides protection from precipitation so that neither runoff nor leachate is generated;

8.10.1.c.3. The pile is protected from surface water run-on by structure or in some other manner;

8.10.1.c.4. The pile is designed and operated to control dispersal of the waste by wind, where necessary, by means other than wetting;

8.10.1.c.5. The pile will not generate leachate through decomposition or other reactions; and

8.10.1.c.6. The pile does not discharge hazardous wastes into State waters.

8.10.2. Design and Operating Requirements.

8.10.2.a. A waste pile must have:

8.10.2.a.1. A liner that is designed, constructed, and installed to prevent discharge into or on the land and State waters during the active life (including the closure period) of the waste pile. The liner must be:

8.10.2.a.1.A. 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;

8.10.2.a.1.B. 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;

8.10.2.a.1.C. At least three (3) feet above the seasonal high water table; and

8.10.2.a.1.D. Installed to cover all surrounding earth likely to be in contact with the waste or leachate; and

8.10.2.a.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 chief will specify conditions for design and operation in the permit to ensure that the leachate depth over the liner does not exceed 30 cm (one foot). The leachate collection and removal system must be:

8.10.2.a.2.A. Constructed of materials that are:

8.10.2.a.2.A.i. Chemically resistant to the waste managed in the pile and the leachate expected to be generated; and

8.10.2.a.2.A.ii. Of sufficient strength and thickness to prevent collapse under the pressures exerted by overlaying wastes, waste cover materials, and by any equipment used at the pile; and

8.10.2.a.2.B. Designed and operated to function without clogging through the operating life and scheduled closure of the waste pile.

8.10.2.a.3. If the collected leachate or runoff is a hazardous waste under Section 3 of these regulations, it must be managed as a hazardous waste in accordance with all applicable requirements. If collected leachate or runoff is discharged through a point source to State waters, it is subject to the requirements of the Water Pollution Control Act and all regulations promulgated thereunder.

8.10.2.b. The owner or operator must design, construct, operate, and maintain a run-on control system capable of preventing flow onto the active portion of the pile during peak discharge from at least a 25-year storm.

8.10.2.c. The owner or operator must design, construct, operate, and maintain a runoff management system to collect and control at least the water volume resulting from a 25-year, 24-hour storm.

8.10.2.d. Collection and holding facilities (e.g., tanks or basins) associated with run-on and runoff control systems must

be emptied or otherwise managed expeditiously after any precipitation event to maintain design capacity of the system.

8.10.2.e. The pile must be designed and operated to control dispersal of the waste by wind or water.

8.10.2.f. The chief will specify in the permit all conditions for design and operation practices that are necessary to ensure that the requirements of Section 8.10.2 of these regulations are satisfied.

8.10.2.g. A liner system must be protected from plant growth which can puncture any component of the system.

8.10.2.h. A liner system must have a containment life equal to or greater than the life of the pile.

8.10.3. Specific Requirements for Double-Lined Waste Piles.

8.10.3.a. The owner or operator of a double-lined waste pile must meet the following:

8.10.3.a.1. The pile (including its underlying liners) must be located at least three (3) feet above the seasonal high water table;

8.10.3.a.2. The pile must be underlain by two (2) liners which are designed and constructed in a manner that prevents the migration of liquids into or out of the space between the liners. Both liners must meet all the specifications in Section 8.10.2.a.1 of these regulations;

8.10.3.a.3. A leak detection system must be designed, constructed, maintained, and operated between the liners to detect any migration of liquids into the space between the liners; and

8.10.3.a.4. The pile must have a leachate collection and removal system above the top liner that is designed, constructed, maintained, and operated in accordance with Section 8.10.2.a.2 of these regulations.

8.10.3.b. If liquid leaks into the leak detection system, the owner or operator must:

8.10.3.b.1. Immediately notify the chief through the division's emergency Notification Number 1-800-642-3074;

8.10.3.b.2. Within fifteen (15) days after detecting the leak, submit to the chief a written report of the problem and corrective measures taken; and

8.10.3.b.3. Comply with the provisions of Section

8.10.6 of these regulations.

8.10.4. Specific Requirements for Single-Lined Waste Piles; Inspection of Liners.

8.10.4.a. The owner or operator of a single-lined waste pile must meet the following conditions:

8.10.4.a.1. The wastes in the pile must be removed periodically, and the liner must be inspected for deterioration, cracks, or other conditions that may result in leaks. The frequency of inspection will be specified in the inspection plan required in Section 8.2.6 of these regulations and must be based on the potential for the liner (base) to crack or otherwise deteriorate under the conditions of operation (e.g., waste type, rainfall, loading rates, and subsurface stability);

8.10.4.a.2. The liner must be of sufficient strength and thickness to prevent failure due to puncture, cracking, tearing, or other physical damage from equipment used to place waste in or on the pile or to clean and expose the liner surface for inspection; and

8.10.4.a.3. The requirements listed in Sections 8.10.2.a and 8.10.2.b of these regulations must be met.

8.10.4.b. If deterioration, a crack, or other condition is identified that is causing or could cause a leak, the owner or operator must:

8.10.4.b.1. Immediately notify the chief through the division's Emergency Notification Number 1-800-642-3074;

8.10.4.b.2. Within fifteen (15) days after detecting the leak, submit to the chief a written report of the problem and corrective measures taken; and

8.10.4.b.3. Comply with the provisions of Section 8.10.6 of these regulations.

8.10.5. Monitoring and Inspection.

8.10.5.a. During and immediately after construction or installation, liner and cover systems must be inspected for uniformity, damage, and imperfections (e.g., holes, cracks, thin spots, and foreign materials).

8.10.5.a.1. Soil-based and admixed liners must be tested for compaction density, moisture content, permeability, and inspected for imperfections including lenses, cracks, channels, root holes, or other structural nonconformities that may cause an increase in the permeability of the liner.

8.10.5.a.2. Synthetic liner materials (e.g., membranes, sheets, and coatings) must be inspected to ensure tight seams and joints and the absence of tears or blisters.

8.10.5.a.3. Upon discovery of any imperfections, the repair of the liner must be completed prior to placement of the wastes into the liner.

8.10.5.a.4. The results of such tests and repairs must be certified in writing by the owner or operator and a registered professional engineer.

8.10.5.a.5. The leachate detection, collection, and removal system must be inspected for cracks, breaks, loose seams and joints, clogging, areas of structural stress, and any other faults or conditions which may result in collapse or failure of the system.

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

8.10.5.b.1. Deterioration, malfunctions, or improper operation of run-on and runoff control systems;

8.10.5.b.2. The presence of liquids in the leachate detection systems, where installed to comply with Section 8.10.3 of these regulations;

8.10.5.b.3. Proper functioning of wind dispersal control systems, where present; and

8.10.5.b.4. The presence of leachate in and proper functioning of leachate collection and removal systems, where present.

8.10.6. Liner System Repairs; Contingency Plan.

8.10.6.a. Whenever there is any indication of a possible failure of liner system, that system must be inspected in accordance with the provisions of the liner system evaluation and repair plan required by Section 8.10.6.d of these regulations. Indications of possible failure of the liner system include liquid detected in the leachate detection system (where applicable), evidence of leakage or the potential for leakage in the base, erosion of the base, or apparent or potential deterioration of the liner(s) based on observation or test samples of the liner materials.

8.10.6.b. Whenever there is a positive indication of a failure of the liner system, the waste pile must be removed from service, and the leachate removed and treated by method and

schedule approved by the chief. Indications of positive failure of the liner system (where applicable) or a breach (e.g., a hole, tear, crack, or separation) in the base.

8.10.6.c. If the waste pile must be removed from service as required by Section 8.10.6.b of these regulations, the owner or operator must:

8.10.6.c.1. Immediately stop adding waste to the pile;

8.10.6.c.2. Immediately contain any leakage which has or is occurring and treat the leachate by a method and schedule approved by the chief;

8.10.6.c.3. Immediately cause the leak to be stopped; and

8.10.6.c.4. If the leak cannot be stopped by any other means, remove the waste from the base.

8.10.6.d. As part of the contingency plan required in Section 8.4 of these regulations the owner or operator must specify:

8.10.6.d.1. All procedures, and design and operating specifications for complying with the requirements of Section 8.10.6.c of these regulations; and

8.10.6.d.2. A liner system evaluation and repair plan describing testing and monitoring techniques; procedures to be followed to evaluate the integrity of the liner system in the event of a possible failure; a schedule of actions to be taken in the event of a possible failure; and a description of the repair techniques to be used in the event of leakage due to liner system failure or deterioration which does not require the waste pile to be removed from service.

8.10.6.e. No waste pile that has been removed from service in accordance with Section 8.10.6.b of these regulations may be restored to service unless:

8.10.6.e.1. The liner system has been repaired; and

8.10.6.e.2. The liner system has been certified by a registered professional engineer as meeting the design specifications approved in the permit and that to the best of his knowledge and opinion the leak has been stopped.

8.10.6.f. A waste pile that has been removed from service in accordance with Section 8.10.6.b of these regulations and that is not being repaired must be closed in accordance with Section 8.10.9 of these regulations.

8.10.6.g. All wastes removed from the waste pile must be managed as a hazardous waste in compliance with all applicable requirements. Any point source discharge to State waters is subject to the requirements of the Water Pollution Control Act and all regulations promulgated thereunder.

8.10.7. Special Requirements for Ignitable or Reactive Waste.

8.10.7.a. Ignitable or reactive waste must not be placed in a waste pile unless the waste and waste pile satisfy all applicable requirements of 40 C.F.R. Part 268 and the waste is treated, rendered, or mixed before or immediately after placement in the pile so that:

8.10.7.a.1. Addition of the waste to an existing pile results in the waste or mixture no longer meeting the definition of ignitable or reactive waste and complies with Section 8.2.8 of these regulations; or

8.10.7.a.2. The waste is managed in such a way that it is protected from any material or conditions which may cause it to ignite or react.

8.10.8. Special Requirements for Incompatible Wastes.

8.10.8.a. Incompatible wastes, or incompatible wastes and other materials, must not be placed in the same pile, unless Section 8.2.8 of these regulations is complied with.

8.10.8.b. A pile of hazardous waste that is incompatible with any waste or other material stored nearby in other containers, piles, open tanks, or surface impoundments must be separated from the other materials, or protected from them by means of a dike, berm, wall, or other device which will prevent fires, explosions, gaseous emissions, leaching, or other discharge which could result from the contact or mixing of incompatible wastes or materials.

8.10.8.c. Hazardous waste must not be piled in the same base where incompatible wastes or materials were previously piled, unless the base has been decontaminated sufficiently to ensure compliance with Section 8.2.8 of these regulations.

8.10.9. Closure.

8.10.9.a. At closure, all hazardous waste and hazardous waste residues must be removed from the pile, except as provided in Section 8.10.9.c of these regulations. Any component of the liner system containing or contaminated with hazardous waste or hazardous waste residues must be decontaminated or removed.

8.10.9.b. At closure, as throughout the operating period,

unless the owner or operator can demonstrate in accordance with these regulations that the waste removed from the waste pile is not a hazardous waste, the owner or operator becomes a generator of hazardous waste and must manage it in accordance with applicable requirements listed in Sections 8.2.2 through 8.2.8 of these regulations.

8.10.9.c. If, upon closure, the owner or operator determines that all hazardous wastes and hazardous waste residues can not be removed as required by Section 8.10.9.a of these regulations due to technical infeasibility, then the owner or operator must submit an application for modifying the permit pursuant to Section 11.17 of these regulations. Such application must contain all information which demonstrates compliance with the requirements for managing a landfill, pursuant to Sections 8.11, 11, and 13 of these regulations.

8.10.10. Special Requirements for Hazardous Wastes F020, F021, F022, F023, F026, F027, and F028.

8.10.10.a. Hazardous wastes F020, F021, F022, F023, F026, F027, and F028 must not be placed in waste piles that are not enclosed (as described in Section 8.10.1 of these regulations) unless the owner or operator operates the waste pile in accordance with a management plan for these wastes that is approved by the chief pursuant to the standards set out in this Section, and in accordance with all other applicable requirements of these regulations. The factors to be considered are:

8.10.10.a.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;

8.10.10.a.2. The attenuative properties of underlying and surrounding soils or other materials;

8.10.10.a.3. The mobilizing properties of other materials co-disposed with these wastes; and

8.10.10.a.4. The effectiveness of additional treatment, design, or monitoring techniques.

8.10.10.b. The chief may determine that additional design, operating, and monitoring requirements are necessary for waste piles managing hazardous wastes F020, F021, F022, F023, F026, F027, and F028 to reduce the possibility of migration of these wastes to groundwater, surface water, or air so as to protect human health and the environment.

8.11. Landfills.

8.11.1. Applicability. The regulations in Section 8.11 of

these regulations apply to owners and operators of facilities that dispose of hazardous waste in landfills, except as Section 8.1 of these regulations provides otherwise.

~~8.11.2. Design and Operating Requirements.~~

~~8.11.2.a. A landfill must have:~~

~~8.11.2.a.1. A double liner system that is designed, constructed, and installed to prevent any migration of wastes or leachate or both out of the landfill to the adjacent subsurface, soil, or groundwater or surface water at any time during the operating life, closure, and the post closure period of the landfill. The primary liner (i.e., the liner in contact with the waste) must be constructed of materials that prevent wastes or leachate or both from passing into the liner during the operating life, closure, and the post closure period of the facility. All liners must be:~~

~~8.11.2.a.1.A. Constructed of materials that are chemically resistant to the waste and leachate expected to be generated and of sufficient strength and thickness to prevent failure due to pressure gradients (including static head and external hydrogeologic forces), physical contact with the waste and leachate installation, and the stress of daily operation. The liner will be tested for compatibility with the waste and leachate expected to be generated to determine possible effects on the liner materials prior to installation;~~

~~8.11.2.a.1.B. Placed upon a foundation or base capable of providing support to the liners and resistance to pressure gradients above and below the liners to prevent failure of the liners due to settlement, compression, or uplift;~~

~~8.11.2.a.1.C. Installed to cover all surrounding earth likely to be in contact with the waste and leachate;~~

~~8.11.2.a.1.D. Constructed to be free of lenses, cracks, channels, holes, or other structural nonconformities; and~~

~~8.11.2.a.1.E. If a soil based or admixed liner is to be used as the secondary liner (i.e., the liner underneath the primary liner), then such liner must be at least 90 cm (3 feet) thick with a maximum saturated hydraulic conductivity of no more than 1×10^{-7} cm/sec throughout the total thickness and area of the liner;~~

~~8.11.2.a.2. A leachate collection and removal system immediately above the primary liner that is designed, constructed, maintained, and operated to collect and remove leachate from the landfill. The chief will specify conditions for design and operation in the permit to ensure that the leachate depth over the~~

~~liner does not exceed 30 cm (one foot). The leachate collection and removal system must be:~~

~~8.11.2.a.2.A. Constructed of materials that are:~~

~~8.11.2.a.2.A.i. Chemically resistant to the waste managed in the landfill and the leachate expected to be generated; and~~

~~8.11.2.a.2.A.ii. Of sufficient strength and thickness to prevent collapse under the pressure exerted by overlying wastes, waste cover materials, and by any equipment used at the landfill;~~

~~8.11.2.a.2.B. Must be overlain by a graded granular material assuring a hydraulic conductivity of 1×10^{-3} cm/sec placed with a minimum slope of two percent (2%); and~~

~~8.11.2.a.2.C. Designed and operated to function without clogging through the operating life and scheduled closure and post closure period of the landfill; and~~

~~8.11.2.a.3. A leachate detection system must be designed, constructed, maintained, and operated between the liners to detect any migration of liquid into the space between the liners.~~

~~8.11.2.b. The owner or operator must design, construct, 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, 24 hour storm.~~

~~8.11.2.c. The owner or operator must design, construct, operate, and maintain a runoff management system to collect and control at least the water volume resulting from a 25 year, 24 hour storm.~~

~~8.11.2.d. Collection and holding facilities (e.g., tanks or basins) associated with run on and runoff control systems must be emptied or otherwise managed expeditiously after storms to maintain design capacity of the system.~~

~~8.11.2.e. If the landfill contains any particulate matter which may be subject to wind dispersal, the owner or operator must cover or otherwise manage the landfill to control wind dispersal.~~

~~8.11.2.f. The landfill (including the base of the lower most liner components) must be located at a minimum of three (3) feet above the highest known seasonal water table elevation. This three foot distance may be achieved by elevating the waste disposal facility artificially or by non mechanical lowering of the water table. All plans for alteration of the water level must be approved~~

~~by the chief and will become a part of the hazardous waste management permit.~~

~~8.11.2.g. The chief will specify in the permit all design and operating practices that are necessary to ensure that the requirements of Section 8.11.2 of these regulations are satisfied.~~

8.11.2. Design and operating requirements.

8.11.2.a. Any landfill that is not covered by section 8.11.2.c of these regulations must have a liner system for all portions of the landfill (except for existing portions of such landfill). The liner system must have:

8.11.2.a.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 anytime during the active life (including the closure period) of the landfill. The liner must be constructed of materials that prevent wastes from passing into the liner during the active life of the facility. The liner must be:

8.11.2.a.1.A. 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;

8.11.2.a.1.B. 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

8.11.2.a.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 Chief will specify design and operating conditions in the permit to ensure that the leachate depth over the liner does not exceed 30 cm (one foot). The leachate collection and removal system must be:

8.11.2.a.2.A. Constructed of materials that are:

8.11.2.a.2.A.i. Chemically resistant to the waste managed in the landfill and the leachate expected to be generated; and

8.11.2.a.2.A.ii. Of sufficient strength and thickness to prevent collapse under the pressures exerted by overlying wastes, waste cover materials, and by any equipment used

at the landfill; and

8.11.2.a.2.B. Designed and operated to function without clogging through the scheduled closure of the landfill.

8.11.2.b. The owner or operator will be exempted from the requirements of paragraph (a) of this section if the Chief 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 into the groundwater or surface water at any future time. In deciding whether to grant an exemption the Chief will consider:

8.11.2.b.1. The nature and quantity of the wastes;

8.11.2.b.2. The proposed alternate design and operation;

8.11.2.b.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

8.11.2.b.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.

8.11.2.c. The owner or operator of each new landfill, each new landfill unit at an existing facility, each replacement of an existing landfill unit, and each lateral expansion of an existing landfill unit, must install two (2) or more liners and a leachate collection system above and between the liners. The liners and leachate collection systems must protect human health and the environment. The requirements of this section shall apply with respect to all waste received after issuance of the permit for units where the part B of the permit application is received by the Chief. The requirement for the installation of two (2) or more liners in this paragraph may be satisfied by the installation of a top liner designed, operated, and constructed of materials to prevent the migration of any constituent into such liner during the period such facility remains in operation (including any post-closure monitoring period), and a lower liner designed, operated, and constructed to prevent the migration of any constituent through such liner during such period. For the purpose of the preceding sentence, a lower liner shall be deemed to satisfy such requirement if it is constructed of a least a 3-foot thick layer of recompacted clay or other natural material with a permeability of no more than 1×10^{-7} centimeter per second.

Note: For purposes of federal enforcement, the liner and leachate collection requirements of Section 8.9.4.c of these

regulations were applicable on November 8, 1984.

8.11.2.d. 8.11.2.c of these regulations will not apply if the owner or operator demonstrates to the Chief, and the Chief finds for such landfill, that alternative design and operating practices, together with location characteristics, will prevent the migration of any hazardous constituent into the groundwater or surface water at least as effectively as such liners and leachate collection systems.

8.11.2.e. The double liner requirement set forth in Section 8.11.2.c of these regulations may be waived by the Chief for any monofill, if:

8.11.2.e.1. The monofill contains only hazardous wastes from foundry furnace emission controls or metal casting molding sand, and such wastes do not contain constituents which would render the wastes hazardous for reasons other than the Toxicity Characteristic in section 3.3.5 of these regulations, with EPA Hazardous Waste Numbers D004 through D017; and

8.11.2.e.2.A.i. The monofill has at least one (1) liner for which there is no evidence that such liner is leaking;

8.11.2.e.2.A.ii. The monofill is located more than one-quarter (1/4) mile from and underground source of drinking water (as that term is defined in §144.3 of chapter 40 of the Code of federal regulations; and

8.11.2.e.2.A.iii. The monofill is in compliance with generally applicable groundwater monitoring requirements for facilities with permits under section 11 of these regulations; or

8.11.2.e.2.B. 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.

8.11.2.f. The owner or operator must design, construct, operate, and maintain a run-on control system capable of preventing flow onto the active portion of the landfill during peak discharge from at least a 25-year storm.

8.11.2.g. The owner or operator must design, construct, operate, and maintain a run-off management system to collect and control at least the water volume resulting from a 24-hour, 25-year storm.

8.11.2.h. Collection and holding facilities (e.g., tanks or basins) associated with run-on and run-off control systems must be emptied or otherwise managed expeditiously after storms to

maintain design capacity of the system.

8.11.2.i. If the landfill contains any particulate matter which may be subject to wind dispersal, the owner or operator must cover or otherwise manage the landfill to control wind dispersal.

8.11.2.j. The Chief will specify in the permit all design and operating practices that are necessary to ensure that the requirements of this section are satisfied.

~~8.11.2.h.~~ 8.11.2.k. The design specifications, construction, and installation practices and operating conditions will be certified by an owner or operator and a registered professional engineer.

~~8.11.2.i.~~ 8.11.2.l. Existing portions of landfills are exempt from the requirements of Section 8.11.2.a, 8.11.3.a, 8.11.4, 8.11.11.c.2, 8.11.11.c.3, and 8.11.11.d of these regulations, provided that Section ~~8.11.2.i.1~~ 8.11.2.l.1 of these regulations is complied with.

~~8.11.2.i.1.~~ 8.11.2.l.1. The owner or operator, in order to qualify for the exemption in Section ~~8.11.2.i.1~~ 8.11.2.l.1 of these regulations, must demonstrate that statistically significant increases of hazardous constituents do not occur in the groundwater or surface water during its active life and the post-closure period, except as provided in Section ~~8.11.2.j~~ 8.11.2.m of these regulations.

~~8.11.2.i.2.~~ 8.11.2.l.2. If statistically significant increases of hazardous constituents are detected as outlined in Section 8.13.8.d of these regulations in the groundwater beneath the facility (including the regulated unit) the owner or operator must comply with the corrective action outlined in Section 8.13.9 of these regulations if groundwater contamination has been determined.

~~8.11.2.j.~~ 8.11.2.m. If the owner or operator determines that the corrective action program being implemented under Section 8.13.9 of these regulations is insufficient for causing cessation of hazardous waste constituents migration, then the unit must be closed. However, if it is determined that the corrective action will adequately arrest and remove the contamination, the owner may choose one of the four options which will become part of the conditions of the permit:

~~8.11.2.j.1.~~ 8.11.2.m.1. Retrofit the unit with liners in accordance with Section 8.11.1.a.1 of these regulations;

~~8.11.2.j.2.~~ 8.11.2.m.2. Stop the leak;

~~8.11.2.j.3.~~ 8.11.2.m.3. Continue the operation of the unit, while concurrently developing and implementing an alternate treatment, storage, or disposal method, for a period of five (5) years, at which time the unit must be closed; or

~~8.11.2.j.4.~~ 8.11.2.m.4. Continue the operation of the unit provided a demonstration can be made and approved by the chief that no adverse impact to human health or to the environment will result from the continued operation of the unit during the active life, closure, and post-closure period, provided that the facility continue to comply with an approved corrective action program. Such demonstration must include and discuss the following:

~~8.11.2.j.4.A.~~ 8.11.2.m.4.A. Potential adverse effects on groundwater quality, considering:

~~8.11.2.j.4.A.i.~~ 8.11.2.m.4.A.i. The physical and chemical characteristics of the waste in the regulated unit, including its potential for migration;

~~8.11.2.j.4.A.ii.~~ 8.11.2.m.4.A.ii. The hydrogeological characteristics of the facility and surrounding land;

~~8.11.2.j.4.A.iii.~~ 8.11.2.m.4.A.iii. The quantity of groundwater and the direction of groundwater flow;

~~8.11.2.j.4.A.iv.~~ 8.11.2.m.4.A.iv. The proximity and withdrawal rates of groundwater users;

~~8.11.2.j.4.A.v.~~ 8.11.2.m.4.A.v. The current and future uses of groundwater in the area;

~~8.11.2.j.4.A.vi.~~ 8.11.2.m.4.A.vi. The existing quality of groundwater, including other sources of contamination and their cumulative impact on groundwater quality;

~~8.11.2.j.4.A.vii.~~ 8.11.2.m.4.A.vii. The potential for health risks caused by human exposure to waste constituents;

~~8.11.2.j.4.A.viii.~~ 8.11.2.m.4.A.viii. The potential damage to wildlife, crops, vegetation, and physical structures caused by exposure to waste constituents; and

~~8.11.2.j.4.A.ix.~~ 8.11.2.j.4.A.ix. The persistence and permanence of the potential adverse effects; and

~~8.11.2.j.4.B.~~ 8.11.2.m.4.B. Potential adverse effects on hydraulically connected surface water quality, considering:

~~8.11.2.j.4.B.i.~~ 8.11.2.m.4.B.i. The volume and physical and chemical characteristics of the waste in the regulated unit;

~~8.11.2.j.4.B.ii.~~ 8.11.2.m.4.B.ii. The hydrogeological characteristics of the facility and surrounding land;

~~8.11.2.j.4.B.iii.~~ 8.11.2.m.4.B.iii. The quantity and quality of groundwater and the direction of groundwater flow;

~~8.11.2.j.4.B.iv.~~ 8.11.2.m.4.B.iv. The patterns of rainfall in the region;

~~8.11.2.j.4.B.v.~~ 8.11.2.m.4.B.v. The proximity of the regulated unit to surface waters;

~~8.11.2.j.4.B.vi.~~ 8.11.2.j.4.B.vi. The current and future uses of surface waters in the area and any water quality standards established for those surface waters;

~~8.11.2.j.4.B.vii.~~ 8.11.2.m.4.B.vii. The existing quality of surface water, including other sources of contamination and the cumulative impact on surface water quality;

~~8.11.2.j.4.B.viii.~~ 8.11.2.m.4.B.viii. The potential for health risks caused by human exposure to waste constituents;

~~8.11.2.j.4.B.ix.~~ 8.11.2.m.4.B.ix. The potential damage to wildlife, crops, vegetation, and physical structures caused by exposure to waste constituents; and

~~8.11.2.j.4.B.x.~~ 8.11.2.m.4.B.x. The persistence and permanence of the potential adverse effects.

~~8.11.2.j.4.C.~~ 8.11.2.m.4.C. In making any determination under Section ~~8.11.2.j.4~~ 8.11.2.m.4 of these regulations concerning the use of groundwater in the area around the facility, the chief will consider any identification of underground sources of drinking water and exempted aquifers made under Title 46, Water Resources Board, Series 9 (46 C.S.R. 9).

8.11.3. Monitoring, Testing, and Inspection.

8.11.3.a. During and immediately after construction or installation, liners and cover systems must be inspected for uniformity, damage, and imperfections (e.g., holes, cracks, thin spots, and foreign materials).

8.11.3.a.1. Synthetic liners and covers (e.g.,

membranes, sheets, or coatings) must be inspected to ensure tight seams and joints and the absence of tears, punctures, or blisters.

8.11.3.a.2. Soil-based and admixed liners and covers must be tested for compaction density, moisture content, and permeability and inspected for imperfections including lenses, cracks, channels, root holes, animal borings, or other structural nonuniformities that may cause an increase in the permeability of the liner or cover.

8.11.3.a.3. Upon discovery of any imperfections, damage, or nonuniformities, the repair of the liner must be completed prior to placement of the wastes into the landfill.

8.11.3.a.4. Any repair to the liner must be certified by a registered professional engineer.

8.11.3.b. While a landfill is in operation, it must be inspected weekly and after storms to detect evidence of any of the following:

8.11.3.b.1. Deterioration, malfunctions, or improper operation of run-on and runoff control systems;

8.11.3.b.2. The presence of liquids in leak detection systems which were installed to comply with Section 8.11.2 of these regulations;

8.11.3.b.3. Proper functioning of wind dispersal control systems, where present; and

8.11.3.b.4. The presence of leachate in and proper functioning of leachate collection and removal systems, where present.

8.11.3.c. If liquid leaks into the leachate detection system, the owner or operator must:

8.11.3.c.1. Immediately notify the chief through the division's Emergency Notification Number 1-800-642-3074 and follow with written notification within seven (7) days of detecting the leak;

8.11.3.c.2. Within fifteen (15) days after detecting a leak, submit to the chief a written report of the problem and corrective measures taken;

8.11.3.c.3. Within a period of time specified in the permit, remove accumulated liquid, repair or replace the liner which is leaking to prevent the migration of liquids through the liner, and obtain a certification through a registered professional engineer that, to the best of his knowledge and opinion, the leak

has been stopped; and

8.11.3.c.4. File a report including all technical drawings and information detailing the repair or liner replacement work accomplished immediately after repairs are completed.

8.11.3.d. The chief will specify in the permit all conditions for design and operation that are necessary to ensure that the requirements of Section 8.11.3 of these regulations are satisfied.

8.11.4. Liner System Repairs; Contingency Plans.

8.11.4.a. Whenever there is any indication of a possible failure of the liner system, that system must be inspected in accordance with that system's evaluation and repair plan required by Section 8.11.4.d of these regulations. Indications of possible failure of the liner system include at least liquid detected in the leachate detection system, apparent or potential deterioration of the liner(s) based on observation or test samples of the liner materials, any mishandling of wastes placed in the landfill, and foreign objects in the landfill.

8.11.4.b. Whenever there is a positive indication of a failure of the liner system, the landfill must be removed from service. Indications of positive failure of the liner system include waste detected in the leachate detection system or a breach (e.g., a hole, tear, crack, or separation) in the liner system.

8.11.4.c. If the landfill must be removed from service as required by Section 8.11.4.b of these regulations, the owner or operator must:

8.11.4.c.1. Immediately stop the addition of wastes into the landfill;

8.11.4.c.2. Immediately contain any leakage which has occurred or is occurring;

8.11.4.c.3. Immediately cause the leak to be stopped;

8.11.4.c.4. If the leak cannot be stopped by any other means, remove the waste from the landfill;

8.11.4.c.5. Immediately notify the chief through the division's Emergency Notification Number 1-800-642-3074; and

8.11.4.c.6. Within fifteen (15) days after detecting a leak, submit to the chief a written report of the problem and corrective measures taken.

8.11.4.d. As part of the contingency plan required in

Section 8.4 of these regulations, the owner or operator must specify:

8.11.4.d.1. A procedure for complying with the requirements of Section 8.11.4.c of these regulations; and

8.11.4.d.2. A liner system evaluation and repair plan describing testing and monitoring techniques; procedures to be followed to evaluate the integrity of the liner system in the event of a possible failure; and a description of the repair techniques to be used in the event of leakage due to liner system failure or deterioration which does not require the landfill to be removed from service.

8.11.4.e. No landfill that has been removed from service in accordance with Section 8.11.4.b of these regulations may be restored to service unless:

8.11.4.e.1. The liner system has been repaired; and

8.11.4.e.2. The liner system has been re-certified by a registered professional engineer as meeting the design specifications approved in the permit.

8.11.4.f. A landfill that has been removed from service in accordance with Section 8.11.4.b of these regulations and that is not being repaired must be closed in accordance with Section 8.11.11 of these regulations.

8.11.4.g. All wastes removed from the landfill must be managed as a hazardous waste in compliance with all applicable requirements. Any point source discharge to State waters is subject to the requirements of the Water Pollution Control Act and all regulations promulgated thereunder.

8.11.5. (Reserved).

8.11.6. (Reserved).

8.11.7. (Reserved).

8.11.8. (Reserved).

8.11.9. (Reserved).

8.11.10. Surveying and Record Keeping. The owner or operator of a landfill must maintain the following items in the operating record required under Section 8.5.4 of these regulations:

8.11.10.a. On a map, the exact location and dimensions, including depth of each cell with respect to permanently surveyed reference points established from USGS or USCG benchmarks; and

8.11.10.b. The contents by hazardous waste type and quantity of each cell and the approximate location and quantity of each hazardous waste type within each cell.

8.11.11. Closure and Post-Closure.

8.11.11.a. At final closure of the landfill or upon closure of any cell, the owner or operator must cover the landfill or cell with a final cover designed and constructed to:

8.11.11.a.1. Provide long-term minimization of migration of liquids through the closed landfill;

8.11.11.a.2. Function with minimum maintenance;

8.11.11.a.3. Promote drainage and minimize erosion or abrasion of the cover;

8.11.11.a.4. Accommodate settling and subsidence so that the cover's integrity is maintained; and

8.11.11.a.5. Have a permeability less than or equal to the least permeable component of the liner system or 1×10^{-7} cm/sec, whichever value is less.

8.11.11.b. During construction or installation, cover systems must be inspected for uniformity, damage, and imperfections (e.g., holes, cracks, thin spots, or foreign materials).

8.11.11.b.1. Synthetic covers (e.g., membranes, sheets, or coatings) must be inspected to ensure tight seams and joints and the absence of tears, punctures, or blisters.

8.11.11.b.2. Soil-based and admixed covers must be tested for compaction density, moisture content, and permeability and inspected for imperfections including lenses, cracks, channels, root holes, animal borings, or other structural nonuniformities that may cause an increase in the permeability of the cover.

8.11.11.b.3. Upon discovery of any imperfections, damage, or nonuniformities, the repair of the cover must be completed before final closure is authorized.

8.11.11.b.4. Any repair to the cover system must be certified by an independent registered professional engineer.

8.11.11.c. After final closure, the owner or operator must comply with all post-closure requirements contained in Sections 8.6.7, 8.6.8, and 13 of these regulations including maintenance and monitoring throughout the post-closure period (specified in the permit under Section 8.6.7 of these regulations). The owner or operator must:

8.11.11.c.1. Maintain the integrity and effectiveness of the final cover , including making repairs to the cover as necessary to correct the effect of settling, subsidence, erosion, or other events. Any repair to the cover system must be certified by a registered professional engineer as meeting the design specifications approved in the permit;

8.11.11.c.2. Maintain and monitor the leachate detection system in accordance with Section 8.11.3 of these regulations where such a system is present between double liners systems;

8.11.11.c.3. Continue to operate the leachate collection and removal system for the entire post-closure period and until leachate is no longer detected;

8.11.11.c.4. Maintain and monitor the groundwater monitoring system and comply with all other applicable requirements of Section 8.13 of these regulations;

8.11.11.c.5. Prevent run-on and run-off from eroding or otherwise damaging the final cover; and

8.11.11.c.6. Protect and maintain surveyed benchmarks or reference points used in complying with Section 8.11.10 of these regulations.

8.11.11.d. During the post-closure period, if liquid leaks into a leachate detection system installed under Section 8.11.2 of these regulations, the owner or operator must:

8.11.11.d.1. Immediately notify the chief through the division's Emergency Notification Number 1-800-642-3074 and follow with written notification within seven (7) days of detecting the leak;

8.11.11.d.2. Within fifteen (15) days after detecting the leak, submit to the chief a written report of the problem and corrective measures taken;

8.11.11.d.3. Begin remedial actions set forth in the contingency plan specified in the permit which shall at least include removing the accumulated liquid and begin corrective action to stop any leak and minimize the potential of possible groundwater contamination by some means within the time period prescribed;

8.11.11.d.4. Manage as hazardous waste in accordance with all regulations governing the generation of such waste, the liquid removed from the detection system, unless the owner or operator can demonstrate otherwise; and

8.11.11.d.5. Obtain a certification from a registered

professional engineer that to the best of his knowledge and opinion, the leak has been stopped and that all necessary work and repairs has been completed to prevent or minimize any potential for groundwater contamination.

8.11.12. (Reserved).

8.11.13. Special Requirements for Ignitable or Reactive Waste.

8.11.13.a. Except as provided in Section 8.11.13.b of these regulations, and in Section 8.11.17 of these regulations, ignitable or reactive waste must not be placed in a landfill unless the waste and landfill meet all applicable requirements of 40 C.F.R. Part 268 and the waste is treated, rendered, or mixed before or immediately after placement in a landfill so that:

8.11.13.a.1. The resulting waste, mixture, or dissolution of material no longer meets the definition of ignitable or reactive waste under Section 3.3.2 or Section 3.3.4 of these regulations; and

8.11.13.a.2. Section 8.2.8.b of these regulations is complied with.

8.11.13.b. Except for prohibited wastes which remain subject to treatment standards under 40 C.F.R. Part 268, Subpart D, non-liquid ignitable wastes in containers may be landfilled without meeting the requirements of Section 8.11.13.a of these regulations, provided that the wastes are disposed of in such a way that they are protected from any material or conditions which may cause them to ignite. At a minimum, ignitable wastes must be disposed in non-leaking containers which are carefully handled and placed so as to avoid heat, sparks, rupture, or any other condition that might cause ignition of the wastes; must be covered after placement with soil or other noncombustible material to minimize the potential for ignition of the wastes; and must not be disposed of in cells that contain or will contain other wastes which may generate heat sufficient to cause ignition of the waste.

8.11.14. Special Requirements for Incompatible Wastes. Incompatible wastes, or incompatible wastes and other materials, (see Appendix X of these regulations for examples) must not be placed in the same landfill cell, unless Section 8.2.8.b of these regulations is complied with.

8.11.15. Restrictions on Liquid Waste.

~~8.11.15.a. Bulk or noncontainerized liquid waste or waste containing free liquids must not be placed in a landfill unless:~~

~~8.11.15.a.1. The landfill has a liner and a leachate collection and removal system that meet the requirements of Section 8.11.2 of these regulations; or~~

~~8.11.15.a.2. Before disposal the liquid waste or waste containing free liquids is treated, solidified, and stabilized chemically or physically so that free liquids are no longer present.~~

8.11.15.a. The placement of bulk or noncontainerized liquid hazardous waste or hazardous waste containing free liquids (whether or not absorbents have been added) in any landfill is prohibited.

Note: To demonstrate the absence or presence of free liquids in either a containerized or bulk waste, Method 9095 (paint filter liquid test) as described in SW-846 must be conducted.

8.11.15.b. Containers holding free liquids must not be placed in a landfill unless:

8.11.15.b.1. The container is very small, such as an ampule; ~~and~~ or

8.11.15.b.2. The container is placed in an over-packed drum (lab pack) as defined in Section 8.11.17 of these regulations and is disposed of in accordance with Section 8.11.17 of these regulations; or

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

8.11.15.b.4. All free-standing liquid has been removed by decanting, or other methods, or has been mixed with absorbents or solidified so that free-standing liquids are no longer observed, or the free-standing liquids have been otherwise eliminated.

8.11.15.c. The placement of any liquid waste which is not a hazardous waste in a landfill is prohibited unless the owner or operator of such landfill demonstrates to the chief, or the chief determines, that:

8.11.15.c.1. The only reasonable available alternative to the placement in such landfill is placement in a landfill or unlined surface impoundment, whether or not permitted or operating under interim status, which contains, or may reasonably be anticipated to contain, hazardous waste; and

8.11.15.c.2. Placement in such owner or operator's landfill will not present a risk of contamination of any underground source of drinking water as defined in Article 9, Title

46 of the regulations of the West Virginia Water Resources Board
(46 C.S.R. 9).

8.11.16. Special Requirements for Containers. Containers must be either:

8.11.16.a. At least ninety percent (90%) full when placed in the landfill; or

8.11.16.b. Crushed, shredded, or similarly reduced in volume to the maximum practicable extent before burial in the landfill.

8.11.17. Disposal of Small Containers of Hazardous Waste in Over-packed Drums (Lab Packs). Small containers of hazardous waste may be placed in a landfill if the following requirements are met:

8.11.17.a. Hazardous waste must be packaged in non-leaking containers. The inside containers must be of a design and constructed of a material that will not react dangerously or otherwise with, be decomposed by, or be ignited by the contained waste. The inside containers must be tightly and securely sealed. The inside containers must be of the size and type specified in the DOT hazardous materials regulations (49 C.F.R. Parts 173, 178, and 179), if those regulations specify a particular inside container for the waste;

8.11.17.b. The inside containers must be packed in an open head DOT specification metal shipping container (49 C.F.R. Parts 178 and 179) of no more than 416 liter (110 gallon) capacity and surrounded by, at a minimum, a sufficient quantity of absorbent material to completely absorb all the liquid contents of the inside containers. the metal outer container must be full after packing with inside containers and absorbent material.

8.11.17.c. The absorbent material used must not be capable of reacting dangerously or otherwise with, being decomposed by, or being ignited by the contents of the inside containers in accordance with Section 8.2.2.b of these regulations.

8.11.17.d. Incompatible wastes, as defined in Section 2 of these regulations, must not be placed in the same outside container.

8.11.17.e. Reactive wastes, other than cyanide or sulfide bearing wastes as defined in Section 3.3.4.a.5 of these regulations must be treated or rendered nonreactive prior to packaging in accordance with Sections 8.11.17.a through 8.11.17.d of these regulations. Cyanide and sulfide bearing reactive waste may be packed in accordance with Sections 8.11.17.a through 8.11.17.d of these regulations without first being treated or rendered nonreactive.

8.11.17.f. Such disposal is in compliance with the requirements of 40 C.F.R Part 268. Persons who incinerate lab packs according to the requirements in 40 CFR 268.42(c)(1) may use fiber drums in place of metal outer containers. Such fiber drums must meet the DOT specifications in 49 CFR 173.12 and be overpacked according to the requirements in section 8.11.17.b of there regulations.

8.11.18. Addition of New Wastes. Prior to approval of a permit modification for the addition of wastes not already authorized in the permit, the waste must be tested to determine its compatibility with the waste(s) already present and with the liner materials to determine if it will have any detrimental effects (e.g., causes cracks, dissolution, decreased mechanical strength, or increased permeability).

8.11.19. Special requirements for Hazardous Wastes F020, F021, F022, F023, F026, F027, and F028.

8.11.19.a. Hazardous wastes F020, F021, F022, F023, F026, F027, and F028 must not be placed in a landfill unless the owner or operator operates the landfill in accordance with a management plan for these wastes that is approved by the chief pursuant to the standards set out under this Section and in accordance with all other applicable requirements of these regulations. The factors to be considered are:

8.11.19.a.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;

8.11.19.a.2. The attenuative properties of underlying and surrounding soils or other materials;

8.11.19.a.3. The mobilizing properties of other materials co-disposed with these wastes; and

8.11.19.a.4. The effectiveness of additional treatment, design, or monitoring techniques.

8.11.19.b. The chief may determine that additional design, operating, and monitoring requirements are necessary for landfills managing hazardous wastes F020, F021, F022, F023, F026, F027, and F028 in order to reduce the possibility of migration of the wastes to groundwater, surface water, or air so as to protect human health and the environment.

8.12. Land Treatment.

8.12.1. Applicability. The regulations in Section 8.12 of these regulations apply to owners and operators of facilities that treat or dispose of hazardous waste in land treatment units, except

as Section 8.1 of these regulations provides otherwise.

8.12.2. Treatment Program.

8.12.2.a. An owner or operator subject to Section 8.12 of these regulations must establish a land treatment program that is designed to ensure that hazardous constituents placed in or on the treatment zone are degraded, transformed, or immobilized within the treatment zone. The chief will specify in the facility permit the elements of the treatment program, including:

8.12.2.a.1. The wastes that are capable of being treated at the unit based on a demonstration under Section 8.12.3 of these regulations;

8.12.2.a.2. Design measures and operating practices necessary to maximize the success of degradation, transformation, and immobilization processes in the treatment zone in accordance with Section 8.12.4.a of these regulations; and

8.12.2.a.3. Unsaturated zone monitoring provisions meeting the requirements of Section 8.12.9 of these regulations.

8.12.2.b. The chief will specify in the facility permit the hazardous constituents that must be degraded, transformed, or immobilized under Section 8.12 of these regulations. Hazardous constituents are constituents identified in Appendix VIII of these regulations that are reasonably expected to be in, or derived from, waste placed in or on the treatment zone.

8.12.2.c. The chief will specify the vertical and horizontal dimensions of the treatment zone in the facility permit. The treatment zone is the portion of the unsaturated zone below and including the land surface in which the owner or operator intends to maintain the conditions necessary for effective degradation, transformation, or immobilization of hazardous constituents. The maximum depth of the treatment zone must be:

8.12.2.c.1. No more than 1.5 meters (5 feet) from the initial soil surface; and

8.12.2.c.2. More than 1.5 meters (5 feet) above the seasonal high water table.

8.12.3. Treatment Demonstration.

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

8.12.3.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 Section 8.12.3.a of these regulations, he must obtain a treatment or disposal permit under Section 11 of these regulations. The chief will specify in this permit the testing, analytical, design, and operating requirements (including the duration of the tests and analyses and, in the case of field tests, the horizontal and vertical dimensions of the treatment zone, monitoring procedures, closure, and clean-up activities) necessary to meet the requirements in Section 8.12.3.c of these regulations.

8.12.3.c. Any field test or laboratory analysis conducted in Section 8.12.3.b of these regulations in order to make a demonstration under Section 8.12.3.a of these regulations must:

8.12.3.c.1. Accurately simulate the characteristics and operating conditions for the proposed land treatment unit including:

8.12.3.c.1.A. The characteristics of the waste (including the presence of Appendix VIII constituents);

8.12.3.c.1.B. The climate in the area;

8.12.3.c.1.C. The topography of the surrounding area;

8.12.3.c.1.D. The characteristics of the soil in the treatment zone (including depth); and

8.12.3.c.1.E. The operating practices to be used at the unit;

8.12.3.c.2. Be likely to show that hazardous constituents in the waste to be treated will be completely degraded, transformed, or immobilized in the treatment zone of the proposed land treatment unit; and

8.12.3.c.3. Be conducted in a manner that protects human health and the environment considering:

8.12.3.c.3.A. The characteristics of the waste to be tested;

8.12.3.c.3.B. The operating and monitoring measures taken during the course of the test;

8.12.3.c.3.C. The duration of the test;

8.12.3.c.3.D. The volume of waste used in the test;
and

8.12.3.c.3.E. In the case of field tests, the potential for migration of hazardous constituents to groundwater or surface water.

8.12.4. Design and Operating Requirements. The chief will specify in the facility permit how the owner or operator will design, construct, operate, and maintain the land treatment unit in compliance with Section 8.12 of these regulations.

8.12.4.a. The owner and operator must design, construct, operate, and maintain the unit to maximize the degradation, transformation, and immobilization of hazardous constituents in the treatment zone. The owner or operator must design, construct, operate, and maintain the unit in accordance with all design and operating conditions that were used in the treatment demonstration under Section 8.12.2 of these regulations. At a minimum, the chief will specify the following in the facility permit:

8.12.4.a.1. The rate and method of waste application to the treatment zone;

8.12.4.a.2. Measures to control soil pH;

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

8.12.4.a.4. Measures to control the moisture content of the treatment zone.

8.12.4.b. The owner or operator must design, construct, operate, and maintain the treatment zone to minimize runoff of hazardous constituents during the active life of the land treatment unit.

8.12.4.c. The owner or operator must design, construct, operate, and maintain a run-on control system capable of preventing flow onto the treatment zone during peak discharge from at least a 25-year, 24-hour storm.

8.12.4.d. The owner or operator must design, construct, operate, and maintain a runoff management system to collect and control at least the water volume resulting from a 25-year, 24-hour storm.

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

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

8.12.4.g. The owner or operator must manage the unit to control the wind dispersal of aerosols or vapors during waste application.

8.12.4.h. The owner or operator must inspect the unit weekly and after any precipitation event to detect evidence of:

8.12.4.h.1. Deterioration, malfunctions, or improper operation of run-on and runoff control systems; and

8.12.4.h.2. Improper functioning of wind dispersal control measures.

8.12.5. (Reserved).

8.12.6. (Reserved).

8.12.7. Food Chain Crops.

8.12.7.a. The chief may allow the growth of food chain crops in or on the treatment zone only if the owner or operator satisfies the conditions of Section 8.12 of these regulations. The chief will specify in the facility permit the specific food chain crops which may be grown.

8.12.7.a.1. The owner or operator must demonstrate that there is no substantial risk to human health caused by the growth of such crops in or on the treatment zone by demonstrating, prior to the planting of such crops, that hazardous constituents other than cadmium:

8.12.7.a.1.A. 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

8.12.7.a.1.B. Will not occur in greater concentrations in or on the food or feed portions of crops grown on the treatment zone than in or identical portions of the same crops grown on untreated soils under similar conditions in the same region.

8.12.7.a.2. The owner or operator must make the demonstration required under Section 8.12.7.a.1 of these regulations prior to the planting of crops at the facility for all constituents identified in Appendix VIII of these regulations that are reasonably expected to be in, or derived from, waste placed in or on the treatment zone.

8.12.7.a.3. In making a demonstration under Section 8.12.7.a.1 of these regulations, the owner or operator may use field tests, greenhouse studies, available data, or, in the case of existing units, operating data, and must:

8.12.7.a.3.A. Base the demonstration on conditions similar to those present in the treatment zone, including soil characteristics (e.g., pH or cation exchange capacity), specific wastes, application rates, application methods, and crops to be grown; and

8.12.7.a.3.B. Describe the procedures used in conducting any tests, including the sample selection criteria, sample size, analytical methods, and statistical procedures.

8.12.7.a.4. If the owner or operator intends to conduct field tests or greenhouse studies in order to make the demonstration required under Section 8.12.7.a.1 of these regulations, he must obtain a permit for conducting such activities.

8.12.7.a.5. The owner or operator must comply with the following conditions if cadmium is contained in wastes applied to the treatment zone:

8.12.7.a.5.A.i. The pH of the waste and soil mixture must be 6.5 or greater at the time of each waste application, except for waste containing cadmium at concentrations of 2 mg/kg (dry weight) or less;

8.12.7.a.5.A.ii. The annual application of cadmium from waste must not exceed 0.44 lbs/acre on land used for production of tobacco, leafy vegetables, root crops, or other food chain crops grown for human consumption.

8.12.7.a.5.A.iii. The cumulative application of cadmium from waste must not exceed 4.46 lbs/acre if the waste and soil mixture has a pH of less than 6.5; and

8.12.7.a.5.A.iv. If the waste and soil mixture has a pH of 6.5 or greater or is maintained at a pH of 6.5 or greater during crop growth, the cumulative application of cadmium from waste must not exceed: 4.46 lbs/acre if soil cation exchange capacity (CEC) is less than 5 meq/100g; 8.92 lbs/acre if soil CEC is 5-15 meq/100g; and 17.84 lbs/acre if soil CEC is greater than 15 meq/100g; or

8.12.7.a.5.B.i. Animal feed must be the only food chain crop produced;

8.12.7.a.5.B.ii. The pH of the waste and soil mixture must be 6.5 or greater at the time of waste application or

at the time the crop is planted, whichever occurs later, and this pH level must be maintained whenever food chain crops are grown;

8.12.7.a.5.B.iii. There must be an operating plan which demonstrates how the animal feed will be distributed to preclude ingestion by humans. The operating plan must describe the measures that must be taken to safeguard against possible health hazards from cadmium entering the food chain, which may result from alternative land uses; and

8.12.7.a.5.B.iv. Future property owners must be notified by a stipulation in the land record or property deed which states that the property has received wastes at high cadmium application rates and that food chain crops must not be grown except in compliance with the provisions of Section 8.12.7.a.5.B of these regulations.

8.12.8. (Reserved).

8.12.9. Unsaturated Zone Monitoring. An owner or operator subject to Section 8.12 of these regulations must establish an unsaturated zone monitoring program to discharge the following responsibilities:

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

8.12.9.a.1. The chief will specify the hazardous constituents to be monitored in the facility permit. The hazardous constituents to be monitored are those specified under Section 8.12.2 of these regulations.

8.12.9.a.2. The chief may require monitoring for principal hazardous constituents (PHCs) in lieu of the constituents specified under Section 8.12.2.b of these regulations. 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 chief will establish PHCs if he finds, based on waste analyses, treatment demonstrations, or other data, that effective degradation, transformation, or immobilization of the PHCs will assure treatment to the least equivalent levels for the other hazardous constituents in the waste.

8.12.9.b. The owner or operator must install an unsaturated zone monitoring system that includes soil monitoring using soil cores and soil-pore liquid monitoring using devices such as lysimeters. The unsaturated zone monitoring system must consist of a sufficient number of sampling points at appropriate locations and depths to yield samples that:

8.12.9.b.1. Represent the quality of background solid-pore liquid quality and the chemical make-up of soil that has not been affected by leakage from the treatment zone; and

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

8.12.9.c. The owner or operator must establish a background value for each hazardous constituent to be monitored under Section 8.12.9.a of these regulations. The permit will specify the background values for each constituent or specify the procedures to be used to calculate the background values.

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

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

8.12.9.c.3. The owner or operator must express all background values in a form necessary for the determination of statistically significant increases under Section 8.12.9.f of these regulations.

8.12.9.c.4. In taking samples used in the determination of all background values, the owner or operator must use an unsaturated zone monitoring system that complies with Section 8.12.9.b.1 of these regulations.

8.12.9.d. The owner or operator must conduct soil monitoring and soil-pore liquid monitoring immediately below the treatment zone. The chief will specify the frequency and timing of soil and soil-pore liquid monitoring in the facility permit after considering the frequency, timing, and rate of waste application and the soil permeability. The owner or operator must express the results of soil and soil-pore liquid monitoring in a form necessary for the determination for statistically significant increases under Section 8.12.9.f of these regulations.

8.12.9.e. The owner or operator must use consistent sampling and analysis procedures that are designed to ensure sampling results that provide a reliable indication of soil-pore liquid quality and the chemical make-up of the soil below the treatment zone. At a minimum, the owner or operator must implement procedures and techniques for:

8.12.9.e.1. Sample collection;

8.12.9.e.2. Sample preservation and shipment;

8.12.9.e.3. Analytical procedures; and

8.12.9.e.4. Chain of custody control.

8.12.9.f. The owner or operator must determine whether there is a statistically significant change over background values for any hazardous constituent to be monitored under Section 8.12.9.a of these regulations below the treatment zone each time he conducts soil monitoring and soil-pore liquid monitoring under Section 8.12.9.d of these regulations.

8.12.9.f.1. In determining whether a statistically significant increase has occurred, the owner or operator must compare the value of each constituent, as determined under Section 8.12.9.d of these regulations, to the background value for that constituent according to the statistical procedure specified in the facility permit under Section 8.12.9 of these regulations.

8.12.9.f.2. The owner or operator must determine whether there has been a statistically significant increase below the treatment zone within a reasonable time period after completion of sampling. The chief will specify the time period in the facility permit after considering the complexity of the statistical test and the availability of laboratory facilities to perform the analysis of soil and soil-pore liquid samples.

8.12.9.f.3. The owner or operator must determine whether there is a statistically significant increase below the treatment zone using a statistical procedure that provides reasonable confidence that migration from the treatment zone will be identified. The chief will specify a statistical procedure in the facility permit that he finds:

8.12.9.f.3.A. Is appropriate for the distribution of the data used to establish background values; and

8.12.9.f.3.B. 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.

8.12.9.g. If the owner or operator determines, pursuant to Section 8.12.9.f of these regulations, that there is a statistically significant increase of hazardous constituents below the treatment zone, he must:

8.12.9.g.1. Notify the chief of this finding in writing within seven (7) days. The notification must indicate what constituents have shown statistically significant increases; and

8.12.9.g.2. Within forty-five (45) days, submit to the chief an application for a permit modification to modify the

operating practices at the facility in order to maximize the success of degradation, transformation, and immobilization processes in the treatment zone.

8.12.9.h. If the owner or operator determines, pursuant to Section 8.12.9.f of these regulations, that there is a statistically significant increase of hazardous constituents below the treatment zone, he may demonstrate that the increase resulted from an error in sampling, analysis, or evaluation. While the owner or operator may make a demonstration under Section 8.12.9 of these regulations in addition to, or in lieu of, submitting a permit modification application under Section 8.12.9.g.2 of these regulations, he is not relieved from the requirement to submit a permit modification application within the time specified in Section 8.12.9.g.2 of these regulations unless the demonstration made under Section 8.12.9 of these regulations successfully shows that the increase resulted from an error in sampling, analysis, or evaluation. In making a demonstration under Section 8.12.9 of these regulations, the owner or operator must:

8.12.9.h.1. Notify the chief in writing within seven (7) days of determining a statistically significant increase below the treatment zone that he intends to make a determination under Section 8.12.9 of these regulations;

8.12.9.h.2. Within forty-five (45) days, submit a report to the chief demonstrating that the increase resulted from error in sampling, analysis, or evaluation;

8.12.9.h.3. Within forty-five (45) days, submit to the chief an application for a permit modification to make any appropriate changes to the unsaturated zone monitoring program at the facility; and

8.12.9.h.4. Continue to monitor in accordance with the unsaturated zone monitoring program established under Section 8.12 of these regulations.

8.12.10. Record Keeping. The owner or operator must include hazardous waste application dates and rates in the operating record required under Section 8.5.4 of these regulations.

8.12.11. Closure and Post-Closure Care.

8.12.11.a. During the closure period the owner or operator must:

8.12.11.a.1. Continue all operations (including pH control) necessary to maximize degradation, transformation, or immobilization of hazardous constituents within the treatment zone as required under Section 8.12.4.a. of these regulations, except to the extent such measures are inconsistent with Section 8.12.11.a.8

of these regulations;

8.12.11.a.2. Continue all operations in the treatment zone to minimize runoff of hazardous constituents as required under Section 8.12.4.b of these regulations;

8.12.11.a.3. Maintain the run-on control system required under Section 8.12.4.c of these regulations;

8.12.11.a.4. Maintain the runoff management system required under Section 8.12.4.d of these regulations;

8.12.11.a.5. Control wind dispersal of hazardous waste if required under Section 8.12.4.f of these regulations;

8.12.11.a.6. Continue to comply with any prohibitions or conditions concerning growth of food chain crops under Section 8.12.7 of these regulations;

8.12.11.a.7. Continue unsaturated zone monitoring in compliance with Section 8.12.9 of these regulations, except that soil-pore liquid monitoring may be terminated ninety (90) days after the last application of waste to the treatment zone; and

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

8.12.11.b. For the purpose of complying with Section 8.6.6 of these regulations, when closure is completed the owner or operator may submit to the chief 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.

8.12.11.c. During the post-closure care period the owner or operator must:

8.12.11.c.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 such measures are consistent with other post-closure activities;

8.12.11.c.2. Maintain a vegetative cover over closed portions of the facility;

8.12.11.c.3. Maintain the run-on control system required under Section 8.12.4.c of these regulations;

8.12.11.c.4. Maintain the runoff management system required under Section 8.12.4.d of these regulations;

8.12.11.c.5. Control wind dispersal of hazardous waste if required under Section 8.12.4.f of these regulations;

8.12.11.c.6. Continue to comply with any prohibitions or conditions concerning growth of food chain crops under Section 8.12.7 of these regulations; and

8.12.11.c.7. Continue unsaturated zone monitoring in compliance with Section 8.12.9 of these regulations except that soil-pore liquid monitoring may be terminated ninety (90) days after the last application of waste to the treatment zone.

8.12.11.d. The owner or operator is not subject to regulation under Section 8.12.11.a.8 and 8.12.11.c of these regulations if the chief finds that the level of hazardous constituents in the treatment zone soil does not exceed the background value for those constituents by an amount that is statistically significant when using the test specified in Section 8.12.11.d.3 of these regulations. The owner or operator may submit such a demonstration to the chief or at any time during the closure or post-closure care periods. For the purposes of Section 8.12.11 of these regulations:

8.12.11.d.1. The owner or operator must establish background soil values and determine whether there is a statistically significant increase over those values for all hazardous constituents specified in the facility permit under Section 8.12.2.b of these regulations.

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

8.12.11.d.1.B. The owner or operator must express background values and values for hazardous constituents in the treatment zone in a form necessary for the determination of statistically significant increases under Section 8.12.11.d.3 of these regulations.

8.12.11.d.2. In taking samples used in the determination of background and treatment zone values, the owner or operator must take samples at a sufficient number of sampling points and at appropriate locations and depths to yield samples that represent the chemical make-up of soil that has not been affected by leakage from the treatment zone and the soil within the treatment zone, respectively.

8.12.11.d.3. In determining whether a statistically significant increase has occurred, the owner or operator must

compare the value of each constituent in the treatment zone to the background value for that constituent using a statistical procedure that provides reasonable confidence that constituent presence in the treatment zone will be identified. The owner or operator must use a statistical procedure that:

8.12.11.d.3.A. Is appropriate for the distribution of the data used to establish background values; and

8.12.11.d.3.B. 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.

8.12.11.e. The owner or operator is not subject to regulation under Section 8.13 of these regulations if the chief finds that the owner or operator satisfies Section 8.12.11.d of these regulations and if unsaturated zone monitoring under Section 8.12.9 of these regulations indicates that hazardous constituents have not migrated beyond the treatment zone during the active life of the land treatment unit.

8.12.12. Special Requirements for Ignitable or Reactive Waste.

8.12.12.a. The owner or operator must not apply ignitable or reactive waste to the treatment zone unless the waste and the treatment zone meet all applicable requirements of 40 C.F.R. Part 268, and:

8.12.12.a.8.12.12.b. The waste is immediately incorporated into the soil so that:

8.12.12.a.1.8.12.12.b.1. The resulting waste, mixture, or dissolution of material no longer meets the definition of ignitable or reactive waste under Section 3.3.2 or Section 3.3.4 of these regulations; and

8.12.12.a.2.8.12.12.b.2. Section 8.2.8.b of these regulations is complied with; or

8.12.12.b.8.12.12.c. The waste is managed in such a way that is protected from any material or conditions which may cause it to ignite or react.

8.12.13. Special Requirements for Incompatible Wastes. The owner or operator must not place incompatible wastes, or incompatible wastes and other materials (see Appendix X of these regulations for examples), in or on the same treatment zone, unless Section 8.2.8.b of these regulations is complied with.

8.12.14. Special Requirements for Hazardous Wastes F020,

F021, F022, F023, F026, F027, and F028.

8.12.14.a. Hazardous wastes F020, F021, F022, F023, F026, F027, and F028 must not be placed in a land treatment unit unless the owner or operator operates the land treatment unit in accordance with a management plan for these wastes that is approved by the chief pursuant to the standards set out under this Section and in accordance with all other applicable requirements of these regulations. The factors to be considered are:

8.12.14.a.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;

8.12.14.a.2. The attenuative properties of underlying and surrounding soils or other materials;

8.12.14.a.3. The mobilizing properties of other materials co-disposed with these wastes; and

8.12.14.a.4. The effectiveness of additional treatment, design, or monitoring techniques.

8.12.14.b. The chief may determine that additional design, operating, and monitoring requirements are necessary for land treatment units managing hazardous wastes F020, F021, F022, F023, F026, F027, and F028 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.

8.13. ~~Groundwater Protection~~ Protection from Releases.

8.13.1. Applicability.

8.13.1.a. Except as provided in Section 8.13.1.b of these regulations, the regulations in Section 8.13 of these regulations apply to owners and operators of facilities that treat, store, or dispose of hazardous waste in surface impoundments, waste piles, land treatment units, or landfills, and may apply to miscellaneous units. The owner or operator must satisfy the requirements of Section 8.13 of these regulations for all wastes (or constituents thereof) contained in any such waste management units at the facility that receives hazardous waste after the effective date of Section 8.13 of these regulations (hereinafter referred to as a "regulated unit"). Any waste or waste constituent migrating beyond the waste management area under Section 8.13.5.b of these regulations is assumed to originate from a regulated unit unless the chief finds that such waste or waste constituent originated from another source.

8.13.1.b. The owner or operator is not subject to regulation under Section 8.13 of these regulations if:

8.13.1.b.1. He is exempted under Section 8.1 of these regulations;

8.13.1.b.2. He designs and operates a pile in compliance with Section 8.10.1.c of these regulations; or

8.13.1.b.3. The chief finds, pursuant to Section 8.12.11.d of these regulations, that the treatment zone of a land treatment unit does not contain concentrations 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 Section 8.12.9 of these regulations has not shown a statistically significant increase in hazardous constituents below the treatment zone during the operating life of the unit. An exemption under Section 8.13.1 of these regulations can only relieve an owner or operator of responsibility to meet the requirements of Section 8.13 of these regulations during the post-closure care period.

8.13.1.c. The regulations under Section 8.13 of these regulations apply during the active life of the regulated unit (including the closure period). After closure of the regulated unit, the regulations in Section 8.13 of these regulations:

8.13.1.c.1. Do not apply if all waste, waste residues, contaminated containment system components, and contaminated subsoils are removed or decontaminated at closure.

8.13.1.c.2. Apply during the post-closure period under Section 8.6.7 of these regulations in all other cases.

8.13.2. Required Programs.

8.13.2.a. Owners and operators subject to Section 8.13 of these regulations must conduct a monitoring and corrective action program as follows:

8.13.2.a.1. Whenever the groundwater protection standards in Title 46, Water Resources Board, Series 7, Section 1 (46 C.S.R. 7 §1) are exceeded, the owner or operator must institute a corrective action program under Section 8.13.9 of these regulations. Exceeded is defined as statistically significant evidence of increased contamination as described in Section 8.13.8.h of these regulations.

8.13.2.a.2. In all other cases, the owner or operator must institute a groundwater monitoring program under Section 8.13.8 of these regulations.

8.13.2.b. The chief will specify in the facility permit the specific elements of the monitoring and response program. The chief may include one or more of the programs identified in Section

8.13.2.a of these regulations 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 chief will consider the potential adverse effects on human health and the environment that may occur before final administrative action on the permit modification application to incorporate such a program could be taken. This will be included in the permit application as contingency plans and shall be accompanied by an engineering feasibility plan for the corrective action program. The corrective action program must, at a minimum, include the following information:

8.13.2.b.1. A description of corrective actions that will achieve compliance with the groundwater protection standards in Title 46, Water Resources Board, Series 7, Section 1 (46 C.S.R. 7 §1); and

8.13.2.b.2. A plan for a groundwater monitoring program that will demonstrate the effectiveness of the corrective action. Such a groundwater monitoring program may be based on a groundwater monitoring program developed to meet the requirements of Section 8.13.8 of these regulations.

8.13.3. (Reserved).

8.13.4. Hazardous Constituents. The chief will specify in the permit the hazardous constituents to which the groundwater protection standards in Title 46, Water Resources Board, Series 7, Section 1 (46 C.S.R. 7 §1) apply. Hazardous constituents are constituents identified in Appendix VIII of these regulations or constituents that caused the director to list the hazardous waste in Section 3.4 of these regulations or constituents listed in Table II of these regulations, that are reasonably expected to be in or derived from waste contained in a regulated unit or that have been detected in groundwater in the uppermost aquifer underlying a regulated unit.

8.13.5. Point of Compliance.

8.13.5.a. The chief will specify in the permit the point of compliance at which the groundwater protection standards in Title 46, Water Resources Board, Series 7, Section 1 (46 C.S.R. 7 §1) apply and at which monitoring must be conducted. The point of compliance is a vertical surface located at the hydraulically downgradient limit of the waste management area that extends through the uppermost aquifer underlying the regulated unit or as the chief specifies in the permit.

8.13.5.b. The waste management area is the limit projected in the horizontal plan of the area on which waste will be

placed during the active life of the regulated unit.

8.13.5.b.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.

8.13.5.b.2. If the facility contains more than one regulated unit, the waste management area may be proposed in the permit application to be described by an imaginary line circumscribing the several regulated units. The chief will determine whether such a proposal is acceptable based on the distance between the regulated units and the wastes contained in each unit.

8.13.6. Compliance Period.

8.13.6.a. The compliance period is the active life of the waste management area, the closure period and the post-closure period.

8.13.6.b. The compliance period begins when the owner or operator initiates a groundwater monitoring program meeting the requirements of Section 8.13.8 of these regulations.

8.13.6.c. If the owner or operator is engaged in a corrective action program at the end of the compliance period specified in Section 8.13.6.a of these regulations, the compliance period is extended until the owner or operator can demonstrate that the groundwater protection standards in Title 46, Water Resources Board, Series 7, Section 1 (46 C.S.R. 7 §1) have not been exceeded for a period of three (3) consecutive years.

8.13.7. Groundwater Monitoring System Requirements. The owner or operator must comply with the following requirements for any groundwater monitoring program:

8.13.7.a. The groundwater monitoring system must consist of a sufficient number of wells installed at appropriate locations and depth to yield groundwater samples from the uppermost aquifer that:

8.13.7.a.1. Represent the quality of background groundwater that has not been affected by leakage from the regulated unit;

8.13.7.a.2. Represent the quality of groundwater passing the point of compliance.

8.13.7.b. Well construction must meet the following standards:

8.13.7.b.1. Wells must be cased in a manner that

maintains the integrity of the monitoring well bore hole;

8.13.7.b.2. Wells must be screened and packed with sand or gravel throughout the total vertical distance of the uppermost aquifer except as provided under Section 8.13.7.c of these regulations. The screened interval of an individual well should not exceed twenty (20) feet (screened intervals greater than twenty (20) feet may be permitted if the owner or operator can successfully demonstrate that the proposed interval will provide representative samples; such demonstration must be based on specific hydrogeologic conditions at the facility). In order to meet these requirements for screened intervals, nested wells or well clusters may be needed;

8.13.7.b.3. Screening shall be designed to prevent the introduction of sediment, yet allow optimum entrance velocity for water;

8.13.7.b.4. Screens and casing must be constructed of materials that are strong enough to prevent collapse and must be nonreactive, non-synergistic and noncatalytic to the hazardous constituents being monitored;

8.13.7.b.5. The annular space (i.e., the space between the bore hole wall and the well casing) above the sampling depth must be sealed to prevent contamination of samples and groundwater by entrance of materials from the surface; and

8.13.7.b.6. The wells must be installed, constructed, and maintained using the best available techniques which will provide compliance with Section 8.13.7.b of these regulations.

8.13.7.c. In locations where multiple formations comprise the uppermost aquifer the owner or operator must establish a groundwater monitoring system that isolates each stratum containing water and allows for separate sampling of each stratum containing water.

8.13.7.d. If a facility contains more than one regulated unit, separate groundwater monitoring systems may not be required for each regulated unit provided that provisions for sampling groundwater in the uppermost aquifer will enable detection and measurement at the point of compliance of hazardous constituents from the regulated units that have entered the groundwater in the uppermost aquifer. Requests to use such a monitoring system must be submitted in the permit application as required under Section 8.13.5.b.2 of these regulations.

8.13.8. Groundwater Monitoring Program. An owner or operator required to establish a groundwater monitoring program must, at a minimum, discharge the following responsibilities:

8.13.8.a. General requirements:

8.13.8.a.1. The owner or operator must monitor for indicator parameters (e.g., pH, specific conductance, total organic carbon, or total organic halogen), hazardous constituents under Section 8.13.4 of these regulations or reaction products or both that provide a reliable indication of the presence of hazardous constituents in groundwater. The chief will specify the monitoring parameters (i.e., indicator parameters or reaction products or both) and constituents to be monitored in the permit, after considering the following factors:

8.13.8.a.1.A. The types, quantities, and concentrations of hazardous constituents in the wastes managed at the regulated unit;

8.13.8.a.1.B. The mobility, stability, and persistence of hazardous constituents or their reaction products in the unsaturated zone beneath the waste management area;

8.13.8.a.1.C. The detectability of indicator parameters, hazardous constituents, and reaction products in groundwater; and

8.13.8.a.1.D. The concentrations and coefficients of variation of proposed monitoring parameters of hazardous constituents in the background groundwater.

8.13.8.a.2. The owner or operator must install a groundwater monitoring system at the point of compliance under Section 8.13.5 of these regulations. The groundwater monitoring system must comply with Section 8.13.7 of these regulations.

8.13.8.a.3. The groundwater monitoring program must 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 must include procedures and techniques for:

8.13.8.a.3.A. Sample collection;

8.13.8.a.3.B. Sample preservation and shipment;

8.13.8.a.3.C. Analytical procedures; and

8.13.8.a.3.D. Chain of custody control.

8.13.8.a.4. The groundwater monitoring program must include sampling and analytical methods that are appropriate for groundwater sampling and that accurately measure hazardous constituents in groundwater samples. Recommended methods include

those outlined in 40 C.F.R. Part 136. The proposed sampling and analytical methods must be approved by the chief and upon approval, become a condition of the hazardous waste management permit.

8.13.8.a.5. The owner or operator must determine the groundwater flow rate and direction in the uppermost aquifer at least annually and determine transmissibility during initial sampling or initial well development.

8.13.8.a.6. The groundwater monitoring program must include a determination of the static water level and groundwater surface elevation each time groundwater is sampled.

8.13.8.a.7. If the owner or operator determines that the groundwater monitoring program no longer satisfies the requirements of Section 8.13.8.a of these regulations, he must, within ninety (90) days, submit an application for a permit modification to make any appropriate changes to the program.

8.13.8.a.8. The owner or operator must assure that monitoring and corrective action measures necessary to achieve compliance with the groundwater protection standards in Title 46, Water Resources Board, Series 7, Section 1 (46 C.S.R. 7 §1) are taken during the term of the permit.

8.13.8.a.9. The groundwater monitoring wells must be sampled to allow detection of density separated hazardous constituents or monitoring parameters which may escape from the regulated unit.

8.13.8.b. Establishing water quality concentrations:

8.13.8.b.1. The groundwater monitoring program must establish background groundwater quality concentrations for each of the hazardous constituents or monitoring parameters specified in the permit.

8.13.8.b.1.A. The background concentration for a hazardous constituent must be based on data from upgradient wells.

8.13.8.b.1.B. Samples shall be obtained from upgradient well(s) each time downgradient wells are sampled. Downgradient concentrations of hazardous constituents or monitoring parameters shall be compared with background concentrations to determine whether the upgradient background concentrations have been exceeded.

8.13.8.b.1.C. In comparing concentrations of hazardous constituents or monitoring parameters at the point of compliance with background concentrations, the owner or operator shall use the background concentration values for the current quarter. At least four (4) background concentration values

collected as required under Section 8.13.8.b.1.E of these regulations must be used when utilizing the statistical test outlined in Section 8.13.8.c of these regulations.

8.13.8.b.1.D. The owner or operator may propose to the chief to use background concentrations of hazardous constituents or monitoring parameters based on sampling of wells that are not upgradient from the waste management area where sampling at other wells will provide values that are as representative or more representative than those provided by the upgradient wells or in situations where the owner or operator cannot define or locate an upgradient well due to adverse hydrogeologic conditions. The owner or operator must submit the details of such a proposal to the chief for his approval. The reasons for the proposal to utilize wells that are not upgradient must be included with the proposal.

8.13.8.b.1.E. In developing the data base used to determine a background concentration for each monitoring parameter or hazardous constituent, the owner or operator must take a minimum of four (4) samples from each well and a minimum of four (4) samples from the entire system used to determine background groundwater quality, each time the system is sampled.

8.13.8.b.2. The owner or operator must determine the concentration of each hazardous constituent and monitoring parameter at each monitoring well at the point of compliance and each upgradient well at least quarterly during the compliance period. Intervals between sampling and the frequency of sampling will be specified in the permit. The owner or operator must express the concentrations of each hazardous constituent and monitoring parameter at each monitoring well in a form necessary for the determination of statistically significant increases under Section 8.13.8.c of these regulations.

8.13.8.c. Statistical Method. The owner or operator must use the following statistical procedure in determining whether the groundwater protection standards in Title 46, Water Resources Board, Series 7, Section 1 (46 C.S.R. 7 §1) have been exceeded.

8.13.8.c.1. If, in a groundwater monitoring program, the concentration of a hazardous constituent or monitoring parameter at the point of compliance is to be compared to its respective background concentration and both the background concentration data set and the point of compliance monitoring well concentration data set have been determined to be normally distributed by an appropriate method approved by the chief:

8.13.8.c.1.A. The owner or operator must take at least four (4) samples at each well at the point of compliance and determine whether any increase between the mean concentration of each constituent at each well (using all samples taken) and the

background concentration value for the constituent is significant at the 0.05 level using the Cochran's Approximation to the Behren-Fisher Student's t-test as described in 40 C.F.R. Part 264, Appendix IV. If the test indicates that the increase is significant, the owner or operator must repeat the same procedure (with at least the same number of samples as used in the first test) using fresh samples from the monitoring well. If this second round of analyses indicates that the increase is significant, the owner or operator must conclude that a statistically significant increase has occurred; or

8.13.8.c.1.B. The owner or operator may request in writing for authorization to use an equivalent statistical procedure for determining whether a statistically significant increase has occurred. The chief will specify such a procedure in the permit if he finds that the alternative procedure reasonably balances the probability of falsely identifying a non-contaminating regulated unit and the probability of failing to identify a contaminating regulated unit in a manner that is comparable to that of the statistical procedure described in Section 8.13.8.c.1.A of these regulations. This alternative procedure must be appropriate for the distribution of the data. The owner or operator may seek approval from the chief to specify one of the statistical methods found in 40 C.F.R. §264.97.

8.13.8.c.2. In all other situations in a groundwater monitoring program the owner or operator must use a statistical procedure which provides a reasonable balance of the probability of falsely identifying a non-contaminating regulated unit and the probability of failing to identify a contaminating regulated unit. The Mann-Whitney Test (see Appendix XI of these regulations) is recommended. The owner or operator must supply to the chief a written request to use such a statistical procedure, completely describing the details of the procedure and the reasons for using it.

8.13.8.c.3. The chief will approve statistical procedures in specific cases where he finds the procedure

8.13.8.c.3.A. Is appropriate for the distribution of the data used to establish concentration values; and

8.13.8.c.3.B. Provides a reasonable balance between the probability of falsely identifying a non-contaminating regulated unit and the probability of failing to identify a contaminating regulated unit.

8.13.8.c.4. In taking samples used in the determination of concentration values, the owner or operator must use a groundwater monitoring system that complies with Section 8.13.7 of these regulations and which fulfills the requirements of Section 8.13.8 of these regulations.

8.13.8.d. Determination of Significant Increases.

8.13.8.d.1. The owner or operator must determine whether there is statistically significant increase over background concentration values for any monitoring parameter or hazardous constituent specified in the permit pursuant to Section 8.13.8.a.1 of these regulations each time he determines the concentration of hazardous constituents or monitoring parameters in the groundwater at the point of compliance under Section 8.13.8.b.2 of these regulations.

8.13.8.d.1.A. In determining whether a statistically significant increase has occurred, the owner or operator must compare the concentration of each hazardous constituent and monitoring parameter at each individual monitoring well at the point of compliance to the background concentration value for that parameter or constituent, according to the statistical procedure specified under Section 8.13.8.c of these regulations.

8.13.8.d.1.B. The owner or operator must determine whether there has been a statistically significant increase at each monitoring well at the point of compliance. This will be done within the time period after completion of sampling specified in the permit. The chief will specify that time period, after considering the complexity of the statistical test and the availability of laboratory facilities to perform the analysis of groundwater samples.

8.13.8.d.2. If the owner or operator determines, pursuant to Section 8.13.8.d.1 of these regulations, that there is a statistically significant increase in the concentrations of any monitoring parameter or hazardous constituents specified pursuant to Section 8.13.8.a.1 of these regulations at any monitoring well at the point of compliance, he must:

8.13.8.d.2.A. Notify the chief of this finding in writing within seven (7) days. The notification must indicate what monitoring parameter(s) or hazardous constituent(s) have shown statistically significant increases;

8.13.8.d.2.B. Immediately sample the groundwater in all monitoring wells and determine the concentrations of all constituents identified in Appendix IX of these regulations that are present in groundwater;

8.13.8.d.2.C. Establish a background value for each constituent that has been found at the compliance point under Section 8.13.8.d.2.B of these regulations as follows:

8.13.8.d.2.C.i. The owner or operator must comply with Section 8.13.8.b of these regulations in developing the

data base used to determine background values;

8.13.8.d.2.C.ii. The owner or operator must express background values in a form necessary for the determination of statistically significant increases under Section 8.13.8.c of these regulations; and

8.13.8.d.2.C.iii. In taking samples used in the determination of background values, the owner or operator must use a groundwater monitoring system that complies with Sections 8.13.7.a through 8.13.7.d of these regulations;

8.13.8.d.2.D. Within sixty (60) days submit to the chief a written report including the following information:

8.13.8.d.2.D.i. Any proposed changes to the groundwater monitoring system at the facility necessary to meet the requirements of Section 8.13.9 of these regulations;

8.13.8.d.2.D.ii. Any proposed changes to the monitoring frequency, sampling and analysis procedures or methods, or statistical procedures used at the facility necessary to meet the requirements of Section 8.13.9 of these regulations;

8.13.8.d.2.D.iii. An identification of the concentration of each constituent found in the groundwater at each monitoring well at the compliance point; and

8.13.8.d.2.D.iv. If such changes are proposed under Sections 8.13.8.d.2.D.i and 8.13.8.d.2.D.ii of these regulations, then an application for permit modification must be submitted, with the report, pursuant to Section 11.17 of these regulations; and

8.13.8.d.2.E. If the owner or operator determines, pursuant to Section 8.13.8.d.1 of these regulations, that there is a statistically significant increase in the concentrations of hazardous constituents specified pursuant to Section 8.13.8.a.1 of these regulations at any monitoring well at the point of compliance, thereby violating the groundwater protection standards in Title 46, Water Resources Board, Series 7, Section 1 (46 C.S.R. 7 §1), must comply with the provisions of the corrective action program specified in the permit, unless the chief determines that a demonstration made under Section 8.13.8.d.3 of these regulations successfully shows that a source other than the regulated unit caused the increase or that the increase resulted from an error in sampling, analysis, or evaluation.

8.13.8.d.3. If the owner or operator determines, pursuant to Section 8.13.8.d.1 of these regulations, that the groundwater protection standards in Title 46, Water Resources Board, Series 7, Section 1 (46 C.S.R. 7 §1) 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 increase or that the increase resulted from error in sampling, analysis, or evaluation. In making a demonstration under Section 8.13.8.d.3 of these regulations, the owner or operator must:

8.13.8.d.3.A. Notify the chief in writing within seven (7) days that he intends to make a demonstration under Section 8.13.8.d.3 of these regulations;

8.13.8.d.3.B. Within ninety (90) days, submit a written report to the chief 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;

8.13.8.d.3.C. Within ninety (90) days, submit to the chief an application for a permit modification to make any appropriate changes to the groundwater monitoring program at the facility; and

8.13.8.d.3.D. Continue to monitor in accordance with the groundwater monitoring program established under Section 8.13.8 of these regulations.

8.13.9. Corrective Action Program. An owner or operator, required to establish a corrective action program under Section 8.13 of these regulations must, at a minimum, discharge the following responsibilities:

8.13.9.a. The owner or operator must take corrective action to ensure that regulated units are in compliance with the groundwater protection standards in Title 46, Water Resources Board, Series 7, Section 1 (46 C.S.R. 7 §1).

8.13.9.b. The owner or operator must implement a corrective action program that prevents hazardous constituents from exceeding their respective background concentrations in groundwater by removing the hazardous constituents from the groundwater. The contingency plan in the permit will specify the specific measure that will be taken.

8.13.9.c. The owner or operator must begin corrective action within the time period specified in the permit contingency plan after the groundwater protection standards in Title 46, Water Resources Board, Series 7, Section 1 (46 C.S.R. 7 §1) are exceeded.

8.13.9.d. In conjunction with a corrective action program, the owner or operator must establish and implement a groundwater monitoring program to demonstrate the effectiveness of the corrective action program. Such a monitoring program may be based on the requirements for a groundwater monitoring program

under Section 8.13.8 of these regulations and must be as effective as that program in determining compliance with the groundwater protection standards in Title 46, Water Resources Board, Series 7, Section 1 (46 C.S.R. 7 §1).

8.13.9.e. In addition to the other requirements of Section 8.13.9 of these regulations, the owner or operator must conduct a corrective action program ~~to remove~~ to reduce any hazardous constituents under Section 8.13.4 of these regulations that exceed their respective background concentrations in groundwater ~~at the point of compliance under Section 8.13.6 of these regulations or between the point of compliance between the compliance point under Section 8.13.5 of these regulations and the downgradient facility property boundary and beyond the facility boundary, where necessary to protect human health and the environment, unless the owner or operator demonstrates to the satisfaction of the chief that, despite the owner's or operator's best efforts, the owner or operator was unable to obtain the necessary permission to undertake such action. The owner/operator is not relieved of all responsibility to clean up a release that has migrated beyond the facility boundary where off-site access is denied. On-site measures to address such releases will be determined on a case-by-case basis.~~ The contingency plans submitted in the permit application will specify the measures to be taken.

8.13.9.e.1. Corrective action measures under Section 8.13.9.e of these regulations must be initiated and completed within a reasonable time considering the extent of contamination.

8.13.9.e.2. The owner or operator must analyze samples from all monitoring wells for all constituents contained in Appendix IX of these regulations at least once prior to terminating the corrective action program to determine if there is a need for further corrective action. The owner or operator shall report the results of full Appendix IX sample analyses to the chief within seven (7) days after completion of the analyses.

8.13.9.e.3. Corrective action measures under Section 8.13.9.e of these regulations may be terminated once the concentration of hazardous constituents under Section 8.13.4 is reduced to ~~levels below~~ their respective background concentrations.

8.13.9.f. The owner or operator must continue corrective action measures during the compliance period to the extent necessary to ensure that the groundwater protection standards in Title 46, Water Resources Board, Series 7, Section 1 (46 C.S.R. 7 §1) are not exceeded. If the owner or operator is conducting corrective action at the end of the compliance period, he must continue that corrective action for as long as necessary to achieve compliance with the above standard. The owner or operator may terminate corrective action measures taken beyond the compliance period if he can demonstrate, based on data from the groundwater

monitoring program under Section 8.13.9.d of these regulations, that the groundwater protection standards in Title 46, Water Resources Board, Series 7, Section 1 (46 C.S.R. 7 §1) have not been exceeded for a period of three (3) consecutive years.

8.13.9.g. The owner or operator must report in writing to the chief on the effectiveness of the corrective action program. The owner or operator must submit these reports semiannually.

8.13.9.h. If the owner or operator determines that the corrective action program no longer satisfies the requirements of Section 8.13.9 of these regulations, he must, within sixty (60) days submit an application for a permit modification to make any appropriate changes to the program.

8.13.9.i. If the owner or operator elects to pursue a corrective action program other than that outlined in the permit contingency plan, he must notify the chief of his decision, in writing, within fifteen (15) days of the determination made under Section 8.13.8.d of these regulations. The owner or operator must obtain approval to implement any alternate corrective action plan from the chief and begin implementation of such plan, within ninety (90) days of the determination made under Section 8.13.8.d of these regulations. If the alternate plan is not approved or in effect within ninety (90) days, the owner or operator must immediately begin implementation of the original corrective action program outlined in the permit contingency plan.

8.13.9.j. If the chief determines that groundwater quality has been affected by a regulated unit prior to or upon receipt of a Part B application, the owner or operator shall be required to implement a corrective action program immediately upon issuance of the permit.

8.14. Miscellaneous Units.

8.14.1. Applicability. The regulations in Section 8.14 of these regulations apply to owners and operators of facilities that treat, store, or dispose of hazardous waste in miscellaneous units, except as Section 8.1 of these regulations provides otherwise.

8.14.2. Environmental Performance Standards. A miscellaneous unit must be located, designed, constructed, operated, maintained, and closed in a manner that will ensure protection of human health and the environment. Permits for miscellaneous units are to contain such terms and provisions as necessary to protect human health and the environment including, but not limited to, as appropriate, design and operating requirements, detection and monitoring requirements, and requirements for response to releases of hazardous waste or hazardous constituents from the unit. Permit terms and provisions shall include those requirements of Sections 8.7 through 8.12 and

11 of these regulations and of title 45, Air Pollution Control Commission, Series 25 (45 C.S.R. 25) that are appropriate for the miscellaneous unit being permitted. Protection of human health and the environment includes, but is not limited to:

8.14.2.a. Prevention of any releases that may have adverse effects on human health or the environment due to migration of waste constituents in the groundwater or subsurface environment, considering:

8.14.2.a.1. The volume and the physical and chemical characteristics of the waste in the unit, including its potential for migration through soil, liners, or other containing structures;

8.14.2.a.2. The hydrologic and geologic characteristics of the unit and surrounding area;

8.14.2.a.3. The existing quality of groundwater, including other sources of contamination and their cumulative impact on the groundwater;

8.14.2.a.4. The quantity and direction of groundwater flow;

8.14.2.a.5. The proximity to and withdrawal rates of current and potential groundwater users;

8.14.2.a.6. The patterns of land use in the region;

8.14.2.a.7. The potential for deposition or migration of waste constituents into subsurface physical structures, and into the root zone of food chain crops and other vegetation;

8.14.2.a.8. The potential for health risks caused by human exposure to waste constituents; and

8.14.2.a.9. The potential for damage to domestic animals, wildlife, crops, vegetation, and physical structures caused by exposure to waste constituents;

8.14.2.b. Prevention of any releases that may have adverse effects on human health or the environment due to migration of waste constituents in surface water, in wetlands, or on the soil surface, considering:

8.14.2.b.1. The volume and physical and chemical characteristics of the waste in the unit;

8.14.2.b.2. The effectiveness and reliability of containing, confining, and collecting systems and structures in preventing migration;

8.14.2.b.3. The hydrologic characteristics of the unit and the surrounding area, including the topography of the land around the unit;

8.14.2.b.4. The patterns of precipitation in the region;

8.14.2.b.5. The quantity, quality, and direction of groundwater flow;

8.14.2.b.6. The proximity of the unit to surface waters;

8.14.2.b.7. The current and potential uses of nearby surface waters and any water quality standards established for those surface waters;

8.14.2.b.8. The existing quality of surface waters and surface soils, including other sources of contamination and their cumulative impact on surface waters and surface soils;

8.14.2.b.9. The patterns of land use in the region;

8.14.2.b.10. The potential for health risks caused by human exposure to waste constituents; and

8.14.2.b.11. The potential for damage to domestic animals, wildlife, crops, vegetation, and physical structures caused by exposure to waste constituents; and

8.14.2.c. Prevention of any releases that may have adverse effects on human health or the environment due to migration of waste constituents in the air, considering:

8.14.2.c.1. The volume and physical and chemical characteristics of the waste in the unit, including its potential for the emission and dispersal of gases, aerosols, and particulates;

8.14.2.c.2. The effectiveness and reliability of systems and structures to reduce or prevent emissions of hazardous constituents to the air;

8.14.2.c.3. The operating characteristics of the unit;

8.14.2.c.4. The atmospheric, meteorologic, and topographic characteristics of the unit and surrounding area;

8.14.2.c.5. The existing quality of the air, including other sources of contamination and their cumulative impact on the air;

8.14.2.c.6. The potential for health risks caused by human exposure to waste constituents; and

8.14.2.c.7. The potential for damage to domestic animals, wildlife, crops, vegetation, and physical structures caused by exposure to waste constituents.

8.14.3. Monitoring, Analysis, Inspection, Response, Reporting, and Corrective Action. Monitoring, testing, analytical data, inspections, response, and reporting procedures and frequencies must ensure compliance with Sections 8.2.6, 8.3.4, 8.5.6, 8.5.7, 8.5.8, and 8.14.1 of these regulations and with 40 C.F.R. §264.101 as well as meet any additional requirements needed to protect human health and the environment as specified in the permit.

8.14.4. Post-Closure Care. A miscellaneous unit that is a disposal unit must be maintained in a manner that complies with Section 8.14.2 of these regulations during the post-closure care period. In addition, if a treatment or storage unit has contaminated soils or groundwater that cannot be completely removed or decontaminated during closure, then that unit must also meet the requirements of Section 8.14.2 of these regulations during post-closure care. The post-closure plan under Section 8.6.8 of these regulations must specify the procedures that will be used to satisfy this requirement.

§47-35-9. Standards for Management of Specific Hazardous Wastes and Specific Types of Hazardous Waste Management Facilities.

9.1. (Reserved).

9.2. (Reserved).

9.3. Recyclable Materials Used in a Manner Constituting Disposal.

9.3.1. Applicability.

9.3.1.a. Section 9.3 of these regulations applies to recyclable materials that are applied to or placed on the land:

9.3.1.a.1. Without mixing with any other substances;

9.3.1.a.2. After mixing with any other substances that are not hazardous wastes, unless the recyclable material undergoes a chemical reaction so as to become inseparable from the other substances by physical means; or

9.3.1.a.3. After combination with any other substances if the resulting combined material is not produced for the general public's use.

9.3.1.a.4. The materials identified in Sections 9.3.1.a.1 through 9.3.1.a.3 of these regulations will be referred to throughout Section 9 of these regulations as "materials used in a manner that constitutes disposal."

9.3.1.b. Products produced for the general public's use that are used in a manner that constitutes disposal and that contain recyclable materials are not presently subject to these regulations if the recyclable materials have undergone chemical reaction in the course of producing the product so as to become inseparable by physical means and if such products meet the applicable treatment standards of 40 C.F.R. Part 268, Subpart D (or applicable prohibition levels under 40 C.F.R. §268.32 or RCRA Section 3004(d), where no treatment standards have been established) for each recyclable material (i.e., hazardous waste) that they contain. Commercial fertilizers that are produced for the general public's use that contain recyclable materials also are not presently subject to these regulations provided they meet these same treatment standards or prohibition levels for each recyclable material that they contain. However, zinc-containing fertilizers using hazardous waste K061 that are produced for the general public's use are not presently subject to regulation.

9.3.2. Standards Applicable to Generators and Transporters of Materials Used in a Manner Constituting Disposal.

9.3.2.a. Generators and transporters of materials that are used in a manner that constitutes disposal are subject to all applicable provisions of Sections 4, 5, and 6 of these regulations as well as the applicable provisions of Title 157, Department of Highways, Series 7 (157 C.S.R. 7) and Title 150, Public Service Commission, Series 11 (150 C.S.R. 11).

9.3.3. Standards Applicable to Storers of Materials That are to be Used in a Manner that Constitutes Disposal Who are not the Ultimate Users.

9.3.3.a. Owners or operators of facilities that store recyclable materials that are to be used in a manner that constitutes disposal, but who are not the ultimate users of the materials, are regulated under all applicable provisions of Sections 4, 8, 11, and 13 of these regulations.

9.3.4. Standards Applicable to Users of Materials That are Used in a Manner That Constitutes Disposal.

9.3.4.a. Owners or operators of facilities that use recyclable materials in a manner that constitutes disposal are subject to all applicable provisions of Sections 4, 8, 11, and 13 of these regulations.

9.3.4.b. The use of waste or used oil or other material,

which is contaminated with dioxin or any other hazardous waste (other than a waste identified solely on the basis of ignitability), for dust suppression or road treatment is prohibited.

Note: Section 9.3.1.b of these regulations exempts certain products containing recyclable materials from regulation.

9.4. Hazardous Waste Burned for Energy Recovery.

9.4.1. Applicability.

9.4.1.a. The provisions of Section 9.4 of these regulations apply to hazardous wastes that are burned for energy recovery in any boiler or industrial furnace, except as provided by Section 9.4.1.b of these regulations. Such hazardous wastes burned for energy recovery are termed "hazardous waste fuel". These regulations do not apply, however to gas recovered from hazardous waste management activities when such gas is burned for energy recovery.

9.4.1.b. The following hazardous wastes are not regulated under Section 9.4 of these regulations:

9.4.1.b.1. Used oil burned for energy recovery that is also a hazardous waste solely because it exhibits a characteristic of hazardous waste identified in Section 3.3 of these regulations. Such used oil is subject to regulation under Subpart E of 40 C.F.R. Part 266 rather than under the provisions of Section 9.4 of these regulations.

9.4.1.b.2. Wastes that are exempt from regulation under the provisions of Section 3.1.4 of these regulations and hazardous wastes that are subject to the special requirements for conditionally exempt small quantity generators under the provisions of Section 10 of these regulations.

9.4.2. Prohibitions.

9.4.2.a. A person may market hazardous waste fuel only:

9.4.2.a.1. To persons who have notified EPA of their hazardous waste fuel activities and have an EPA identification number; and

9.4.2.a.2. If the fuel is sold to persons who burn the fuel in boilers or industrial furnaces in Section 9.4.2.b of these regulations.

9.4.2.b. Hazardous waste fuel may be burned for energy recovery in only the following devices:

9.4.2.b.1. Industrial furnaces identified in Section 2 of these regulations;

9.4.2.b.2. Boilers, as defined in Section 2 of these regulations, that are identified as follows:

9.4.2.b.2.A. Industrial boilers located on the site of a facility engaged in a manufacturing process where substances are transformed into new products, including the component parts of products, by mechanical or chemical processes; or

9.4.2.b.2.B. Utility boilers used to produce electric power, steam, or heated or cooled air or other gases or fluids for sale.

9.4.3. Standards Applicable to Generators of Hazardous Waste Fuel.

9.4.3.a. Generators of hazardous waste fuel are subject to the requirements of Section 6 of these regulations.

9.4.3.b. Generators of hazardous waste fuel who are also marketers are subject to the requirements of Sections 6 and 9.4.5 of these regulations.

9.4.3.c. Generators of hazardous waste fuel who are also burners are subject to the requirements of Sections 6 and 9.4.6 of these regulations.

9.4.4. Standards Applicable to Transporters of Hazardous Waste Fuel.

9.4.4.a. Transporters of hazardous waste fuel are subject to:

9.4.4.a.1. The requirements of Section 5 of these regulations for transportation by air or water;

9.4.4.a.2. The requirements of Title 157, Department of Highways, Series 7 (157 C.S.R. 7) for transportation by highway; or

9.4.4.a.3. The requirements of Title 150, Public Service Commission, Series 11 (150 C.S.R. 11) for transportation by rail.

9.4.5. Standards Applicable to Marketers of Hazardous Waste Fuel.

9.4.5.a. Marketers other than distributors are subject to the following requirements:

9.4.5.a.1. Marketers who are generators are subject to all applicable provisions of Section 6.3.5, Sections 8.1 through 8.10, Section 8.13, Section 11 excluding the interim status standards for the owners and operators of Subparts M through Q of Part 265 of 40 C.F.R., and 13 of these regulations.

9.4.5.a.2. Marketers who receive hazardous wastes from generators and produce, process, or blend hazardous waste fuel from such hazardous wastes are subject to all applicable provisions of Sections 8, 11, and 13 of these regulations.

9.4.6. Standards Applicable to Burners of Hazardous Waste Fuel.

9.4.6.a. Burners who store hazardous waste fuel prior to burning are subject to all applicable provisions of Section 6.3.5, Sections 8.1 through 8.10, Section 8.13, Section 11 excluding the interim status standards for the owners and operators of Subparts M through Q of Part 265 of 40 C.F.R., and 13 of these regulations.

9.5. Used Oil Burned for Energy Recovery. (Reserved).

9.6. Recyclable Materials Utilized for Precious Metal Recovery.

9.6.1. The regulations of Section 9.6 of these regulations apply to recyclable materials that are reclaimed to recover economically significant amounts of gold, silver, platinum, palladium, iridium, osmium, rhodium, ruthenium, or any combination of these.

9.6.2. Persons who generate any of the recyclable materials listed in Section 9.6.1 of these regulations are subject to the requirements of Sections 4 and 6.2 of these regulations.

9.6.3. Persons who transport by air or water any of the recyclable materials listed in Section 9.6.1 of these regulations are subject to the requirements of Sections 4 and 5 of these regulations.

9.6.4. Persons who transport by highway any of the recyclable materials listed in Section 9.6.1 of these regulations are subject to the requirements of Section 4 of these regulations and of Title 157, Department of Highways, Series 7 (157 C.S.R. 7).

9.6.5. Persons who transport by rail any of the recyclable materials listed in Section 9.6.1 of these regulations are subject to the requirements of Section 4 of these regulations and of Title 150, Public Service Commission, Series 11 (150 C.S.R. 11).

9.6.6. Persons who store any of the recyclable materials listed in Section 9.6.1 of these regulations are subject to the requirements in Sections 4, 8.5.2, and 8.5.3 of these regulations

and must keep the following records to document that they are not accumulating these materials speculatively:

9.6.6.a. Records showing the volume of these materials stored at the beginning of the calendar year;

9.6.6.b. Records showing the amount of these materials generated or received during the calendar year; and

9.6.6.c. Records showing the amounts of these materials remaining at the end of the calendar year.

9.6.7. Persons who generate, transport, or store any of the recyclable materials listed in Section 9.6.1 of these regulations that are accumulated speculatively, as defined in Section 2 of these regulations, are subject to all applicable provisions of Sections 4, 5, 6, 8, 11, and 13 of these regulations.

9.7. Reclaimed Spent Lead-Acid Batteries.

9.7.1. Section 9.7 of these regulations applies to persons who reclaim spent lead-acid batteries that are recyclable materials ("spent batteries"). Persons who generate, transport, or collect spent batteries and persons who store spent batteries but do not reclaim them are not subject to the requirements of Sections 4, 5, 6, 8, 9, 11, or 13 of these regulations.

9.7.2. Owners or operators of facilities that store spent batteries before reclaiming them are subject to the following requirements:

9.7.2.a. All applicable provisions of Sections 4, 11, and 13 of these regulations; and

9.7.2.b. All applicable provisions of Sections 8.1 through 8.10 of these regulations, except Section 8.2.4 of these regulations concerning waste analysis and Sections 8.5.2 and 8.5.3 of these regulations concerning use of the manifest and manifest discrepancies.

\$47-35-10. Special Requirements for Hazardous Waste Generated by Small Quantity Generators.

10.1. Except as provided in Sections 10.1.1 through 10.1.5 of these regulations, hazardous wastes generated by small quantity generators who generate greater than one hundred (100) kilograms but less than one thousand (1,000) kilograms of hazardous wastes in one (1) calander month are subject to all provisions of these regulations.

10.1.1. Reclaimed Waste. The requirements of Section 6.2 of these regulations do not apply to hazardous waste produced by small

quantity generators of greater than one hundred (100) kilograms but less than one thousand (1,000) kilograms in a calendar month where:

10.1.1.a. The waste is reclaimed under a contractual agreement pursuant to which:

10.1.1.a.1. The type of waste and frequency of shipments are specified in the agreement; and

10.1.1.a.2. The vehicle used to transport the waste to the recycling facility and to deliver regenerated material back to the generator is owned and operated by the reclaimer of the waste; and

10.1.1.b. The small quantity generator maintains a copy of the reclamation agreement in his files for a period of at least three (3) years after termination or expiration of the agreement.

10.1.2. Record Keeping. A small quantity generator who generates greater than one hundred (100) kilograms but less than one thousand (1,000) kilograms of hazardous waste in a calendar month is exempt from the requirements of Section 6.4 of these regulations except for the record keeping requirements in Sections 6.4.1.a, 6.4.1.c, 6.4.1.d, and 6.4.4 of these regulations.

10.1.3. Accumulation Time; Contingency Plan and Emergency Procedures. A small quantity generator who generates greater than one hundred (100) kilograms but less than one thousand (1,000) kilograms of hazardous waste in a calendar month may accumulate hazardous waste on site for one hundred and eighty (180) days or less without a permit or without having interim status provided that:

10.1.3.a. The quantity of waste accumulated on-site never exceeds six thousand (6,000) kilograms;

10.1.3.b. The small quantity generator complies with the requirements of 40 C.F.R. §265.201 and Section 6.3.5.a.1 of these regulations, except the generator need not comply with 40 C.F.R. §265.176;

10.1.3.c. The small quantity generator complies with the requirements of Sections 6.3.5.a.2 and 6.3.5.a.4 of these regulations and the requirements of Subpart C of 40 C.F.R. Part 265; and

10.1.3.d. The small quantity generator complies with the following requirements:

10.1.3.d.1. At all times there must be at least one employee either on the premises or on call (i.e., available to respond to an emergency by reaching the facility in a short period

of time) with the responsibility for coordinating all emergency response measures specified in Section 10.1.3.d.4 of these regulations. This employee is the emergency coordinator.

10.1.3.d.2. The small quantity generator must post the following information next to the telephone:

10.1.3.d.2.A. The name and telephone number of the emergency coordinator;

10.1.3.d.2.B. Location of fire extinguishers and spill control material, and, if present, fire alarm; and

10.1.3.d.2.C. The telephone number of the fire department, unless the facility has a direct alarm.

10.1.3.d.3. The small quantity generator must ensure that all the employees are thoroughly familiar with proper waste handling and emergency procedures, relevant to their responsibilities during normal facility operations and emergencies.

10.1.3.d.4. The emergency coordinator or his designee must respond to any emergencies that arise. The applicable responses are as follows:

10.1.3.d.4.A. In the event of a fire, call the fire department or attempt to extinguish it using a fire extinguisher;

10.1.3.d.4.B. In the event of a spill, contain the flow of hazardous waste to the extent possible, and as soon as is practicable, clean up the hazardous waste and any contaminated materials or soil; and

10.1.3.d.4.C. In the event of a fire, explosion, or other release that could threaten human health outside the facility or when the small quantity generator has knowledge that a spill has reached surface water, the generator must immediately notify the National Response Center at 1-800-424-8802. The report must include the following information:

10.1.3.d.4.C.i. The name, address, and EPA identification number of the generator;

10.1.3.d.4.C.ii. Date, time, and type of incident (e.g., spill or fire);

10.1.3.d.4.C.iii. Quantity and type of hazardous waste involved in the incident;

10.1.3.d.4.C.iv. Extent of injuries, if any; and

10.1.3.d.4.C.v. Estimated quantity and

disposition of recovered materials, if any.

10.1.4. Extended Accumulation Time. A small quantity generator who generates greater than one hundred (100) kilograms but less than one thousand (1,000) kilograms of hazardous waste in a calendar month and who must transport his waste, or offer his waste for transportation, over a distance of two hundred (200) miles or more for off-site treatment, storage, or disposal may accumulate hazardous waste on-site for two hundred and seventy (270) days or less without a permit or without having interim status provided that he complies with the requirements of Section 10.1.3 of these regulations.

10.1.5. Small Quantity Generator Storage Facilities. A small quantity generator who generates greater than one hundred (100) kilograms but less than one thousand (1,000) kilograms of hazardous waste in a calendar month and who accumulates hazardous waste in quantities exceeding six thousand (6,000) kilograms or accumulates hazardous waste for more than one hundred and eighty (180) days (or for more than two hundred and seventy (270) days if he must transport his waste, or offer his waste for transportation over a distance of two hundred (200) miles or more) is an operator of a storage facility and is subject to the requirements of Section 8 of these regulations and 40 C.F.R. Part 265 and the permit requirements of Section 11 of these regulations unless he has been granted an extension to the one hundred and eighty (180) day period, or the two hundred and seventy (270) day period if applicable. Such extension may be granted by the chief if hazardous wastes must remain on-site for longer than one hundred and eighty (180) days (or two hundred and seventy (270) days if applicable) due to unforeseen, temporary, and uncontrollable circumstances. An extension of up to thirty (30) days may be granted at the discretion of the chief on a case-by-case basis.

10.2. Special Requirements for Hazardous Wastes Generated by Conditionally Exempt Small Quantity Generators.

10.2.1. A generator is a conditionally exempt small quantity generator in a calendar month if he generates no more than one hundred (100) kilograms of hazardous waste in that month.

10.2.2. Except for those wastes identified in Sections 10.2.5, 10.2.7, and 10.2.10 of these regulations, a conditionally exempt small quantity generator's hazardous wastes are not subject to regulation under Sections 6, 8, 9, and 11 of these regulations and 40 C.F.R. Part 265, provided the generator complies with the requirements of Sections 10.2.6, 10.2.7, and 10.2.10 of these regulations.

Note: In the event that a conditionally exempt small quantity generator has failed to comply with the notification requirements of Section 4 of these regulations, no penalty shall be

sought for such violation unless the conditionally exempt small quantity generator fails to notify within sixty (60) days after being notified by the chief of the requirement to notify.

10.2.3. Hazardous waste that is not subject to regulation or that is subject only to Section 6.1.2, 6.1.3, 6.4.1.c, and 6.4.2 of these regulations is not included in the quantity determinations of Sections 6, 8, 9, 10.2, and 11 of these regulations and 40 C.F.R. Part 265 and is not subject to any of the requirements of those Sections or Part. Hazardous waste that is subject to the requirements of Sections 3.1.5.b, 3.1.5.c, 3.1.6.d, 3.1.6.e, 3.1.6.f, 9.3, 9.4, and 9.6 of these regulations is included in the quantity determination of all provisions of these regulations.

10.2.4. In determining quantity of hazardous wastes generated a generator need not include:

10.2.4.a. Hazardous waste when it is removed from on-site storage;

10.2.4.b. Hazardous waste produced by on-site treatment (including reclamation) or his hazardous waste so long as the hazardous waste that is treated was counted once; or

10.2.4.c. Spent materials that are generated, reclaimed, and subsequently reused on-site so long as such spent materials have been counted once.

10.2.5. Acutely Hazardous Wastes. If a conditionally exempt small quantity generator generates acute hazardous waste in a calendar month in quantities greater than set forth below, all quantities of acute hazardous wastes are fully subject to these regulations:

10.2.5.a. A total of one (1) kilogram of acute hazardous waste listed in Section 3.4.4.e of these regulations; or

10.2.5.b. A total of one hundred (100) kilograms of any residue or contaminated soil, waste, or other debris resulting from the clean-up of a spill into or on any land or water of any acute hazardous wastes listed in Section 3.4.4.e of these regulations.

Note: "Full Regulation" means those regulations applicable to generators of greater than one thousand (1,000) kilograms of non-acutely hazardous waste in a calendar month.

10.2.6. Accumulation of Hazardous Waste in Quantities Greater than Small Quantity Amounts. A conditionally exempt small quantity generator may accumulate hazardous waste on site. If he accumulates at any time more than a total of one thousand (1,000) kilograms of his hazardous wastes or his acutely hazardous wastes in quantities greater than those set forth in Sections 10.2.5.a and

10.2.5.b of these regulations, all of these accumulated wastes for which the accumulation limit was exceeded are fully subject to Section 10 of these regulations. If he accumulates at any time more than a total of one thousand (1,000) kilograms of his hazardous wastes which are not acutely hazardous, all of those accumulated wastes are subject to regulation under the special provisions of Section 10.1 of these regulations applicable to generators of between one hundred (100) kilograms and one thousand (1,000) kilograms of hazardous waste in a calendar month. The time period of Section 6.3.5.a of these regulations for accumulation of wastes on-site begins when the accumulated wastes exceed the applicable exclusion level for acutely hazardous waste or when the accumulated waste exceeds one thousand (1,000) kilograms for hazardous wastes not acutely hazardous.

10.2.7. Exclusion from Regulation. In order for hazardous waste generated by a conditionally exempt small quantity generator generating less than one hundred (100) kilograms of hazardous wastes per month or less than or equal to the quantities of acutely hazardous wastes set forth in Section 10.2.5 of these regulations to be excluded from full regulation under Section 10.2.7 of these regulations, the conditionally exempt small quantity generator must:

10.2.7.a. Comply with the requirements of Sections 4 and 6.1.2 of these regulations;

10.2.7.b. Store on-site hazardous waste in compliance with the requirements of Section 10.2.6 of these regulations;

10.2.7.c. Establish and maintain on-site a written record specifying the quantity and types of hazardous wastes disposed of, the dates the wastes were transported off-site, and the final disposition of the wastes. This record keeping requirement is applicable to all manufacturing, service, and repair facilities which qualify as small quantity generators under these regulations; and

10.2.7.d. Either treat or dispose of his hazardous waste in an on-site facility, or ensure delivery to an off-site treatment, storage, or disposal facility which:

10.2.7.d.1. Is permitted under 40 C.F.R. Part 270;

10.2.7.d.2. Is in interim status under 40 C.F.R. Parts 265 and 270 or under the State Act;

10.2.7.d.3. Is permitted under Section 11 of these regulations;

10.2.7.d.4. Is authorized to manage hazardous waste by

a state with a hazardous waste program approved under 40 C.F.R. Part 271;

10.2.7.d.5. Is permitted, licensed, or registered by a state other than West Virginia to manage waste generated by conditionally exempt small quantity facilities;

10.2.7.d.6. Beneficially uses or re-uses, or legitimately recycles or reclaims, his waste; or

10.2.7.d.7. Treats his waste prior to beneficial use or re-use or legitimate recycling or reclamation.

10.2.8. Hazardous waste subject to the reduced requirements of Section 10.2 of these regulations may be mixed with nonhazardous waste and remain subject to these reduced requirements even though the resultant mixture exceeds the quantity limitations identified in Section 10.2 of these regulations, unless the mixture meets any of the characteristics of hazardous wastes identified in Section 3.3 of these regulations.

10.2.9. If any person mixes a waste with a hazardous waste that exceeds a quantity exclusion level of Section 10.2 of these regulations, the mixture is subject to full regulation.

10.2.10. If a conditionally exempt small quantity generator's wastes are mixed with used oil, the mixture is subject to Section 9.5 of these regulations if it is destined to be burned for energy recovery. Any material produced from such a mixture by processing, blending, or other treatment is also so regulated if it is destined to be burned for energy recovery.

§47-35-11. Hazardous Waste Permitting Program.

11.1. Scope of the Hazardous Waste Management Permit Requirements. These regulations require a permit for the treatment, storage, or disposal of any hazardous waste unless expressly excluded by these regulations or the State Act.

11.1.1. Specific Inclusions. Without limiting in any way the scope of the permit requirements as set forth in Section 11.1 of these regulations, hazardous waste management permits are required for: Treatment, storage, or disposal of hazardous waste at facilities requiring an NPDES permit. The owner and operator of a POTW receiving hazardous waste will be deemed to have a hazardous waste management permit for that waste if they comply with the requirements of Section 11.8.1 of these regulations .

11.1.2. Specific Exclusions. The following are not required to obtain a hazardous waste management permit:

11.1.2.a. Generators who accumulate hazardous waste on-

site for less than the time periods provided in Sections 6.3.5.a, 10.1.3, and 10.1.4 of these regulations;

11.1.2.b. Farmers who dispose of hazardous waste pesticides from their own use as provided in Section 6.5.2 of these regulations;

11.1.2.c. Persons who own or operate facilities operated solely for the treatment, storage, or disposal of hazardous waste excluded from regulations under Section 11 of these regulations, by Section ~~3.1.4~~ 3.1.6 or 10 of these regulations;

11.1.2.d. Owners or operators of totally enclosed treatment facilities, as defined in Section 2 of these regulations;

11.1.2.e. Owners or operators of elementary neutralization units or wastewater treatment units as defined in Section 2 of these regulations;

11.1.2.f. Transporters storing manifested shipments of hazardous waste in containers meeting the requirements of Section 6.3.1 of these regulations at a transfer facility for a period of ten (10) days or less;

11.1.2.g. A person is not required to obtain a hazardous waste management permit for treatment or containment activities taken during immediate response to any of the following situations:

11.1.2.g.1. A discharge of a hazardous waste;

11.1.2.g.2. An imminent and substantial threat of discharge of hazardous waste; or

11.1.2.g.3. A discharge of a material which, when discharged, becomes a hazardous waste;

11.1.2.h. Any person who continues or initiates hazardous waste treatment or containment activities after the immediate response is over is subject to all applicable requirements of Section 11 of these regulations for those activities; and

11.1.2.i. Persons adding absorbent material to hazardous waste in a container and persons adding hazardous waste to absorbent material in a container, provided that these actions occur at the time hazardous waste is first placed in the container and Sections 8.2.8.b, 8.7.2, and 8.7.3 of these regulations are complied with.

11.1.3. Permits for less than an entire facility. The chief may issue or deny a permit for one or more units at a facility without simultaneously issuing or denying a permit to all of the units at the facility. The interim status of any unit for which a

permit has not been issued or denied is not affected by the issuance or denial of a permit to any other unit at the facility.

11.1.3. (Reserved).

11.1.4. Closure by Removal. Owners/operators of surface impoundments, land treatment units, and waste piles closing by removal or decontamination under 40 C.F.R. Part 265 standards must obtain a post-closure permit unless they can demonstrate to the chief that the closure met the standards for closure by removal or decontamination under Sections 8.9.7, 8.10.9, and 8.12.11 of these regulations. The demonstration may be made in the following ways:

11.1.4.a. If the owner/operator has submitted a Part B application for a post-closure permit, the owner/operator may request a determination, based on information contained in the application, that closure by removal standards under Section 8 of these regulations are met. If the chief believes that the standards of Section 8 of these regulations were met, the chief will notify the public of his proposed decision, allow for public comment, and reach a final determination according to the procedures in Section 11.1.5 of these regulations.

11.1.4.b. If the owner/operator has not submitted a Part B application for a post-closure permit, the owner/operator may petition the chief for a determination that a post-closure permit is not required because the closure met the applicable closure standards in Section 8 of these regulations.

11.1.4.b.1. The petition must include data demonstrating that closure by the removal or decontamination standards of these regulations were met.

11.1.4.b.2. The chief shall approve or deny the petition according to the procedures outlined in Section 11.1.5 of these regulations.

11.1.5. Procedures for Closure Equivalency Determination.

11.1.5.a. If a facility owner/operator seeks an equivalency demonstration under Section 11.1.4 of these regulations, the chief will provide the public, through a newspaper notice, the opportunity to submit written comments on the information submitted by the owner/operator within thirty (30) days from the date of the notice. The chief will also, in response to a request or at the chief's own discretion, hold a public hearing whenever such a hearing may clarify one or more issues concerning the 40 C.F.R. Part 265 closure requirements to a closure in accordance with Section 8 of these regulations. The chief will give public notice of the hearing at least thirty (30) days before it occurs. (Public notice of the hearing may be given at the same time as notice of the opportunity for the public to submit written

comments, and the two notices may be combined.)

11.1.5.b. The chief will determine whether the closure in accordance with 40 C.F.R. Part 265 met the closure by removal or decontamination requirements of Section 8 of these regulations within ninety (90) days of its receipt. If the chief finds that the closure did not meet the applicable standards of Section 8 of these regulations, the chief will provide the owner/operator with a written statement of the reasons why the closure failed to meet the standards of Section 8 of these regulations. The owner/operator may submit additional information in support of an equivalency demonstration within thirty (30) days after receiving such written statement. The chief will review any additional information submitted and make a final determination within sixty (60) days.

11.1.5.c. If the chief determines that the facility did not close in accordance with the closure by removal standards of Section 8 of these regulations, the facility is subject to post-closure permitting requirements.

11.2. Application for a Permit.

11.2.1. Permit Application. Any person who is required to have a permit (including new applicants and permittees with expiring permits) shall complete, sign, and submit an application to the chief as described in Sections 11.2 and 11.3 of these regulations. Persons currently authorized with interim status shall apply for permits when required by the chief. Persons covered by Section 11.8 of these regulations need not apply. Procedures for applications, issuance, and administration of emergency permits are found in Section 11.9 of these regulations. Procedures for application, issuance, and administration of research, development, and demonstration permits are found under Section 11.31 of these regulations.

11.2.2. Who Applies. When a facility or activity is owned by one person but is operated by another person, it is the operator's duty to obtain a permit; however, the owner must also sign the permit application.

11.2.3. Completeness. The chief shall not issue a permit before receiving a complete application, except permits by rule or emergency permits. An application for a permit is complete when the chief receives an application form and any supplemental information which are completed to the chief's satisfaction. An application for a permit is complete notwithstanding the failure of the owner or operator to submit the exposure information described in Section 11.2.9 of these regulations. The chief may deny a permit for the active life of a hazardous waste management facility or unit before receiving a complete application for a permit.

11.2.4. Existing Hazardous Waste Management Facilities.

11.2.4.a. All owners or operators of existing hazardous waste treatment, storage, or disposal facilities shall submit Part A (see Section 11.4 of these regulations) of their permit application to the chief or a copy of Part A if it was already submitted to EPA.

11.2.4.b. For generators generating more than one hundred (100) kilograms but less than one thousand (1,000) kilograms of hazardous waste in a calendar month and treats, stores, or disposes of these wastes, Part A, or a copy of Part A if it was already submitted to EPA shall be submitted.

11.2.4.c. The owner or operator of an existing hazardous waste management facility shall submit Part B (see Section 11.5 of these regulations) of their permit application to the chief.

11.2.4.d. Failure to furnish a requested Part B application, or to furnish in full the information required by the Part B application, are grounds for termination of interim status under Section 11.3.5 of these regulations.

11.2.5. New Hazardous Waste Management Facilities.

11.2.5.a. No person shall begin physical construction on a new hazardous waste management facility without having submitted Part A and Part B of the permit application and having received a hazardous waste management permit.

11.2.5.b. An application for a permit for a new hazardous waste management facility shall be filed with the chief. All applications shall be submitted at least one hundred and eighty (180) days before physical construction is expected to commence.

11.2.5.c. The chief shall notify the applicant in writing within ninety (90) days from the date on which Part B of the application is filed if the application is complete; provided, however that if the chief determines that the complexity of the application or other circumstances warrant an extension of the ninety (90) day period of review, the chief shall so notify the applicant.

11.2.6. Updating Permit Applications.

11.2.6.a. An amended Part A shall be filed with the chief as necessary to comply with provisions of Section 11.3.3 of these regulations for changes during interim status.

11.2.6.b. The owner or operator of a facility who fails to comply with the updating requirements does not receive interim status as to the wastes not covered by the duly filed Part A application.

11.2.7. Reapplications. Any hazardous waste management facility with an effective permit shall submit a new application at least one hundred and eighty (180) days before the expiration date of the effective permit, unless permission for a later date has been granted by the chief. The chief will not grant permission for applications to be submitted later than the expiration date of the existing permit.

11.2.8. Application Fees.

11.2.8.a. Any person who applies for a permit for the construction or operation of a hazardous waste management facility, or both, shall submit as part of said application a money order or cashier's check payable to "The Hazardous Waste Management Fund" of the State Treasury. Persons required to obtain a permit-by-rule pursuant to these regulations are not required to pay a permit application fee.

11.2.8.b. Such fee shall be determined by the schedule set forth in Table VII of these regulations.

11.2.8.c. The chief reserves his right to promulgate rules and regulations establishing a permit renewal fee at a later date.

11.2.8.d. (Reserved).

11.2.9. Exposure Information.

11.2.9.a. After August 8, 1985, any Part B permit application submitted by an owner or operator of a facility that treats, stores, or disposes of hazardous waste in a surface impoundment or landfill must be accompanied by information, reasonably ascertainable by the owner or operator, on the potential for the public to be exposed to hazardous wastes or hazardous constituents through releases from the unit. At a minimum, such information must address:

11.2.9.a.1. Reasonably foreseeable potential releases from both normal operations and accidents at the unit, including releases associated with transportation to and from the unit;

11.2.9.a.2. The potential pathways of human exposure to hazardous waste or hazardous constituents resulting from the release described under Section 11.2.9.a.1 of these regulations; and

11.2.9.a.3. The potential magnitude and nature of the human exposure resulting from such releases.

11.2.9.b. After August 8, 1985, owners or operators of a landfill or surface impoundment who already submitted a Part B

application must submit the exposure information required in this Section.

11.2.10. The chief may require a permittee or an applicant to submit information in order to establish permit conditions under Sections 11.11.2 and 11.12.6 of these regulations.

11.3. Interim Status.

11.3.1. Qualifying for Interim Status.

11.3.1.a. Any person who owns or operates an existing facility, or a facility in existence as of July 10, 1981, shall have interim status and shall be treated as having been issued a permit to the extent they:

11.3.1.a.1. Comply with the interim status requirements of the EPA established pursuant to Section 3005 of RCRA;

11.3.1.a.2. Operate the facility in such a manner as will not cause or create a substantial risk of a health hazard or public nuisance or a significant adverse effect upon the environment; and

11.3.1.a.3. Make a timely and complete application for such permit in accordance with these regulations.

11.3.1.b. If the chief determines that a facility is not complying with the requirements of Section 11.3.1 of these regulations, he may terminate interim status of any owner or operator. Such termination will be in the form of an order stating the reasons for the termination and shall inform the operator that he is subject to an enforcement action for operation without a permit.

11.3.1.b.1. Failure to Qualify for Interim Status. If the chief has reason to believe upon examination of a Part A application that it fails to meet the requirements of Section 11.4 of these regulations he shall notify the owner or operator in writing of the apparent deficiency. Such notice shall specify the grounds for the chief's belief that the application is deficient. The owner or operator shall have thirty (30) days from receipt to respond to such a notification and to explain or cure the alleged deficiency in his Part A application. If, after such notification and opportunity for response, the chief determines that the application is deficient he may take appropriate enforcement action.

11.3.1.b.2. Section 11.3.1.a of these regulations shall not apply to any facility which has been previously denied a RCRA permit or if authority to operate the facility under RCRA has

been previously terminated.

11.3.1.c. Any person who owns or operates an existing facility which was not previously required to have a permit under the State Act because it managed no hazardous wastes identified or listed under Section 3 of these regulations, but which due to a revision of Section 3 of these regulations is later required to have a permit, shall also have interim status and shall be treated as having been issued a permit to the extent such person:

11.3.1.c.1. Has notified the chief within ninety (90) days from the effective date of any revision of Section 3 of these regulations of such hazardous waste activity by the use of EPA Form 8700-12 or the provisions of the same information in any other manner selected by the notifier;

11.3.1.c.2. Complies with and continues to operate in compliance with the interim status requirements of the Environmental Protection Agency established pursuant to Section 3005 of RCRA if applicable within ninety (90) days from the effective date of such revision to Section 3 of these regulations, and operates in such a manner as will not create or cause a substantial risk of a health hazard or public nuisance or a significant adverse effect upon the environment; and

11.3.1.c.3. Makes a timely and complete application for a permit as required by Section 11 of these regulations.

11.3.2. Coverage. During the interim status period, the facility shall not:

11.3.2.a. Treat, store, or dispose of hazardous waste not specified in Part A of the permit application;

11.3.2.b. Employ processes not specified in Part A of the permit application; or

11.3.2.c. Exceed the design capabilities specified in Part A of the permit application.

11.3.3. Changes During Interim Status.

11.3.3.a. Except as provided in Section 11.3.3.b of these regulations, the owner or operator of an interim status facility may make the following changes at the facility:

11.3.3.a.1. Treatment, storage, or disposal of new hazardous wastes not previously identified in Part A of the permit application and in the case of newly listed or identified wastes, addition of the units being used to treat, store, or dispose of the hazardous wastes on the effective date of the listing or identification if the owner or operator submits a revised Part A

permit application prior to such treatment, storage, or disposal;

11.3.3.a.2. Increases in the design capacity of processes used at the facility if the owner or operator submits a revised Part A permit application prior to such a change and a justification explaining the need for the change and the chief approves the change because:

11.3.3.a.2.A. There is a lack of available treatment, storage, or disposal capacity at other hazardous waste management facilities; or

11.3.3.a.2.B. The change is necessary to comply with local, State, or federal requirements.

11.3.3.a.3. Changes in the processes for the treatment, storage, or disposal of hazardous waste or addition of processes if the owner or operator submits a revised Part A permit application prior to such change and a justification explaining the need for the change and the chief approves the change because:

11.3.3.a.3.A. The change is necessary to prevent a threat to human health and the environment because of an emergency situation; or

11.3.3.a.3.B. The change is necessary to comply with local, State, or federal regulations.

11.3.3.a.3.C. Proposed changes are demonstrated to result in safer or environmentally more acceptable processes.

11.3.3.a.4. Changes in the ownership or operational control of a facility if the new owner or operator submits a revised Part A permit application no later than ninety (90) days prior to the scheduled change. When a transfer of operational control of a facility occurs, the old owner or operator shall comply with the requirements of Section 13 of these regulations until the new owner or operator has demonstrated to the chief that he or she is complying with the financial requirements of Section 13 of these regulations. The new owner or operator must demonstrate compliance with Section 13 of these regulations within six (6) months of the date of the change in ownership or operational control of the facility. Upon demonstration to the chief by the new owner or operator of compliance with the requirements of Section 13 of these regulations, the chief shall notify the old owner or operator in writing that he or she no longer needs to comply with the financial requirements as of the date of demonstration. All other interim status duties are transferred upon the date of the change in ownership or operational control of the facility.

11.3.3.a.5. Changes made in accordance with an interim status corrective action order issued by the State or a court in a

judicial action brought by the State. These changes are limited to the treatment, storage, or disposal of hazardous waste from releases which originate within the boundaries of the facility.

11.3.3.b. Except as specifically allowed in this Section, changes listed under Section 11.3.3.a of these regulations may not be made if they amount to reconstruction of the facility. Reconstruction occurs when the capital investment in the changes in the facility exceeds fifty percent (50%) of the capital cost of a comparable entirely new facility. If all other requirements are met the following changes may be made even if they amount to reconstruction:

11.3.3.b.1. Changes made solely for the purpose of complying with the requirements for tanks and ancillary equipment under 40 C.F.R. Part 265.193 (b) (1);

11.3.3.b.2. If necessary to comply with local, State, and federal requirements, changes to an existing unit, changes solely involving tanks or containers, or addition of replacement surface impoundments that meet the requirements of Section 8.9 of these regulations and Section 3004(o) of RCRA;

11.3.3.b.3. Changes that are necessary to allow owners or operators to continue handling newly listed or identified hazardous wastes that have been treated, stored, or disposed of at the facility prior to the effective date of the rule establishing the new listing or identification;

11.3.3.b.4. Changes during closure of a facility, or a unit within the facility, made in accordance with an approved closure plan;

11.3.3.b.5. Changes necessary to comply with an interim status corrective action order or in a judicial proceeding brought under the State Act provided that such changes are limited to the treatment, storage, or disposal of hazardous waste from releases that originate within the boundary of the facility; and

11.3.3.b.6. Changes to treat or store, in tanks or containers, hazardous wastes subject to land disposal restrictions under Section 7 of these regulations or RCRA Section 3004, provided that such changes are made solely for the purpose of complying with the requirements under Section 7 of these regulations or RCRA Section 3004.

11.3.4. Interim Status Standards. The director hereby adopts and incorporates by reference the interim status standards contained in 40 C.F.R. Part 265 as published in the Code of Federal Regulations on the date specified in Section 1.5 of these regulations, with the following modifications:

11.3.4.a. Whenever the term Administrator or Regional Administrator is used, the term shall have the meaning of the chief of the Section of Waste Management of the West Virginia Division of Natural Resources.

11.3.4.b. Whenever the term Environmental Protection Agency is used, the term shall have the meaning of the West Virginia Division of Natural Resources.

11.3.4.c. Whenever the dates of July 14, 1986 or January 12, 1987 appear in the adopted provisions of Subpart J of 40 C.F.R. Part 265, the phrase "the effective date of these regulations" shall be substituted for the date.

11.3.4.d. Where the phrase "by January 12, 1988" appears in the adopted provisions of Subpart J of 40 C.F.R. Part 265, ~~the phrase "within one year of the effective date of these regulations"~~ April 1, 1989 shall be substituted .

11.3.5. Grounds for Termination of Interim Status. Interim status terminates when final disposition of a permit application is made or when interim status is terminated by the chief. Interim status may be terminated for:

11.3.5.a. Failure to furnish requested Part B application on time, or to furnish in full the information required by the Part B application;

11.3.5.b. A determination is made by the chief that the facility poses a substantial risk of a health hazard or a significant risk of an adverse effect upon the environment;

11.3.5.c. A determination is made that the facility has failed to comply with the requirements of Chapter twenty, Article five-e, Section ten of the West Virginia Code (W.Va. Code §20-5E-10) ~~of Section 10 of the State Act~~ and the corresponding federal requirements of 40 C.F.R. Part 265 and 40 C.F.R. Part 270.73; or

11.3.5.d. Failure of the owner or operator to certify that he or she is in compliance with all applicable groundwater monitoring and financial responsibility requirements no later than the date twelve (12) months after the facility was granted authority or twelve (12) months after the facility was granted authority to operate under Section 11.3 of these regulations or twelve (12) months after the effective date of these regulations, whichever comes later. The chief may waive the twelve (12) month deadline if he determines that adequate progress has been made toward compliance with applicable groundwater monitoring and financial responsibility requirements.

11.4. Contents of Part A.

11.4.1. Part A of the application shall include the following information:

11.4.1.a. The activities conducted by the applicant which require it to obtain a hazardous waste management permit;

11.4.1.b. Name, mailing address, and location of the facility for which the application is submitted;

11.4.1.c. Up to four (4) SIC Codes which best reflect the principal products or services provided by the facility;

11.4.1.d. The latitude and longitude of the facility;

11.4.1.e. The name, address, and telephone number of the owner of the facility;

11.4.1.f. An indication of whether the facility is new or existing and whether it is a first or revised application;

11.4.1.g. For existing facilities, a scale drawing of the facility showing the location of all past, present, and future treatment, storage, and disposal areas;

11.4.1.h. For existing facilities, photographs of the facility clearly delineating all existing structures; existing treatment, storage, and disposal areas; and site of future treatment, storage, and disposal areas;

11.4.1.i. The operator's name, address, telephone number, ownership status, and status as federal, State, private, public, or other entity;

11.4.1.j. A listing of all permits or construction approvals received or applied for under any of the following programs and their counterpart programs administered by the State, where appropriate:

11.4.1.j.1. Hazardous waste management program under RCRA;

11.4.1.j.2. UIC program under SDWA;

11.4.1.j.3. NPDES program under CWA;

11.4.1.j.4. Prevention of significant deterioration (PSD) program under the Clean Air Act;

11.4.1.j.5. Nonattainment program under the Clean Air Act;

11.4.1.j.6. National emission standards for hazardous

pollutants (NESHAPS) pre-construction approval under the Clean Air Act;

11.4.1.j.7. Ocean dumping permits under the Marine Protection, Research and Sanctuaries Act;

11.4.1.j.8. Dredge or fill permits under CWA Section 404; and

11.4.1.j.9. Other relevant environmental permits including local permits;

11.4.1.k. A topographic map (or other map if a topographic map is unavailable) extending at least one mile beyond the property boundaries of the source, depicting the facility and each of its intake and discharge structures; each of its hazardous waste treatment, storage, or disposal facilities; each well where fluids from the facility are injected underground; and those wells, springs, other surface water bodies, and drinking water wells listed in public records or otherwise known to the applicant in the map area;

11.4.1.l. A brief description of the nature of the business;

11.4.1.m. A description of the processes to be used for treating, storing, and disposing of hazardous waste and the design capacity of these items; and

11.4.1.n. A specification of the hazardous wastes listed or designated under Section 3 of these regulations to be treated, stored, or disposed at the facility; an estimate of the quantity of such wastes to be treated, stored, or disposed annually; and a general description of the processes to be used for such wastes.

11.4.1.o. The filing of a completed copy of an EPA Part A application with the chief shall constitute compliance with Section 11.4 of these regulations.

11.5. Contents of Part B.

11.5.1. General Information Requirements. Part B of the permit application consists of the general information requirements of this Section and the specific information requirements of Section 11.5.2 of these regulations. Certain technical data, such as drawings and specifications, and engineering studies shall be certified by a registered professional engineer. The following information is required to be submitted with Part B of the application for all facilities:

11.5.1.a. A general description of the facility;

11.5.1.b. Chemical and physical analyses of the hazardous wastes to be handled at the facility. At a minimum, these analyses shall contain all the information which must be known to treat, store, or dispose of the wastes properly in accordance with Section 8 of these regulations;

11.5.1.c. A copy of the waste analysis plan required by Section 8.2.4.b of these regulations and, if applicable, Section 8.2.4.c of these regulations;

11.5.1.d. A description of the security procedures and equipment required by Section 8.2.5 of these regulations or a justification demonstrating the reasons for requesting a waiver of this requirement;

11.5.1.e. A copy of the general inspection schedule required by Section 8.2.6.b of these regulations. Include, where applicable, as part of the inspection schedule, specific requirements in Sections 8.7.6, 8.8.4, 8.8.6, 8.9.5, 8.10.5, 8.11.3, 8.12.4, ~~8.14.2~~, and 8.14.3 of these regulations;

11.5.1.f. A justification of any request for a waiver(s) of preparedness and prevention requirements of Section 8.3 of these regulations;

11.5.1.g. A copy of the contingency plan required under Section 8.4 and ~~8.8.4.e.5~~ of these regulations;

Note: Include, where applicable, as part of the contingency plan, the specific requirements in Sections 8.9.6 and 8.10.6 of these regulations.

11.5.1.h. A description of procedures, structures, or equipment used at the facility to:

11.5.1.h.1. Prevent hazards in unloading operations (e.g., ramps or special forklifts);

11.5.1.h.2. Prevent runoff from hazardous waste handling areas to other areas of the facility or environment, or to prevent flooding (e.g., berms, dikes, or trenches);

11.5.1.h.3. Prevent contamination of water supplies;

11.5.1.h.4. Mitigate effects of equipment failure and power outages; and

11.5.1.h.5. Prevent undue exposure of personnel to hazardous waste (e.g., protective clothing);

11.5.1.i. A description of precautions to prevent accidental ignition or reaction of ignitable, reactive, or

incompatible wastes as required to demonstrate compliance with Section 8.2.8 of these regulations including documentation demonstrating compliance with Section 8.2.8.c of these regulations;

11.5.1.j. Traffic pattern, estimated volume (i.e., number and types of vehicles), and control (i.e., show turns across traffic lanes and stacking lanes, describe access road surfacing and load bearing capacity, and show traffic control signals);

11.5.1.k. (Reserved).

11.5.1.l. Facility Location Information. Applicants must submit documentation demonstrating that the proposed siting of a new facility is not restricted by the location standards of Section 12 of these regulations. The demonstration may be made by either using published geologic data or data obtained from field investigations carried out by the applicant. The submitted information must include the source of data for such determinations, including copies of maps, reports, results of surface or subsurface investigations, and calculations where applicable.

11.5.1.l.1. Seismic Considerations. The information submitted must show that either:

11.5.1.l.1.A. No faults which have had displacement in Holocene time are present, or no lineations which suggest the presence of a fault (which have displacement in Holocene time) within three thousand (3,000) feet of a facility are present, based on data from:

11.5.1.l.1.A.i. U.S. Geological Service (USGS) publications;

11.5.1.l.1.A.ii. Aerial reconnaissance of the area within a five (5) mile radius from the facility (available from the USGS);

11.5.1.l.1.A.iii. An analysis of aerial photographs covering a three thousand (3,000) foot radius of the facility; and

11.5.1.l.1.A.iv. If needed to clarify the above data, a reconnaissance based on walking portions of the area within three thousand (3,000) feet of the facility; or

11.5.1.l.1.B. If faults (to include lineations) which have had displacement in Holocene time are present within three thousand (3,000) feet of a facility, no faults pass within two hundred (200) feet of the portions of the facility where treatment, storage, or disposal of hazardous waste will be conducted, based on data from a comprehensive geologic analysis of

the site. Unless a site analysis is otherwise conclusive concerning the absence of faults within two hundred (200) feet of such portions of the facility, data shall be obtained from a subsurface exploration (trenching) of the area within a distance no less than two hundred (200) feet from portions of the facility where treatment, storage, or disposal of hazardous waste will be conducted. Such trenching shall be performed in a direction that is perpendicular to known faults (which have had displacement in Holocene time) passing within three thousand (3,000) feet of the portions of the facility where treatment, storage, or disposal of hazardous waste will be conducted. Such investigation shall document with supporting maps and other analyses, the location of any faults found.

11.5.1.1.2. Karst Terrain. The demonstration must show that no solution cavities underlie or may influence the site by subsidence. Sources of information include:

11.5.1.1.2.A. Fracture trend maps and karst subsidence maps from the U.S. Geological Survey and the West Virginia Geological Survey; and

11.5.1.1.2.B. Test borings to determine the stability of the overburden.

11.5.1.1.3. Subsurface Mining Areas. The information submitted must show that the site is not located within one thousand (1,000) feet of the area likely to be influenced by subsidence., as determined by the angle of draw. Calculations must be included in the demonstration where applicable. Sources of information include:

11.5.1.1.3.A. Maps and Reports from the West Virginia Department of Energy;

11.5.1.1.3.B. Maps from the U.S. Bureau of Mines; and

11.5.1.1.3.C. Maps from the West Virginia Geological and Economic Survey.

11.5.1.1.4. Critical Recharge. The information submitted must show that the site is not located in an area that serves to recharge a public groundwater supply that serves more than fifteen (15) connections or twenty five (25) residents on a permanent year-round basis. Sources of information include:

11.5.1.1.4.A. U.S. Geological Survey maps;

11.5.1.1.4.B. West Virginia Division of Natural Resources, Section of Water Resources; and

11.5.1.1.4.C. The West Virginia Department of Health.

11.5.1.1.5. Wetlands. The demonstration must show that the site is not located in a wetland or in areas that may have an impact on wetlands. Sources of information include:

11.5.1.1.5.A. U.S. Geological Survey maps; and

11.5.1.1.5.B. The West Virginia Division of Natural Resources, Section of Wildlife Resources.

11.5.1.1.6. Dam-Related Flood Hazard Areas. The demonstration must show that the site is not located in the "danger reach" of a dam not permitted by the state or within the floodpool area of any dam. Sources of information include:

11.5.1.1.6.A. Reports from the U.S. Army Corps of Engineers;

11.5.1.1.6.B. U.S. Geological Survey maps; and

11.5.1.1.6.C. The West Virginia Department of Energy.

11.5.1.1.7. Floodplains. The owners or operators of all facilities shall provide an identification of whether the facility is located within a 100-year floodplain. This identification must indicate the source of data for such determination and include a copy of the relevant Federal Insurance Administration (FIA) flood map, if used, or the calculations and maps used where a FIA map is not available. Informations shall also be provided identifying the 100-year flood level and any other special flooding factors (e.g., wave action) which must be considered in designing, constructing, operating, or maintaining the facility to withstand washout from a 100-year flood.

Comment: Where maps for the National Flood Insurance Program produced by the Federal Insurance Administration (FIA) of the Federal Emergency Management Agency are available, they will normally be determinative of whether a facility is located within or outside of the 100-year floodplain. However, FIA maps may not show certain areas, such as areas of floodplain that are less than two hundred (200) feet in width. In cases where FIA maps exclude the area in which the facility is to be located or where FIA maps are not available for a proposed facility location, the owner or operator must use equivalent mapping techniques to determine whether the facility is within the 100-year floodplain and, if so located, what the 100-year flood elevation would be.

11.5.1.1.8. Owners and operators of facilities located in the 100-year floodplain must provide the following information:

11.5.1.1.8.A. Engineering analysis to indicate the various hydrodynamic and hydrostatic forces expected to result at the site as a consequence of a 100-year flood;

11.5.1.1.8.B. Structural or other engineering studies showing the design of operational units (e.g., tanks or incinerators) and flood protection devices (e.g., floodwalls or dikes) at the facility and how these will prevent washout; and

11.5.1.1.8.C. If applicable, and in lieu of Sections 11.5.1.1.8.A and 11.5.1.1.8.B of these regulations, a detailed description of procedures to be followed to remove hazardous waste to safety before the facility is flooded, including:

11.5.1.1.8.C.i. Timing of such movement relative to flood levels, including estimated time to move the waste, to show that such movement can be completed;

11.5.1.1.8.C.ii. A description of the location(s) to which the waste will be moved and demonstration that those facilities will be eligible to receive hazardous waste in accordance with the regulations under Sections 8 and 11 of these regulations;

11.5.1.1.8.C.iii. The planned procedures, equipment, and personnel to be used and the means to ensure that such resources will be available in time for use; and

11.5.1.1.8.C.iv. The potential for accidental discharges of the waste during movement.

11.5.1.1.9. Existing facilities not in compliance with Section 12.1.7 of these regulations shall provide a plan showing how the facility will be brought into compliance and a schedule for compliance;

11.5.1.m. An outline of both the introductory and continuing training programs by owners or operators to prepare persons to operate or maintain the hazardous waste management facility in a safe manner as required to demonstrate compliance with Section 8.2.7 of these regulations. A brief description of how training will be designed to meet actual job tasks in accordance with requirements in Section 8.2.7.a.3 of these regulations;

11.5.1.n. A copy of the closure plan and, where applicable, the post-closure plan required by Sections 8.6.3, 8.6.8, and 8.8.8 of these regulations. Include, where applicable, as part of the plans, specific requirements in Sections 8.7.10, 8.8.8, 8.9.7, 8.10.9, 8.11.11, and 8.12.11 of these regulations and in Title 45, Air Pollution Control Commission, Series 25, Section 24.01 (45 C.S.R. 25 §24.01);

11.5.1.o. For existing facilities, documentation that a notice has been placed in the deed or appropriate alternate instrument as required by Section 15.1 of these regulations. For hazardous waste disposal units that have been closed, documentation that a notice has been placed in the deed or appropriate alternate instrument as required by Sections 15.1 and 15.4 of these regulations;

11.5.1.p. The most recent closure cost estimate for the facility prepared in accordance with Section 13 of these regulations plus a copy of the financial assurance mechanism adopted in compliance with Section 13 of these regulations. For a new facility, a copy of the required documentation may be submitted sixty (60) days prior to the initial receipt of hazardous wastes, if that is later than the submission of Part B;

11.5.1.q. Where applicable, the most recent post-closure cost estimates for the facility prepared in accordance with Section 13 of these regulations plus a copy of the financial assurance mechanism adopted in compliance with Section 13 of these regulations. For a new facility a copy of the required documentation may be submitted sixty (60) days prior to the initial receipt of hazardous wastes, if that is later than the submission of Part B;

11.5.1.r. Where applicable, a copy of the insurance policy or other documentation which comprises compliance with the requirements of Section 13 of these regulations. For a new facility, documentation showing the amount of insurance meeting the specifications of Section 13 of these regulations that the owner or operator plans to have in effect before initial receipt of hazardous wastes for treatment, storage, or disposal. A request for a variance in the amount of required coverage, for a new or existing facility may be submitted as specified in Section 13 of these regulations;

11.5.1.s. (Reserved);

11.5.1.t. A topographic map showing a distance of one thousand (1,000) feet around the facility at a scale of 2.5 centimeters (1 inch) equal to not more than 61.0 meters (200 feet). Contours must be shown on the map. The contour interval must be sufficient to clearly show the pattern of surface water flow in the vicinity of and from each operational unit of the facility. For example, contours with an interval of 1.5 meters (5 feet), if relief is greater than 6.1 meters (20 feet), or an interval of 0.6 meters (2 feet) if relief is less than 6.1 meters (20 feet). Owners and operators of hazardous waste facilities located in mountainous areas should use larger contour intervals to adequately show topographic profiles of facilities. The map shall clearly show the following:

- 11.5.1.t.1. Map scale and date;
- 11.5.1.t.2. 100-year floodplain area;
- 11.5.1.t.3. Surface waters including intermittent streams;
- 11.5.1.t.4. Surrounding land uses (e.g., residential, commercial, agricultural, recreational);
- 11.5.1.t.5. A wind rose (i.e., prevailing wind speed and direction);
- 11.5.1.t.6. Orientation of the map (north arrow);
- 11.5.1.t.7. Legal boundaries of the hazardous waste management facility site;
- 11.5.1.t.8. Access control (e.g., fences, gates);
- 11.5.1.t.9. Injection and withdrawal wells both on-site and off-site;
- 11.5.1.t.10. Buildings, treatment, storage, or disposal operations or other structures (e.g., recreation areas; runoff control systems; access and internal roads; storm, sanitary, and process sewage systems; loading and unloading areas; and fire control facilities);
- 11.5.1.t.11. Barriers for drainage or flood control; and
- 11.5.1.t.12. Location of operational units within the hazardous waste management facility site, where hazardous waste is or will be treated, stored, or disposed (include equipment clean-up areas); and
- 11.5.1.u. Where appropriate, proof of coverage by a financial mechanism in compliance with Section 13 of these regulations.

11.5.2. Specific Information Requirements.

11.5.2.a. Except as otherwise provided in Section 8.7.1 of these regulations, the following additional information is required from owners or operators of facilities that store containers of hazardous waste:

11.5.2.a.1. A description of the containment system to demonstrate compliance with Section 8.7.7 of these regulations. Show at least the following:

11.5.2.a.1.A. Basic design parameters, dimensions, and materials of construction;

11.5.2.a.1.B. How the design promotes drainage or how containers are kept from contact with standing liquids in the containment system;

11.5.2.a.1.C. Capacity of the containment system relative to the number and volume of containers to be stored;

11.5.2.a.1.D. Provisions for preventing or managing run-on; and

11.5.2.a.1.E. How accumulated liquids can be analyzed and removed to prevent overflow;

11.5.2.a.2. For storage areas that store containers holding hazardous wastes that do not contain free liquids, a demonstration of compliance with Section 8.7.7.c of these regulations, including:

11.5.2.a.2.A. Test procedures and results or other documentation or information to show that the wastes do not contain free liquids provided such test procedures, results and other documentation or information simulate in-situ waste management conditions and demonstrate the irreversibility of the liquid to solid phase of the waste during the time the waste is managed in the containers, based at least on in-situ temperature and pressure conditions, possible chemical and biological reactions, and the partition coefficients of the specific sorbant matrix with that of the particular waste; and

11.5.2.a.2.B. A description of how the storage area is designed or operated to drain and remove liquids and how containers are kept from contact with standing liquids;

11.5.2.a.3. Sketches, drawings, or data demonstrating compliance with Section 8.7.8 of these regulations (location or buffer zone and containers holding ignitable or reactive wastes) and Section 8.7.9 of these regulations (location of incompatible wastes), where applicable; and

11.5.2.a.4. Where incompatible wastes are stored or otherwise managed in containers, a description of the procedures used to ensure compliance with Sections 8.7.9.a, 8.7.9.b, 8.2.8.b, and 8.2.8.c of these regulations.

11.5.2.b. Except as otherwise provided in Section 8.8.1 of these regulations, the following additional information is required from owners or operators of facilities that use tanks to store or treat hazardous waste:

11.5.2.b.1. A written assessment that is reviewed and certified by an independent, qualified, registered professional engineer as to the structural integrity and suitability for handling hazardous waste of each tank system, as required under Sections 8.8.2 and 8.8.3 of these regulations;

11.5.2.b.2. Dimensions and capacity of each tank;

11.5.2.b.3. Description of feed systems, safety cutoff, bypass systems, and pressure controls (e.g., vents);

11.5.2.b.4. A diagram of piping, instrumentation, and process flow for each tank system;

11.5.2.b.5. A description of materials and equipment used to provide external corrosion protection, as required under Section 8.8.3.a.3.B.iii of these regulations;

11.5.2.b.6. For new tank systems, a detailed description of how the tank system(s) will be installed in compliance with Sections 8.8.3.b through 8.8.3.f of these regulations;

11.5.2.b.7. Detailed plans and description of how the secondary containment system for each tank system is or will be designed, constructed, and operated to meet the requirements of Sections 8.8.4.a through 8.8.4.f of these regulations;

11.5.2.b.8. For tank systems for which a variance from the requirements of Section 8.8.4 of these regulations is sought (as provided by Section 8.8.4.g of these regulations):

11.5.2.b.8.A. Detailed plans and engineering and hydrogeologic reports, as appropriate, describing alternate design and operating practices that will, in conjunction with location aspects, prevent the migration of any hazardous waste or hazardous constituents into the groundwater or surface water during the life of the facility; or

11.5.2.b.8.B. A detailed assessment of the substantial present or potential hazards posed to human health or the environment should a release enter the environment;

11.5.2.b.9. A description of controls and practices to prevent spills and overflows, as required under Section 8.8.5.b of these regulations; and

11.5.2.b.10. For tank systems in which ignitable, reactive, or incompatible wastes are to be stored or treated, a description of how operating procedures and tank system and facility design will achieve compliance with the requirements of Sections 8.8.9, and 8.8.10 of these regulations.

11.5.2.c. Except as otherwise provided in Section 8.1 of these regulations, the following additional information is required from owners or operators of facilities that treat, store, or dispose of hazardous waste in surface impoundments:

11.5.2.c.1. A list of the hazardous wastes placed or to be placed in each surface impoundment;

11.5.2.c.2. Detailed plans and an engineering report describing how the surface impoundment is or will be designed, constructed, operated, and maintained to meet the requirements of Sections 8.9.2 and 8.9.4 of these regulations. This submission must address the following items:

11.5.2.c.2.A. The liner system;

11.5.2.c.2.B. Prevention of overtopping; and

11.5.2.c.2.C. Structural integrity of dikes;

11.5.2.c.3. A description of how each surface impoundment, including the liner and cover systems and appurtenances for control of overtopping, will be inspected in order to meet the requirements of Section 8.9.5 of these regulations. The information should be included in the inspection plan and submitted under Section 11.5.1.e of these regulations;

11.5.2.c.4. A certification by a registered professional engineer which attests to the structural integrity of each dike, as required under Section 8.9.5 of these regulations. For new units, the owner or operator must submit a statement by a registered professional engineer that he will provide such a certification upon completion of construction in accordance with the plans and specifications;

11.5.2.c.5. A description of the procedure to be used for removing a surface impoundment from service, as required under Sections 8.9.6 and 11.5.2.c of these regulations. This information should be included in the contingency plan submitted under Section 11.5.1.g of these regulations;

11.5.2.c.6. A description of how hazardous waste residues and contaminated materials will be removed from the unit at closure, as required under Section 8.9.7 of these regulations. For any wastes not to be removed from the unit upon closure, the owner or operator must submit detailed plans and an engineering report describing how Section 8.9.7 of these regulations will be complied with. This information should be included in the closure plan and, where applicable, the post-closure plan submitted under Section 11.5.1.n of these regulations;

11.5.2.c.7. If ignitable or reactive wastes are to be

placed in a surface impoundment, an explanation of how Section 8.9.8 of these regulations will be complied with;

11.5.2.c.8. If incompatible wastes, or incompatible wastes and other materials, will be placed in a surface impoundment, an explanation of how Section 8.9.9 of these regulations will be complied with; and

11.5.2.c.9. A waste management plan for hazardous waste numbers F020, F021, F022, F023, F026, F027, and F028 describing how the surface impoundment is or will be designed, constructed, operated, and maintained to meet the requirements of Section 8.9.11 of these regulations. This submission must address the following items as specified in Section 8.9.11 of these regulations:

11.5.2.c.9.A. The volume and physical and chemical characteristics of the waste including their potential to migrate through soil or to volatilize or escape into the atmosphere;

11.5.2.c.9.B. The attenuative properties of the underlying and surrounding soils or other materials;

11.5.2.c.9.C. The mobilizing properties of other materials co-disposed with these wastes; and

11.5.2.c.9.D. The effectiveness of additional treatment, design, or monitoring techniques.

11.5.2.d. Except as otherwise provided in Section 8.1 of these regulations, the following additional information is required from owners or operators of facilities that store or treat hazardous waste in waste piles:

11.5.2.d.1. A list of hazardous wastes placed or to be placed in each waste pile;

11.5.2.d.2. If an exemption is sought to Sections ~~8.10.2, 8.10.3, 8.10.4, and 8.10.6~~ and 8.13 of these regulations pursuant to Section 8.10.1.c of these regulations, a demonstration must be made sufficient to show compliance with Sections 8.10.1.c.1 through 8.10.1.c.6 of these regulations;

11.5.2.d.3. Detailed plans and an engineering report describing how the pile is or will be designed, constructed, operated, and maintained to meet the requirements of Section 8.10.2 of these regulations. This submission must address the following items:

11.5.2.d.3.A. The liner system;

11.5.2.d.3.B. Control of run-on;

11.5.2.d.3.C. Control of runoff;

11.5.2.d.3.D. Management of collection and holding units associated with run-on and runoff control systems; and

11.5.2.d.3.E. Control of wind dispersal of particulate matter, where applicable;

11.5.2.d.4. A description of how each waste pile, including the liner and appurtenances for control of run-on and run-off, will be inspected in order to meet the requirements of Section 8.10.5 of these regulations. This information should be included in the inspection plan submitted under Section 11.5.1.e of these regulations;

11.5.2.d.5. If treatment is carried out on or in the pile, details of the process and equipment used and the nature and quality of the residuals;

11.5.2.d.6. If ignitable or reactive wastes are to be placed in a waste pile, an explanation of how the requirements of Section 8.10.7 of these regulations will be complied with;

11.5.2.d.7. If incompatible wastes, or incompatible wastes and other materials, will be placed in a waste pile, an explanation of how Section 8.10.8 of these regulations will be complied with;

11.5.2.d.8. A description of how hazardous waste residues and contaminated materials will be removed from the waste pile at closure, as required under Section 8.6 of these regulations; and

11.5.2.d.9. A waste management plan for hazardous waste numbers F020, F021, F022, F023, F026, F027, and F028 describing how the waste pile is or will be designed, constructed, operated, and maintained to meet the requirements of Section 8.10.10 of these regulations. This submission must address the following items as specified in Section 8.10.10 of these regulations:

11.5.2.d.9.A. The volume and physical and chemical characteristics of the waste, including their potential to migrate through soil or to volatilize or escape into the atmosphere;

11.5.2.d.9.B. The attenuative properties of the underlying and surrounding soils or other materials;

11.5.2.d.9.C. The mobilizing properties of other materials co-disposed with these wastes; and

11.5.2.d.9.D. The effectiveness of additional

treatment, design, or monitoring techniques.

11.5.2.e. Except as otherwise provided in Section 8.1 of these regulations, the following additional information for owners or operators of facilities that use land treatment to dispose of hazardous waste:

11.5.2.e.1. A description of plans to conduct a treatment demonstration as required under Section 8.12.3 of these regulations. The description must include the following information:

11.5.2.e.1.A. The wastes for which the demonstration will be made and the potential hazardous constituents in the wastes;

11.5.2.e.1.B. The data sources to be used to make the demonstration (e.g., literature, laboratory data, field data, or operating data); and

11.5.2.e.1.C. Any specific laboratory or field test that will be conducted, including:

11.5.2.e.1.C.i. The type of test (e.g., column leaching or degradation);

11.5.2.e.1.C.ii. Materials and methods, including analytical procedures;

11.5.2.e.1.C.iii. Expected time for completion; and

11.5.2.e.1.C.iv. Characteristics of the unit that will be simulated in the demonstration, including treatment zone characteristics, climatic conditions, and operating practices;

11.5.2.e.2. A description of a land treatment program, as required under Section 8.12.3 of these regulations. This information must be submitted with the plans for the treatment demonstration and updated following the treatment demonstration. The land treatment program must address the following items:

11.5.2.e.2.A. The wastes to be land-treated;

11.5.2.e.2.B. Design measures and operating practices necessary to maximize treatment in accordance with Section 8.12.4 of these regulations including:

11.5.2.e.2.B.i. Waste application method and rate;

11.5.2.e.2.B.ii. Measures to control soil pH;

11.5.2.e.2.B.iii. Enhancement of microbial or chemical reactions; and

11.5.2.e.2.B.iv. Control of moisture content;

11.5.2.e.2.C. Provisions for unsaturated zone monitoring, including:

11.5.2.e.2.C.i. Sampling equipment, procedures, and frequency;

11.5.2.e.2.C.ii. Procedures for selecting sampling locations;

11.5.2.e.2.C.iii. Analytical procedures;

11.5.2.e.2.C.iv. Chain of custody control;

11.5.2.e.2.C.v. Procedures for establishing background values;

11.5.2.e.2.C.vi. Statistical methods for interpreting results; and

11.5.2.e.2.C.vii. The justification for any hazardous constituents, in accordance with the criteria for such selection in Section 8.12.9 of these regulations;

11.5.2.e.2.D. A list of hazardous constituents reasonably expected to be in, or derived from, the wastes to be land treated based on land analysis performed pursuant to Section 8.2.4 of these regulations; and

11.5.2.e.2.E. The proposed dimensions of the treatment zone;

11.5.2.e.3. A description of how the unit is or will be designed, constructed, operated, and maintained in order to meet the requirements of Section 8.12.4 of these regulations. This submission must address the following items:

11.5.2.e.3.A. Control of run-on;

11.5.2.e.3.B. Collection and control of runoff;

11.5.2.e.3.C. Minimization of runoff or hazardous constituents from the treatment zone;

11.5.2.e.3.D. Management of collection and holding facilities associated with run-on and runoff control systems;

11.5.2.e.3.E. Periodic inspection of the unit. This

information should be included in the inspection plan submitted under Section 11.5.1.e of these regulations; and

11.5.2.e.3.F. Control of wind dispersal of particulate matter, if applicable;

11.5.2.e.4. If food chain crops are to be grown in or on the treatment zone of the land treatment unit, a description of how the demonstration required under Section 8.12.7.a of these regulations will be conducted including:

11.5.2.e.4.A. Characteristics of the food chain crop for which the demonstration will be made;

11.5.2.e.4.B. Characteristics of the waste, treatment zone, and waste application method and rate to be used in the demonstration;

11.5.2.e.4.C. Procedures for crop growth, sample collection, sample analysis, and data evaluation; and

11.5.2.e.4.D. Characteristics of the comparison crop including the location and conditions which it was or will be grown;

11.5.2.e.5. If food chain crops are to be grown, and cadmium is present in the land-treated waste, a description of how the requirements of Section 8.12.7 of these regulations will be complied with;

11.5.2.e.6. A description of the vegetative cover to be applied to closed portions of the facility, and a plan for maintaining such cover during the post-closure care period, as required under Section 8.12.11 of these regulations. This information should be included in the closure plan and, where applicable, the post-closure care plan submitted under Section 11.5.1.n of these regulations;

11.5.2.e.7. If ignitable or reactive wastes will be placed in or on the treatment zone, an explanation of how the requirements of Section 8.12.12 of these regulations will be complied with;

11.5.2.e.8. If incompatible wastes, or incompatible wastes and other materials, will be placed in or on the same treatment zone, an explanation of how Section 8.12.13 of these regulations will be complied with; and

11.5.2.e.9. A waste management plan for hazardous waste numbers F020, F021, F022, F023, F026, F027, and F028 describing how the land treatment unit is or will be designed, constructed, operated, and maintained to meet the requirements of

Section 8.12.14 of these regulations. This submission must address the following items as specified in Section 8.12.14 of these regulations:

11.5.2.e.9.A. The volume and physical and chemical characteristics of the waste including their potential to migrate through soil or to volatilize or escape into the atmosphere;

11.5.2.e.9.B. The attenuative properties of the underlying and surrounding soils or other materials;

11.5.2.e.9.C. The mobilizing properties of other materials co-disposed with these wastes; and

11.5.2.e.9.D. The effectiveness of additional treatment, design, or monitoring, techniques.

11.5.2.f. Except as otherwise provided in Section 8.1 of these regulations, the following additional information is required from owners or operators of facilities that dispose of hazardous waste in landfills:

11.5.2.f.1. A list of hazardous wastes placed in each landfill or landfill cell;

11.5.2.f.2. Detailed plans and an engineering report describing how the landfill is or will be designed, constructed, operated, and maintained to comply with the requirements of Section 8.11.2 of these regulations. This submission must address the following items as specified in Section 8.11.2 of these regulations:

11.5.2.f.2.A. The liner system and leachate collection and removal system;

11.5.2.f.2.B. Control of run-on;

11.5.2.f.2.C. Control of runoff;

11.5.2.f.2.D. Management of collection and holding facilities associated with run-on and runoff control systems; and

11.5.2.f.2.E. Control of wind dispersal of particulate matter, where applicable;

11.5.2.f.3. A description of how each landfill, including the liner and cover systems, will be inspected in order to meet the requirements of Section 8.11.3 of these regulations. This information should be included in the inspection plan submitted under Section 11.5.1.e of these regulations;

11.5.2.f.4. Detailed plans and an engineering report

describing the final cover which will be applied to each landfill or landfill cell at closure in accordance with Section 8.11.11 of these regulations, and a description of how each landfill will be maintained and monitored after closure in accordance with Section 8.11.11 of these regulations. This information should be included in the closure and post-closure plans submitted under Section 11.5.1.n of these regulations;

11.5.2.f.5. If ignitable or reactive wastes will be landfilled, an explanation of how the requirements of Section 8.11.13 of these regulations will be complied with;

11.5.2.f.6. If incompatible wastes, or incompatible wastes and other materials, will be landfilled, an explanation of how Section 8.11.14 of these regulations will be complied with;

11.5.2.f.7. If bulk or noncontainerized liquid waste or waste containing free liquids is to be landfilled, an explanation of how the requirements of Section 8.11.15 of these regulations will be complied with;

11.5.2.f.8. If containers of hazardous waste are to be landfilled, an explanation of how the requirements of Section 8.11.16 or 8.11.17 of these regulations, as applicable, will be complied with; and

11.5.2.f.9. A waste management plan for hazardous waste numbers F020, F021, F022, F023, F026, F027, and F028 describing how the landfill is or will be designed, constructed, operated, and maintained to meet the requirements of Section 8.11.19 of these regulations. The submission must address the following items as specified in Section 8.11.19 of these regulations:

11.5.2.f.9.A. The volume and physical and chemical characteristics of the waste, including their potential to migrate through soil or to volatilize or escape into the atmosphere;

11.5.2.f.9.B. The attenuative properties of the underlying and surrounding soils or other materials;

11.5.2.f.9.C. The mobilizing properties of other materials co-disposed with these wastes; and

11.5.2.f.9.D. The effectiveness of additional treatment, design, or monitoring techniques;

11.5.2.g. ~~Except as provided in Section 8.13.1.b of these regulations, the following additional information regarding protection of groundwater is required from owners or operators of hazardous waste surface impoundments, piles, land treatment units, and landfills:~~ The following additional information regarding

protection of groundwater is required from owners or operators of hazardous waste facilities containing a regulated unit except as provided in Section 8.13.1.b of these regulations:

11.5.2.g.1. A summary of the groundwater monitoring data obtained during the interim status period under 40 C.F.R. §§265.90 through 265.94, where applicable;

11.5.2.g.2. Identification of the uppermost aquifer and aquifers hydraulically interconnected beneath the facility property, including groundwater flow direction and rate, and the basis for such identification (i.e., the information obtained from hydrogeologic investigations of the facility area). This information should include the following:

11.5.2.g.2.A. Characterization of the site hydrogeology:

11.5.2.g.2.A.i. Copies of any available geophysical logs of the site (e.g., spontaneous potential, resistivity, gamma ray);

11.5.2.g.2.A.ii. Depth to the top of each water-bearing formation;

11.5.2.g.2.A.iii. Depth to the bottom of each water-bearing formation;

11.5.2.g.2.A.iv. Areas of recharge and discharge for the uppermost aquifer;

11.5.2.g.2.A.v. Water level depth information (i.e., a water table map);

11.5.2.g.2.a.vi. Depth to and type of bedrock present;

11.5.2.g.2.A.vii. Information available on the three-dimensional flow of the site (including horizontal and vertical flow rates and directions); and

11.5.2.g.2.A.viii. Any additional information deemed necessary by the chief;

11.5.2.g.2.B. Characterization of each soil horizon underlying the hazardous waste management area:

11.5.2.g.2.B.i. pH;

11.5.2.g.2.B.ii. Cation exchange capacity;

11.5.2.g.2.B.iii. Particle size ratio and

textural classification;

11.5.2.g.2.B.iv. Bulk density;

11.5.2.g.2.B.v. Percent voids present;

11.5.2.g.2.B.vi. Permeability;

11.5.2.g.2.B.vii. Infiltration rate; and

11.5.2.g.2.B.viii. Any other information deemed necessary by the chief;

11.5.2.g.3. On the topographic map required under Section 11.5.1.t of these regulations, a delineation of the waste management area, the property boundary, the proposed "point of compliance" as defined under Section 8.13.5 of these regulations, the proposed location of groundwater monitoring wells as required under Section 8.13.7 of these regulations and, to the extent possible, the information required in Section 11.5.2.g.2 of these regulations;

11.5.2.g.4. A description of any plume of contamination that has entered the groundwater from a regulated unit at the time that the application is submitted that:

11.5.2.g.4.A. Delineates the extent of the plume on the topographic map required under Section 11.5.1.t of these regulations; and

11.5.2.g.4.B. Identifies the concentration of each Appendix IX constituent in the plume;

11.5.2.g.5. Detailed plans and an engineering report describing the proposed groundwater monitoring program to be implemented to meet the requirements of Section 8.13.7 of these regulations, including such information as proposed purging methods or proposed development of wells;

11.5.2.g.6. The owner or operator must also submit an engineering feasibility plan for a corrective action program necessary to meet the requirements of Section 8.13.9 of these regulations;

11.5.2.g.7. The owner or operator must submit sufficient information, supporting data, and analyses to establish a groundwater monitoring program which meets the requirements of Section 8.13.8 of these regulations. This submission must address the following items:

11.5.2.g.7.A. A proposed list of indicator parameters, waste constituents, or reaction products that can

provide a reliable indication of the presence of hazardous constituents in the groundwater;

11.5.2.g.7.B. A proposed groundwater monitoring system;

11.5.2.g.7.C. Background concentrations of each proposed monitoring parameter or hazardous constituent, or procedures to calculate such concentrations; and

11.5.2.g.7.D. A description of proposed sampling, analysis, and statistical comparison procedures to be utilized in evaluating groundwater monitoring data; and

11.5.2.g.8. If hazardous constituents have been measured in the groundwater at the point of compliance at concentrations which are determined to be significantly increased over background concentrations under Section 8.13.8.d of these regulations, the owner or operator must submit sufficient information, supporting data, and analyses to establish a corrective action program which meets the requirements of Section 8.13.9 of these regulations. To demonstrate compliance with Section 8.13.9 of these regulations, The owner or operator must address the following items (in addition to other Section 8.13.9 requirements):

11.5.2.g.8.A. A characterization of the contaminated groundwater, including concentrations of hazardous constituents;

11.5.2.g.8.B. The background concentration for each hazardous constituent found in the groundwater as set forth in Section 8.13.8.b of these regulations;

11.5.2.g.8.C. Detailed plans and an engineering report describing the corrective action to be taken;

11.5.2.g.8.D. A description of how the groundwater monitoring program will assess the adequacy of the corrective action under Section 8.13.9.d of these regulations;

11.5.2.g.8.E. A proposed compliance schedule for beginning the corrective action; and

11.5.2.g.8.F. A description of the wastes previously handled at the facility.

11.5.2.h. Information requirements for solid waste management units.

11.5.2.h.1. The following information is required for each solid waste management unit at a facility seeking a permit:

11.5.2.h.1.A. The location of the unit on the topographic map required under section 11.5.1.t of these regulations.

11.5.2.h.1.B. Designation of type of unit.

11.5.2.h.1.C. General dimensions and structural description (supply any available drawings).

11.5.2.h.1.D. When the unit was operated.

11.5.2.h.1.E. Specification of all wastes that have been managed at the unit, to the extent available.

11.5.2.h.2. The owner or operator of any facility containing one or more solid waste management units must submit all available information pertaining to any release of hazardous wastes or hazardous constituents from such unit or units.

11.5.2.h.3. The owner/operator must conduct and provide the results of sampling and analysis of groundwater, landsurface, and subsurface strata, surface water, or air, which may include the installation of wells, where the Director ascertains it is necessary to complete a RCRA Facility Assessment that will determine if a more complete investigation is necessary.

~~11.5.2.h.~~ 11.5.2.i. Except as otherwise provided in Section 8.14 of these regulations, the following additional information is required from owners or operators of facilities that treat, store, or dispose of hazardous waste in miscellaneous units:

~~11.5.2.h.1.~~ 11.5.2.i.1. A detailed description of the unit be used or proposed for use, including the following:

~~11.5.2.h.1.A.~~ 11.5.2.i.1.A. Physical characteristics, materials of construction, and dimensions of the unit;

~~11.5.2.h.1.B.~~ 11.5.2.i.1.B. Detailed plans and engineering reports describing how the unit will be located, designed, constructed, operated, maintained, monitored, inspected, and closed to comply with the requirements of Sections 8.14.2 and 8.14.3 of these regulations; and

~~11.5.2.h.1.C.~~ 11.5.2.i.1.C. For disposal units, a detailed description of the plans to comply with the post-closure requirements of Section 8.14.4 of these regulations;

~~11.5.2.h.2.~~ 11.5.2.i.2. Detailed hydrologic, geologic, and meteorologic assessments and land-use maps for the region surrounding the site that address and ensure compliance of the unit

with each factor in the environmental performance standards of Section 8.14.2 of these regulations. If the applicant can demonstrate that he does not violate the environmental performance standards in Section 8.14.2 of these regulations and the chief agrees with such demonstration, preliminary hydrologic, geologic, and meteorologic assessments will suffice;

~~11.5.2.h.3.~~ 11.5.2.i.3. Information on the potential pathways of exposure of humans or environmental receptors to hazardous waste or hazardous constituents and information on the potential magnitude and nature of such exposures;

~~11.5.2.h.4.~~ 11.5.2.i.4. For any treatment unit, a report on the demonstration of the effectiveness of the treatment based on laboratory or field data; and

~~11.5.2.h.5.~~ 11.5.2.i.5. Any additional information determined by the chief to be necessary for evaluation of compliance of the unit with the environmental protection standards of Section 8.14.2 of these regulations.

11.5.3. Environmental Analysis. In addition to the information to be submitted with Part B of the application under Sections 11.5.2 and 11.5.3 of these regulations, major facilities not in existence on November 19, 1980, shall submit an environmental analysis which shall contain information of the type, quality, and detail that will permit adequate consideration of the environmental, technical, and economic factors involved in the establishment and operation of such facilities:

11.5.3.a. The portion of the applicant's environmental analysis dealing with environmental assessments shall contain, but not be limited to:

11.5.3.a.1. The potential impact of the method and route of transportation of hazardous waste to the site and the potential impact of the establishment and operation of such facilities on air and water quality, existing land use, transportation, and natural resources in the area affected by such facilities;

11.5.3.a.2. A description of the expected effect of such facilities; and

11.5.3.a.3. Recommendations for minimizing any adverse impact.

11.5.3.b. The portion of the applicant's environmental analysis dealing with technical and economic assessments shall contain, but not limited to:

11.5.3.b.1. Detailed descriptions of the proposed site

and facility, including site location and boundaries and facility purpose, type, size, capacity, and location on the site and estimate of the cost and charges to be made for material accepted, if any:

11.5.3.b.2. Provisions for managing the site following cessation of operation of the facility; and

11.5.3.b.3. Qualifications of owner and operator, including a description of the applicant's prior experience in hazardous waste management operations.

11.5.4. Additional Information. In addition to the information required in Sections 11.5.1 through 11.5.3 of these regulations, the chief may request that the applicant submit such other information as may be necessary for the chief to carry out his duties under the State Act.

11.5.5. The chief may, pursuant to the procedures of Section 11 of these regulations, deny the permit application in its entirety or as to the active life of the hazardous waste management facility or unit only.

11.6. Record Keeping. Applicants shall keep records of all data used to complete permit applications and any supplemental information submitted for a period of three (3) years from the date the application is signed.

11.7. Signatories to Permit Applications and Reports.

11.7.1. Applications. All permit applications shall be signed as follows:

11.7.1.a. For a corporation, by a responsible corporate officer, as defined in Section 2 of these regulations.

Note: The director does not require specific assignments or delegations of authority to responsible corporate officers identified in Section 11.7.1.a of these regulations. The director will presume that these responsible corporate officers have the requisite authority to sign permit applications unless the corporation has notified the director to the contrary. Corporate procedures governing authority to sign permit applications may provide for assignment of delegation to applicable corporate positions under Section 11.7.1.a.2 of these regulations rather than to specify individuals.

11.7.1.b. For a partnership or sole proprietorship, by a general partner or proprietor, respectively; or

11.7.1.c. For a municipality, state, federal, or other public agency, by either a principal executive officer or ranking

elected official. For purposes of Section 11.7 of these regulations, a principal executive officer of a federal agency includes:

11.7.1.c.1. The chief executive officer of the agency;
or

11.7.1.c.2. A senior executive officer having responsibility for the overall operations of a principal geographic unit of the agency (e.g., Regional Administrators of EPA).

11.7.2. Reports. All reports required by permits and other information requested by the chief shall be signed by a person described in Section 11.7.1 of these regulations above or by a duly authorized representative of that person. A person is a duly authorized representative only if:

11.7.2.a. The authorization is made in writing by a person described in Section 11.7.1 of these regulations;

11.7.2.b. The authorization specifies either an individual or a position having responsibility for the overall operation of the regulated facility or an individual or position having responsibility for the facility's compliance with environmental laws and permits; and

11.7.2.c. The written authorization is submitted to the chief.

11.7.3. Changes to Authorization. If an authorization is no longer accurate because a different individual or position has responsibility for the overall operation of the facility or because a new individual or position has responsibility for the facility's compliance with environmental laws and permits, a new authorization satisfying the requirements shall be submitted to the chief prior to or together with any reports, information, or applications to be signed by an authorized representative.

11.7.4. Certification. Any person signing a document under Section 11.7.1 or Section 11.7.2 of these regulations shall make the following certification:

"I certify under penalty of law that this document and all attachments were prepared under my direction or supervision in accordance with a system designed to assure that qualified personnel properly gather and evaluate the information submitted. Based on my inquiry of the person or persons who manage the system, or those persons directly responsible for gathering the information, the information submitted is to the best of my knowledge and belief true, accurate, and complete. I am aware that there are significant penalties for submitting false information, including the possibility of fine and imprisonment for knowing

violations."

11.8. Permits by Rule. Notwithstanding any other provisions of Section 11 of these regulations, the following shall be deemed to have a hazardous waste management permit if the conditions listed are met:

11.8.1. Publicly Owned Treatment Works. A POTW which accepts for treatment hazardous wastes qualifies for a permit by rule if the owner or operator of the facility:

11.8.1.a. Has an NPDES permit and a State water pollution control permit;

11.8.1.b. Complies with the conditions of those permits;

11.8.1.c. Complies with the appropriate Sections of these regulations with respect to:

11.8.1.c.1. Identification number;

11.8.1.c.2. Use of manifest system;

11.8.1.c.3. Manifest discrepancies;

11.8.1.c.4. Operating record;

11.8.1.c.5. ~~Annual~~ Biennial report; and

11.8.1.c.6. Unmanifested waste report; and

11.8.1.d. If the waste meets all federal, State, and local pretreatment requirements which would be applicable to the waste if it were being discharged into a POTW through a sewer, pipe, or similar conveyance.

11.8.2. (Reserved).

11.8.3. Injection Wells. The owner or operator of an injection well disposing of hazardous waste, if the owner or operator:

11.8.3.a. Has a UIC permit for underground injection issued by the West Virginia Department of Energy; and

11.8.3.b. Complies with the regulatory and permitting requirements established by the West Virginia Department of Energy and the Shallow Gas Well Review Board pursuant to the authority contained in the State Act.

11.9. Emergency Permits.

11.9.1. Notwithstanding any other provision in Section 11 of these regulations, in the event the chief finds an imminent and substantial endangerment to human health or the environment, the chief may issue a temporary emergency permit to a facility to allow treatment, storage, or disposal of hazardous waste at a non-permitted facility, or hazardous waste not covered by the permit for a facility with an effective permit. This emergency permit:

11.9.1.a. May be oral or written. If oral, it shall be followed within five (5) days by a written emergency permit;

11.9.1.b. Shall not exceed ninety (90) days in duration;

11.9.1.c. Shall clearly specify the hazardous wastes to be received, and the manner and location of their treatment, storage, or disposal;

11.9.1.d. May be terminated by the chief at any time without prior notice if it is determined that termination is appropriate to protect human health or the environment;

11.9.1.e. Shall be accompanied by a public notice as required by these regulations including:

11.9.1.e.1. Name and location of the permitted hazardous waste management facility;

11.9.1.e.2. A brief description of the wastes involved;

11.9.1.e.3. A brief description of the action authorized and reasons for authorizing;

11.9.1.e.4. Duration of the emergency permit; and

11.9.1.e.5. Name and address of the office granting the emergency authorization; and

11.9.1.f. Shall incorporate, to the extent possible and not inconsistent with the emergency situation, all applicable requirements of these regulations.

11.10. Conditions Applicable to All Permits. The following conditions apply to hazardous waste management permits. All conditions applicable to all permits shall be incorporated into the permits either expressly or by reference. If incorporated by reference, a specific citation to these regulations shall be given in the permit.

11.10.1. Duty to Comply. Any permit noncompliance constitutes a violation of these regulations and is grounds for enforcement action, for permit termination, revocation, or

modification, or for denial of a permit renewal application. The permittee need not comply with the conditions of the permit to the extent and for the duration such noncompliance is authorized in an emergency permit.

11.10.2. Duty to Reapply. If the permittee wishes to continue a regulated activity after the expiration date of the permit, the permittee shall apply for and obtain a new permit.

11.10.3. Need to Halt or Reduce Activity Not a Defense. It shall not be a defense for a permittee in an enforcement action that it would have been necessary to halt or reduce the permitted activity in order to maintain compliance with the conditions of this permit.

11.10.4. Duty to Mitigate. In the event of noncompliance with the permit, the permittee shall take all reasonable steps to minimize releases to the environment, and shall carry out such measures as are reasonable to prevent adverse impacts on human health or the environment.

11.10.5. Proper Operation and Maintenance. The permittee shall at all times maintain in good working order and operate efficiently all treatment and control facilities or systems installed or used by the permittee to achieve compliance with the terms and conditions of this permit. Proper operation and maintenance includes effective performance, adequate funding, adequate operator staffing and training, and adequate laboratory and process controls, including quality assurance procedures. Unless otherwise required by federal or State law this provision requires the operation of back-up or auxiliary facilities or similar systems only when necessary to achieve compliance with the conditions of the permit.

Comment: The proper interpretation of this language is to permit the permittee to shutdown or operate these treatment and control facilities or systems to carry out such maintenance, repair, or overhaul as may be dictated by sound engineering and operating practice.

11.10.6. Permit Actions. The permit may be modified, revoked and reissued, or terminated for cause. The filing of a request by the permittee for a permit modification, reissuance, termination, or a modification of planned changes or anticipated noncompliance does not stay any permit condition.

11.10.7. Property Rights. The permit does not convey any property rights of any sort or any exclusive privilege. Possession of a permit does not authorize any injury to persons or property or invasion of other private rights, or any infringement of State or local law or regulation.

11.10.8. Duty to Provide Information. The permittee shall furnish to the chief within a specified time any relevant information which the chief or an authorized representative may request to determine if cause exists for modifying, revoking and reissuing, suspending, revoking, or terminating this permit or to determine compliance with this permit. The permittee shall also furnish to the chief or an authorized representative, upon request, copies of records to be kept as part of the permit.

11.10.9. Inspection and Entry. The permittee shall allow the chief or an authorized representative, employee, or agent, upon the presentation of credentials and at reasonable times, to:

11.10.9.a. Enter any building, property, premises, place, vehicle, or permitted facility where hazardous wastes are or have been ~~generated~~, treated, stored, transported, or disposed of for the purpose of making an investigation with reasonable promptness to ascertain the compliance by any person with the State Act and these regulations or permits issued by the chief.

11.10.9.b. Enter any establishment or other place maintained by any person where hazardous wastes are or have been stored, treated, or disposed of to inspect and take samples of wastes, soils, surface waters, and groundwater and samples of any containers or labeling for such wastes. In taking such samples, the division may utilize such sampling methods as it determines to be necessary, including but not limited to, soil borings and monitoring wells. If the chief or an authorized representative, employee, or agent obtains any such samples prior to leaving the premises, the owner or operator or agent in charge shall be given a receipt describing the sample obtained and, if requested, a portion of each such sample equal in volume or weight to the portion retained. The division shall promptly provide a copy of any analysis made to the owner, operator, or agent in charge.

11.10.9.c. ~~Shall be~~ Have access to examine and copy, at reasonable times all records relating to the permitted storage, treatment, or disposal of hazardous waste in the possession of any person who ~~generates~~, stores, treats, transports, disposes of, or otherwise handles or has handled such waste. The chief or an authorized representative, employee, or agent shall be furnished with copies of all such records or given the records for the purpose of making copies.

11.10.10. Monitoring Records.

11.10.10.a. Samples and measurements taken for the purpose of monitoring shall be representative of the monitored activity.

11.10.10.b. The permittee shall retain records of all monitoring information including all calibration and maintenance

records and all original strip chart recordings for continuous monitoring instrumentation, copies of all reports required by the permit, the certification required by Section 8.5.4.b.9 of these regulations, and records of all data used to complete the application for the permit for a period of three (3) years from the date of the sample, measurement, report, or application. This period may be extended by the chief at any time.

11.10.10.c. The permittee shall maintain records from all groundwater monitoring wells and associated groundwater surface elevations for the active life of the facility and, for disposal facilities, for the post-closure care period as well.

11.10.10.d. Records of monitoring information shall include:

11.10.10.d.1. The date, exact place, and time of sampling or measurements;

11.10.10.d.2. The individual(s) who performed the sampling or measurements;

11.10.10.d.3. The date(s) analyses were performed;

11.10.10.d.4. The individual(s) who performed the analyses;

11.10.10.d.5. The analytical techniques or methods used; and

11.10.10.d.6. The results of such analyses.

11.10.11. Signatory Requirement. All applications, reports, or information submitted to the chief shall be signed and certified as specified in Section 11.7 of these regulations.

11.10.12. Reporting Requirements.

11.10.12.a. Planned Changes. The permittee shall give written notice to the chief as soon as possible of any planned physical alterations or additions to the permitted facility. For a new hazardous waste management facility, the permittee may not commence treatment, storage, or disposal of hazardous waste and for a facility being modified the permittee may not treat, store, or dispose of hazardous waste in the modified portion of the facility, except as provided in Section ~~11.18~~ 11.20 of these regulations, until:

11.10.12.a.1. The permittee has submitted to the chief, by certified mail or hand delivery, a letter signed by the permittee and a registered professional engineer stating that the facility has been constructed or modified in compliance with the

permit; and

11.10.12.a.1.A. The chief has inspected the modified or newly constructed facility and finds it is in compliance with the conditions of the permit; or

11.10.12.a.1.B. Within fifteen (15) days of the date of submission of the letter in Section 11.10.12.a.1 of these regulations, if the permittee has not received notice from the chief of the intent to inspect, prior inspection is waived and the permittee may commence treatment, storage, or disposal of hazardous waste.

11.10.12.b. Anticipated Noncompliance. The permittee shall give advance written notice to the chief of any planned changes in the permitted facility or activity which may result in noncompliance with permit requirements. For a new facility the permittee may not treat, store, or dispose of hazardous waste; and for a facility being modified the permittee may not treat, store, or dispose of hazardous waste in the modified portion of the facility, except as provided in Section 11.20 of these regulations, until:

11.10.12.b.1. The permittee has submitted to the chief by certified mail or hand delivery a letter signed by the permittee and a registered professional engineer stating that the facility has been constructed or modified in compliance with the permit; and

11.10.12.b.2. The chief has inspected the newly constructed or modified facility and finds that it is in compliance with the conditions of the permit; or

11.10.12.b.3. Within fifteen (15) days of the date of submission of the letter in Section 11.10.12.b.1 of these regulations, the permittee has not received notice from the chief of his or her intent to inspect, prior inspection is waived and the permittee may commence treatment, storage, or disposal of hazardous waste.

11.10.12.c. (Reserved).

11.10.12.d. Transfers. This permit is not transferrable except after notice to the chief, and modification or revocation and reissuance of the permit to change the name of the permittee and incorporate such other requirements as may be necessary under these regulations and the State Act. (See Section 11.18.2 of these regulations.)

11.10.12.e. Monitoring Reports. Monitoring results shall be reported at the intervals specified.

11.10.12.f. Compliance Schedules. Reports of compliance

or noncompliance with, or any progress reports on, interim and final requirements contained in any compliance schedule of the permit shall be submitted no later than fourteen (14) days following each schedule date.

11.10.12.g. Immediate Reporting. The permittee shall report any noncompliance which may endanger health or environment immediately after becoming aware of the circumstances. A written submission shall also be provided within five (5) days. The written submission shall contain a description of the noncompliance and its cause; the period of noncompliance, including exact dates and times; if the noncompliance has not been corrected, the anticipated time it is expected to continue; and steps taken or planned to reduce, eliminate, and prevent recurrence of the noncompliance. The following shall also be reported immediately:

11.10.12.g.1. Information concerning release of any hazardous waste that may cause an endangerment to public drinking water supplies; and

11.10.12.g.2. Any information of a release or discharge of hazardous waste, or of a fire or explosion from a hazardous waste management facility, which could threaten the environment or human health outside the facility. The description of the occurrence and its cause shall include:

11.10.12.g.2.A. Name, address, and telephone number of the owner or operator;

11.10.12.g.2.B. Name, address, and telephone number of the facility;

11.10.12.g.2.C. Date, time, and type of incident;

11.10.12.g.2.D. Name and quantity of material(s) involved;

11.10.12.g.2.E. The extent of injuries, if any;

11.10.12.g.2.F. An assessment of actual or potential hazards to the environment and human health outside the facility; and

11.10.12.g.2.G. Estimated quantity and disposition of recovered material that resulted from the incident.

11.10.12.h. Other Noncompliance. The permittee shall report all instances of noncompliance not reported under Sections 11.10.12.a, 11.10.12.e, 11.10.12.f, and 11.10.12.g of these regulations at the time monitoring reports are submitted. The report shall contain the information listed in Section 11.10.12.g of these regulations.

11.10.12.i. Other Information. Where the permittee becomes aware that it failed to submit any relevant facts in a permit application, or submitted incorrect information in a permit application or in any report to the chief, such facts or information shall be promptly submitted.

11.10.12.j. In addition, the following reports required by Section 8 of these regulations shall be submitted:

11.10.12.j.1. If a significant discrepancy in a manifest is discovered, the permittee shall attempt to reconcile the discrepancy. If not resolved within fifteen (15) days, the permittee shall submit a written manifest discrepancy report, including a copy of the manifest, to the chief. (See Section 8.5.3 of these regulations.)

11.10.12.j.2. An unmanifested waste report must be submitted to the chief within fifteen (15) days of receipt of unmanifested waste. (See Section 8.5.5 of these regulations.)

11.10.12.j.3. ~~An annual~~ A biennial report must be submitted covering facility activities during the previous calendar year. (See Section 8.5.6 of these regulations.)

11.10.12.j.4. (Reserved).

11.11. Establishing Permit Conditions.

11.11.1. In addition to conditions required in all permits, the chief shall establish conditions as required on a case-by-case basis, for the duration of permits, schedules of compliance, monitoring, and to provide for and assure compliance with all applicable requirements of the State Act and of these regulations, and any applicable statutory or regulatory requirement that takes effect prior to the final administrative disposition of a permit.

11.11.2. Each permit shall include permit conditions necessary to achieve compliance with these regulations and for protection of human health and the environment. In satisfying this provision the chief may incorporate applicable requirements specified in these regulations directly into the permit or establish other permit conditions that are based on these regulations.

11.11.3. All preconditions shall be incorporated either expressly or by reference. If incorporated by reference, a specific citation to the applicable regulations or requirements shall be given in the permit.

11.12. Duration of Permits.

11.12.1. Hazardous waste management permits shall be

effective for a fixed term not to exceed ten (10) years.

11.12.2. Except as provided in Section 11.12.3 of these regulations, the term of the permit shall not be extended by modification beyond the maximum duration specified in Section 11.12.1 of these regulations.

11.12.3. The conditions of an expired permit shall continue in force until the effective date of the new permit if:

11.12.3.a. The permittee has submitted a timely application under Section 11.5 of these regulations which is a complete application for a new permit; and

11.12.3.b. The chief, through no fault of the permittee, does not issue a new permit with an effective date on or before the expiration date of the previous permit.

11.12.4. Permits continued under Section 11.12 of these regulations remain fully effective and enforceable. When the permittee is not in compliance with the conditions of the expiring or expired permit, the chief may choose to do any or all of the following:

11.12.4.a. Initiate enforcement action based upon the permit which has been continued;

11.12.4.b. Issue an order of denial for the new permit. If the permit is denied, the owner or operator would then be required to cease the activities authorized by the continued permit or be subject to an enforcement action for operating without a permit;

11.12.4.c. Issue a new permit with appropriate conditions; or

11.12.4.d. Take other actions authorized by statute or these regulations.

11.12.5. The chief may issue any permit for a duration that is less than the full allowable term under Section 11.12.1 of these regulations.

11.12.6. Each permit for a land disposal facility shall be reviewed by the chief five (5) years after the date of permit issuance or reissuance and shall be modified as necessary, as provided in Section 11.18 of these regulations.

11.13. Effect of a Permit. Compliance with a permit during its term constitutes compliance for purposes of enforcement under the State Act except for Section 17 of that Act and except for those requirements not included in the permit which become effective by

State statute, federal statute, or regulations adopted by the State which are promulgated under 40 CFR Part 268 restricting the placement of hazardous waste in or on the land; provided, however, that the regulations adopted by the State pursuant to 40 CFR Part 268 must satisfy the provisions of Section 1.5 of these regulations pertaining to incorporation by reference. ~~provided, however, that a permit may be modified, suspended, revoked, revoked and reissued, or terminated during its term for cause as set forth in Section 11.20 of these regulations.~~

Note: A permit may be modified, suspended, revoked, revoked and reissued, or terminated during its term for cause as set forth in these regulations.

11.14. Transfer of Permits.

11.14.1. A permit may be transferred by the permittee to a new owner or operator only if the permit has been modified, or revoked and reissued by the chief under Sections 11.18.2.b and 11.14.2 of these regulations to identify the new permittee and incorporate such other requirements as may be necessary to comply with these regulations and the State Act.

11.14.2. Changes in the ownership or operational control of a facility may be made as a Class 1 modification with prior written approval of the chief in accordance with Section 11.20 of these regulations. The new owner or operator must submit a revised permit application no later than ninety (90) days prior to the scheduled change. A written agreement containing a specific date for transfer of permit responsibility between the current and new permittees must also be submitted to the chief. When a transfer of ownership or operational control occurs, the old operator shall comply with the financial requirements under Section 13 of these regulations until the new owner or operator has demonstrated that he or she is in compliance with the requirements of that Section. The new owner or operator must demonstrate compliance with Section 13 of these regulations within six (6) months of the date of the change of ownership or operational control of the facility. Upon demonstration to the chief by the new owner or operator of compliance with Section 13 of these regulations, the chief shall notify the old owner or operator that he or she no longer needs to comply with Section 13 of these regulations as of the date of demonstration.

11.15. Schedules of Compliance.

11.15.1. General. The permit may, when appropriate, specify a schedule of compliance leading to compliance with these regulations.

11.15.1.a. Any schedules of compliance under Section 11.15 of these regulations shall require compliance as soon as

possible.

11.15.1.b. Except as otherwise provided, if a permit establishes a schedule of compliance which exceeds one (1) year from the date of permit issuance, the schedule shall set forth interim requirements and the dates for their achievements.

11.15.1.b.1. The time between interim dates shall not exceed one (1) year.

11.15.1.b.2. If the time necessary for completion of any interim requirement is more than one (1) year and is not readily divisible into stages of completion, the permit shall specify interim dates for the submission of reports of progress toward completion of the interim requirements and indicate a projected completion date.

11.15.1.c. The permit shall be written to require that no later than fourteen (14) days following each interim date and the final date of compliance, a permittee shall notify the chief, in writing of his compliance or noncompliance with the interim or final requirements.

11.15.2. Alternative Schedules of Compliance. A permit applicant or permittee may cease conducting regulated activities rather than continue to operate and meet permit requirements as follows:

11.15.2.a. If the permittee decides to cease conducting regulated activities at a given time within the term of a permit which has already been issued:

11.15.2.a.1. The permit may be modified to contain a new or additional schedule leading to timely cessation of activities; or

11.15.2.a.2. The permittee shall cease conducting permitted activities before noncompliance with any interim or final compliance schedule requirement already specified in the permit.

11.15.2.b. If the decision to cease conducting regulated activities is made before issuance of a permit whose terms will include the termination date, the permit shall contain a schedule leading to termination which will ensure timely compliance with applicable requirements.

11.15.2.c. If the permittee is undecided whether to cease conducting regulated activities, the chief may issue or modify a permit to contain two (2) schedules as follows:

11.15.2.c.1. Both schedules shall contain an identical interim deadline requiring a final decision on whether to cease

conducting regulated activities no later than a date which ensures sufficient time to comply with applicable requirements in a timely manner if the decision is to continue regulated activities.

11.15.2.c.2. One schedule shall lead to timely compliance with applicable requirements.

11.15.2.c.3. The second schedule shall lead to cessation of regulated activities by a date which will ensure timely compliance with applicable requirements.

11.15.2.c.4. Each permit containing two (2) schedules shall include a requirement that, after the permittee has made a final decision, a schedule leading to compliance shall follow if the decision is to continue conducting regulated activities, and follow the schedule leading to termination if the decision is to cease conducting regulated activities.

11.15.2.d. The applicant's or permittee's decision to cease conducting regulated activities shall be evidenced by a firm public commitment satisfactory to the chief, such as a resolution of the board of directors of a corporation.

11.16. Requirements for Recording and Reporting of Monitoring Results. All permits shall specify:

11.16.1. When appropriate, requirements concerning the proper use, maintenance, and installation of monitoring equipment or methods including biological monitoring methods and introduced tracer methods.

11.16.2. Required monitoring including type, intervals, and frequency sufficient to yield data which are representative of the monitored activity including, when appropriate, continuous monitoring.

11.16.3. Applicable reporting requirements based upon the impact of the regulated activity and as specified in these regulations.

11.17. Modification, Revocation and Reissuance, Suspension, Termination, and Revocation of Permits.

11.17.1. Permits may be modified, revoked and reissued, suspended, revoked, or terminated either at the request of any interested person (including the permittee) or upon the chief's initiative. However permits may only be modified, revoked and reissued, suspended, revoked, or terminated for the reasons specified in Sections 11.18 and 11.19 of these regulations. All requests shall be submitted in writing and shall contain facts or reasons supporting the request.

11.17.2. If the chief tentatively decides to modify or revoke and reissue a permit and the modification is not made under Section 11.20 of these regulations, a draft permit under Section 11.21 of these regulations shall be prepared incorporating the proposed changes. The chief may request additional information and, in the case of a modified permit, may require the submission of an updated permit application. In the case of revoked and reissued permits, the chief shall require the submission of a new application.

11.17.3. In a permit modification under Section 11.17 of these regulations, only those conditions to be modified shall be reopened when a new draft permit is prepared. All other conditions of the existing permit shall remain in effect for the duration of the unmodified permit. When a permit is revoked and reissued under Section 11.17 of these regulations, the entire permit is reopened just as if the permit had expired and was being reissued. During any revocation and reissuance proceedings the permittee shall comply with all conditions of the existing permit until a new final permit is reissued.

11.17.4. "Modifications at the Request of the Permittee" as defined in Section 11.20 of these regulations are not subject to the requirements of Section 11.17 of these regulations.

11.17.5. If the chief tentatively decides to suspend, revoke, or terminate a permit, a notice of such intent shall be issued. A notice of intent to suspend, revoke, or terminate is a type of draft permit which follows the same procedure as any draft permit prepared under Section 11.21 of these regulations.

11.18. Modification or Revocation and Reissuance of Permits.

11.18.1. When the chief receives any information (e.g., inspects the facility, receives information submitted by the permittee as required in the permit (see Section 11.10 of these regulations), receives a request for modification or revocation and reissuance under Section 11.17 of these regulations, or conducts a review of the permit file), a determination may be made whether or not one or more of the causes listed in Sections 11.18.1 or 11.18.2 of these regulations for modification or revocation and reissuance or both exist. If cause exists, the chief may modify or revoke and reissue the permit accordingly, subject to the limitations of Section ~~11.18.3~~ 11.18.4 of these regulations, and may request an updated application if necessary. When a permit is modified, only the conditions subject to modification are reopened. If a permit is revoked and reissued, the entire permit is reopened and subject to revision and the permit is reissued for a new term. If cause does not exist under Section 11.18 of these regulations, the chief shall not modify or revoke and reissue the permit, except upon request of the permittee. If a permit modification is requested by the permittee, the chief shall approve or deny the request

according to the procedures of Section 11.20 of these regulations. Otherwise, a draft permit shall be prepared and other appropriate procedures followed.

~~11.18.1.~~11.18.2. Causes for Modification. The following are causes for modification but not revocation and reissuance of permits. However, the following may be causes for revocation and reissuance as well as modification when the permittee requests or agrees:

~~11.18.1.a.~~11.18.2.a. Alterations. There are material and substantial alterations or additions to the permitted facility or activity which occurred after permit issuance which justify the application of permit conditions that are different or absent in the existing permit.

~~11.18.1.b.~~11.18.2.b. Information. If the chief has received information pertaining to circumstances or conditions existing at the time the permit was issued that were not available at the time of permit issuance (other than revised regulations, guidance, or test methods) and would have justified the application of different permit conditions at the time of issuance, the permit may be modified accordingly.

~~11.18.1.c.~~11.18.2.c. New Regulations. The standards or regulations on which the permit was based have been changed by statute, through the promulgation of new or amended standards or regulations or by judicial decision after the permit was issued. ~~Permits may be modified during their terms for this cause only as follows:~~

~~11.18.1.c.1.~~11.18.2.c.1. For promulgation of amended standards or regulations, when:

~~11.18.1.c.1.A.~~11.18.2.c.1.A. The permit condition requested to be modified was based on a hazardous waste management regulation and the chief or director, or both, have revised, withdrawn, or modified that portion of the regulation on which the permit condition was based.

~~11.18.1.c.1.B.~~ ~~The Section of Waste Management or the director, or both, have revised, withdrawn, or modified that portion of the regulation on which the permit condition was based.~~

~~11.18.1.c.1.C.~~11.18.2.c.1.B. Time Limit. A permittee must request modification within ninety (90) days after State Register notice of the action on which the request is based.

~~11.18.1.c.2.~~11.18.2.c.2. For judicial decision, when: ~~A court of competent jurisdiction has remanded and stayed State regulations, if the remand and stay concern that portion of the regulations on which the permit condition was based and a request~~

~~is filed by the permittee within ninety (90) days of judicial remand.~~

11.18.2.c.2.A. A court of competent jurisdiction has remanded and stayed State regulations, if the remand and stay concern that portion of the regulations on which the permit condition was based and a request is filed by the permittee within ninety (90) days of judicial remand.

11.18.2.c.2.B. Time Limit. A permittee must request modification within ninety (90) days of judicial remand.

~~11.18.1.d.~~11.18.2.d. Compliance Schedules. The chief determines good cause exists for modification of a compliance schedule such as an act of God, strike, flood, materials shortage, or other events over which the permittee has little or no control and for which there is not a reasonably available remedy.

~~11.18.1.e.~~11.18.2.e. Other Causes. The chief may also modify a permit:

~~11.18.1.e.1.~~11.18.2.e.1. When modification of a closure plan is required.

~~11.18.1.e.2.~~11.18.2.e.2. When the chief receives notification of expected closure pursuant to Section 8.6.4 of these regulations and determines the following permit conditions are unwarranted:

~~11.18.1.e.2.A.~~11.18.2.e.2.A. Extension of the ninety (90) to one hundred and eighty (180) day periods under Section 8.6.4 of these regulations;

~~11.18.1.e.2.B.~~11.18.2.e.2.B. Modification of the thirty year post-closure period under Section 8.6.7.a of these regulations;

~~11.18.1.e.2.C.~~11.18.2.e.2.C. Continuation of security requirements under Section 8.6.7.b of these regulations; or

~~11.18.1.e.2.D.~~11.18.2.e.2.D. Permission to disturb the integrity of a containment system under Section 8.6.7 of these regulations.

~~11.18.1.e.3.~~11.18.2.e.3. When the permittee has filed a request under Section 13 of these regulations for a variance to the level of financial responsibility or when the chief demonstrates that an upward adjustment of the level of financial responsibility is required.

~~11.18.1.e.4.~~11.18.2.e.4. When a corrective action

program specified in a permit under Section 8.13.9 of these regulations has not brought the regulated unit into compliance with the groundwater protection standard within a reasonable period of time.

~~11.18.1.e.5-11.18.2.e.5.~~ To include a monitoring program meeting the requirements of Section 8.13.8 of these regulations, when the owner or operator has been conducting a corrective action program under Section 8.13.9 of these regulations and the compliance period ends before the end of the post closure care period for the unit.

~~11.18.1.e.6-11.18.2.e.6.~~ To include conditions applicable to units at a facility that were not previously included in the facility's permit.

~~11.18.1.e.7-11.18.2.e.7.~~ When a land treatment unit is not achieving complete treatment of hazardous constituents under its current permit conditions.

~~11.18.1.f-11.18.2.f.~~ Notwithstanding any other provision in these regulations, when a permit for a land disposal facility is reviewed by the chief, the chief shall modify the permit as necessary to ~~ensure~~ assure that the facility continues to comply with the currently applicable requirements of these regulations.

~~11.18.2-11.18.3.~~ Causes of Modification or Revocation and Reissuance. The following are causes to modify or, alternatively, revoke and reissue a permit:

~~11.18.2.a-11.18.3.a.~~ Cause exists for revocation under Section 11.19 of these regulations and the chief determines that modification or revocation and reissuance is appropriate.

~~11.18.2.b-11.18.3.b.~~ The chief has received notification of a proposed transfer or modification of the permit.

~~11.18.3-11.18.4.~~ Facility Siting. The suitability of the facility location will not be considered at the time of permit modification or revocation and reissuance unless new information or standards indicate that an endangerment to human health or the environment exists that was unknown at the time of permit issuance.

11.19. Termination, Revocation, or Suspension of Permits.

11.19.1. The following are causes for revocation or suspension of a permit during its term, or for denying a permit renewal application:

11.19.1.a. Noncompliance by the permittee with any condition of the permit;

11.19.1.b. The permittee's failure in application or during the permit issuance process to disclose fully all relevant facts, or the permittee's misrepresentation of any relevant facts at any time, or

11.19.1.c. A determination that the permitted activity endangers human health or the environment and can only be regulated to acceptable levels by permit revocation.

11.19.2. The chief shall follow the applicable procedures set forth in Section 11.17.5 of these regulations for terminating, revoking, or suspending a permit.

11.20. Permit Modifications at the Request of the Permittee.

11.20.1. Class 1 Modifications.

11.20.1.a. Except as provided in Section 11.20.1.b of these regulations, the permittee may put into effect Class 1 modifications listed in Appendix XV of these regulations under the following conditions:

11.20.1.a.1. The permittee must notify the chief concerning the modification by certified mail or other means that establish proof of delivery within seven (7) days after the change is put into effect. This notice must specify the changes being made to permit conditions or supporting documents referenced by the permit and must explain why they are necessary. Along with the notice, the permittee must provide the applicable information required by Sections 11.4, 11.5, and 11.30 of these regulations and 40 C.F.R. §270.62.

11.20.1.a.2. The permittee must send a notice of the modification to all persons on the facility mailing list maintained by the chief in accordance with Section 11.24.3.a of these regulations. This notification must be made within ninety (90) days after the change is put into effect. For Class 1 modifications that require prior approval by the chief, the notification must be made within ninety (90) days after the chief approves the request.

11.20.1.a.3. Any person may request the chief to review, and the chief may for cause reject any Class 1 modification. The chief must notify the permittee by certified mail that a Class 1 modification has been rejected explaining the reasons for rejection. If a Class 1 modification has been rejected, the permittee must comply with the original permit condition.

11.20.1.b. Class 1 permit modifications identified in Appendix XV of these regulations, by an asterisk may be made only with the prior written approval of the chief.

11.20.1.c. For a Class 1 permit modification the

permittee may elect to follow the procedures in Section 11.20.2 of these regulations for Class 2 modifications instead of Class 1 procedures. The permittee must inform the chief of this decision in the notice required in Section 11.20.2.a of these regulations.

11.20.2. Class 2 Modifications.

11.20.2.a. For Class 2 modifications listed in Appendix XV of these regulations the permittee must submit a modification request to the chief that:

11.20.2.a.1. Describes the exact change to be made to the permit conditions and supporting documents referenced by the permit;

11.20.2.a.2. Identifies that the modification is a Class 2 modification;

11.20.2.a.3. Explains why the modification is needed; and

11.20.2.a.4. Provides the applicable information required by Section 11.4, 11.5, 11.30 of these regulations and 40 C.F.R. §270.62.

11.20.2.b. The permittee must send a notice of the modification request to all persons on the facility mailing list maintained by the chief as specified under Section 11.24.3.a.6 of these regulations and must publish this notice in a major local newspaper of general circulation. This notice must be mailed and published within seven (7) days before or after the date of submission of the modification request. The permittee the chief with evidence of the mailing and publication. The notice must include:

11.20.2.b.1. Announcement of a sixty (60) day comment period in accordance with Section 11.20.2.e of these regulations and the name and address of a division contact to whom comments must be sent;

11.20.2.b.2. Announcement of the date, time, and place for a public meeting held in accordance with Section 11.20.2.d of these regulations;

11.20.2.b.3. Name and telephone number of the permittee's contact person;

11.20.2.b.4. Name and telephone number of a division contact person;

11.20.2.b.5. Location where copies of the modification request and any supporting documents can be viewed and copied; and

11.20.2.b.6. The following statement:

"The permittee's compliance history during the life of the permit being modified is available from the division contact person."

11.20.2.c. The permittee must place a copy of the permit modification request and supporting documents at a location accessible by the public in the vicinity of the permitted facility.

11.20.2.d. The permittee must hold a public meeting no later than fifteen (15) days after the publication of the notice required in Section 11.20.2.b of these regulations, and no later than fifteen (15) days before the close of the sixty (60) day comment period. The meeting must be held to the extent practicable in the vicinity of the permitted facility.

11.20.2.e. The public shall be provided sixty (60) days to comment on the modification request. The comment period will begin on the date the permittee publishes the notice in the local newspaper. Comments should be submitted to the division contact identified in the public notice.

11.20.2.f. The chief shall, no later than ninety (90) days after the receipt of the modification request:

11.20.2.f.1. Approve the modification request with or without changes and modify the permit accordingly;

11.20.2.f.2. Deny the request;

11.20.2.f.3. Determine that the modification request must follow the procedures in Section 11.20.3 of these regulations for Class 3 modifications for the following reasons:

11.20.2.f.3.A. There is significant public concern about the proposed modification; or

11.20.2.f.3.B. The complex nature of the change requires the more extensive procedures of a Class 3 modification;

11.20.2.f.4. Approve the request with or without changes as a temporary authorization having a term of up to one hundred and eighty (180) days; or

11.20.2.f.5. Notify the permittee that a decision on the request will be made within the next thirty (30) days.

11.20.2.g. If the chief notifies the permittee of a thirty (30) day extension for a decision the chief must, no later than one hundred and twenty (120) days after the receipt of the modification request, make a determination as to the outcome of the

modification request as described in Sections 11.20.2.f.1 through 11.20.2.f.5 of these regulations.

11.20.2.h. If the chief fails to make a decision by the end of the one hundred and twenty (120) day period after receipt of the modification request the permittee is automatically authorized to conduct the activities described in the modification request for up to one hundred and eighty (180) days. The authorized activities must be conducted as described in the permit modification request and must be in compliance with all appropriate standards of 40 C.F.R. Part 265. If the chief approves or denies the modification during the term of the temporary or automatic authorization provided for in these regulations, such action cancels the temporary or automatic authorization.

11.20.2.i. In the case of an automatic authorization under Section 11.20.2.h of these regulations, or a temporary authorization under Section 11.20.2.f.4, if the chief has not approved or denied the modification request before fifty (50) days prior to the end of the temporary or automatic authorization period, the permittee must within seven (7) days of that time send a notification to persons on the facility mailing list and make a reasonable effort to notify other persons who submitted written comments on the modification request that:

11.20.2.i.1. The permittee has been authorized temporarily to conduct the activities described in the permit modification request; and

11.20.2.i.2. Unless the chief acts to give final approval or denial of the request before the end of the temporary or automatic authorization period, the permittee will receive authorization to conduct such activities for the life of the permit.

11.20.2.j. If the owner or operator fails to notify the public by the date specified in Section 11.20.2.i of these regulations, the effective date of the permanent authorization will be deferred until fifty (50) days after the owner or operator notifies the public.

11.20.2.k. If the chief does not give final approval or denial of a modification request, except as provided in Section 11.20.2.m of these regulations, before the end of the temporary or automatic authorization period or reclassify the modification as a Class 3, the permittee is authorized to conduct the activities described in the permit modification request for the life of the permit unless modified later under Section 11.18 or 11.20 of these regulations. The activities authorized under this Section must be conducted as described in the permit modification request and must be in compliance with all appropriate standards of 40 C.F.R. Part 265.

11.20.2.1. In making a decision to approve or deny a modification request, issue a temporary authorization, or reclassify as a Class 3 modification the chief must consider all written comments submitted to the division during the public comment period and must respond in writing to all significant comments.

11.20.2.m. With the written consent of the permittee, the chief may extend indefinitely or for a specified period of time, the time periods for final approval or denial of a modification request or for reclassifying a modification as a Class 3.

11.20.2.n. The chief may deny or change the terms of a Class 2 permit modification request for the following reasons:

11.20.2.n.1. The modification request is incomplete;

11.20.2.n.2. The requested modification does not comply with the appropriate requirements under Section 8 of these regulations or other applicable requirements; or

11.20.2.n.3. The conditions of the modification fail to protect human health and the environment.

11.20.2.o. The permittee may perform any construction associated with a Class 2 permit modification request beginning sixty (60) days after the submission of the request unless the chief establishes a later date for commencing construction and informs the permittee in writing before the end of the sixty (60) day period.

11.20.3. Class 3 Modifications.

11.20.3.a. For Class 3 modifications listed in Appendix XV of these regulations, the permittee must submit a modification request to the chief that:

11.20.3.a.1. Describes the exact change to be made to the permit conditions and supporting documents referenced by the permit;

11.20.3.a.2. Identifies that the modification is a Class 3 modification;

11.20.3.a.3. Explains why the modification is needed; and

11.20.3.a.4. Provides the applicable information required by 40 C.F.R. §270.62 and Sections 11.4, 11.5, and 11.30 of these regulations.

11.20.3.b. The permittee must send a notice of the

modification request to all persons on the facility mailing list maintained by the chief and must publish this notice in a major local newspaper of general circulation. This notice must be mailed and published within seven (7) days before or after the date of submission of the modification request. The permittee must provide to the chief evidence of the mailing and publication. The notice must include:

11.20.3.b.1. Announcement of a sixty (60) day comment period and a name and address of a division contact to whom comments must be sent;

11.20.3.b.2. Announcement of the date, time, and place for a public meeting on the modification request in accordance with Section 11.20.3.d of these regulations;

11.20.3.b.3. Name and phone number of the permittee's contact person;

11.20.3.b.4. Name and telephone number of a division contact person;

11.20.3.b.5. Location where copies of the modification request and any supporting documents can be viewed and copied; and

11.20.3.b.6. The following statement:

"The permittee's compliance history during the life of the permit being modified is available from the division contact person."

11.20.3.c. The permittee must place a copy of the permit modification request and supporting documents in a location accessible to the public in the vicinity of the permitted facility.

11.20.3.d. The permittee must hold a public meeting no earlier than fifteen (15) days after the publication of the notice required in these regulations and no later than fifteen (15) days before the close of the sixty (60) day comment period. The meeting must be held to the extent practicable in the vicinity of the permitted facility.

11.20.3.e. The public shall be provided at least sixty (60) days to comment on the modification request. The comment period will begin on the date the permittee publishes the notice in the local newspaper. Comments should be submitted to the division contact person identified in the notice.

11.20.3.f. After the conclusion of the sixty (60) day comment period, the chief must grant or deny the permit modification request according to the permit modification procedures of Section 11.18 of these regulations. In addition, the

chief must consider and respond to all significant written comments received during the sixty (60) day comment period.

11.20.4. Other Modifications.

11.20.4.a. In the case of modifications not explicitly listed in Appendix XV of these regulations, the permittee may submit a Class 3 modification request or may request a determination by the chief if the modification should be reviewed and approved as a Class 1 or Class 2 modification. If the permittee requests that the modification be classified as a Class 1 or Class 2 modification, he or she must provide the chief with the necessary information to support the requested classification.

11.20.4.b. The chief shall make the determination as promptly as practicable in determining the appropriate class for a specific modification. The chief shall consider the similarity of the modification to other modifications codified in Appendix XV of these regulations, and the following criteria:

11.20.4.b.1. Class 1 modifications apply to minor changes that keep the permit current with routine changes to the facility or its operation. These changes do not substantially alter the permit conditions or reduce the capacity of the facility to protect human health or the environment. In the case of Class 1 modifications, the chief may require prior approval.

11.20.4.b.2. Class 2 modifications apply to changes that are necessary to enable a permittee to respond in a timely manner to:

11.20.4.b.2.A. Common variations in the types and quantities of the wastes managed under the facility permit;

11.20.4.b.2.B. Technological advancements; and

11.20.4.b.2.C. Changes necessary to comply with new regulations where these changes can be implemented without substantially changing design specifications or management practices in the permit.

11.20.4.b.3. Class 3 modifications substantially alter the facility or its operation.

11.20.5. Temporary Authorizations.

11.20.5.a. Upon request of the permittee the chief may, without prior public notice and comment, grant the permittee a temporary authorization not to exceed a term of one hundred and eighty (180) days in accordance with these regulations.

11.20.5.a.1. The permittee may request a temporary

authorization for:

11.20.5.a.1.A. Any Class 2 modification meeting the criteria in Section 11.20.5.c.2 of these regulations; and

11.20.5.a.1.B. Any Class 3 modification that meets the criteria in Sections 11.20.5.c.2.A through 11.20.5.c.2.E of these regulations and provides improved management or treatment of a hazardous waste already listed in the facility permit.

11.20.5.a.2. The temporary authorization request must include:

11.20.5.a.2.A. A description of the activities to be conducted under the temporary authorization;

11.20.5.a.2.B. An explanation of why the temporary authorization is necessary; and

11.20.5.a.2.C. Sufficient information to ensure compliance with Section 8 of these regulations.

11.20.5.b. The permittee shall send a notice about the temporary authorization request to all persons on the facility mailing list maintained by the chief and as specified under Section 11.24.3.a of these regulations. This notification must be made within seven (7) days of submission of the authorization request.

11.20.5.c. The chief shall approve or deny the temporary authorization as quickly as practicable. To issue a temporary authorization the chief must find:

11.20.5.c.1. The authorized activities are in compliance with the standards of Section 8 of these regulations;

11.20.5.c.2. The temporary authorization is necessary to achieve one of the following objectives before action is likely to be taken on a modification request:

11.20.5.c.2.A. To facilitate timely implementation of closure or corrective action activities;

11.20.5.c.2.B. To allow treatment or storage in tanks or containers of restricted wastes in accordance with 40 C.F.R. Part 268;

11.20.5.c.2.C. To prevent disruption of ongoing waste management activities;

11.20.5.c.2.D. To enable the permittee to respond to sudden changes in the types or quantities of the wastes managed under the facility permit; or

11.20.5.c.2.E. To facilitate other changes to protect human health and the environment.

11.20.5.d. A temporary authorization may be issued for one additional term of up to one hundred and eighty (180) days provided that the permittee has requested a Class 2 or Class 3 permit modification for the activity covered in the temporary authorization; and

11.20.5.d.1. The reissued temporary authorization constitutes the chief's decision on a Class 2 permit modification in accordance with these regulations, or

11.20.5.d.2. The chief determines that the reissued temporary authorization involving a Class 3 permit modification request is warranted to allow the authorized activities to continue while the modification procedures of Section 11.20.3 of these regulations are conducted.

11.20.6. Public Notice and Appeals of Permit Modification Decisions.

11.20.6.a. The chief shall notify persons on the facility mailing list within ten (10) days of any decision under this Section to grant or deny a Class 2 or Class 3 permit modification request. The chief shall also notify such persons within ten (10) days after an automatic authorization before a Class 2 modification goes into effect under Section 11.20.2.h or 11.20.2.j of these regulations.

11.20.6.b. The chief's decision to grant or deny a Class 2 or Class 3 permit modification request may be appealed under the permit appeal procedures under the State Act.

11.20.6.c. An automatic authorization that goes into effect under Sections 11.20.2.h or 11.20.2.j of these regulations may also be appealed under the appeal procedures of the State Act. However, the permittee may continue to conduct the activities pursuant to the automatic authorization until the appeal has been granted.

11.20.7. Newly Listed or Identified Wastes.

11.20.7.a. The permittee is authorized to continue to manage wastes listed or identified as hazardous under Section 3 of these regulations if they:

11.20.7.a.1. Were in existence as a hazardous waste facility with respect to the newly listed or characterized waste on the effective date of the final rule listing or identifying the waste;

11.20.7.a.2. Submits a Class 1 permit modification request on or before the date on which the waste becomes subject to the new requirement;

11.20.7.a.3. Is in compliance with the standards of Section 11.3 of these regulations;

11.20.7.a.4. In the case of a Class 2 or Class 3 permit modification request, also submits a complete permit modification request within one hundred and eighty (180) days after the effective date of the rule listing or identifying the waste; and

11.20.7.a.5. In the case of land disposal units, certifies that such unit is in compliance with all applicable groundwater monitoring and financial responsibility requirements on the date twelve (12) months after the effective date of the rule identifying or listing the waste as hazardous. If the owner or operator fails to clarify compliance with these requirements he or she shall lose authority to operate under this Section.

11.20.7.b. New wastes or units added to the facility's permit under this Subsection do not constitute expansions for the purpose of the twenty-five percent (25%) capacity expansion limit for Class 2 permit modifications.

11.20.8. Permit Modification List. The chief must maintain a list of all approved permit modifications and must publish a notice once a year in a statewide newspaper that an updated list is available for review.

11.21. Draft Permits.

11.21.1. Once an application is complete, the chief shall tentatively decide whether to prepare a draft permit or to deny the application.

11.21.2. If the chief decides to prepare a draft permit, a draft permit shall be prepared that contains the following information:

11.21.2.a. All conditions under Sections 11.10 and 11.11 of these regulations;

11.21.2.b. All compliance schedules under Section 11.15 of these regulations;

11.21.2.c. All monitoring requirements under Section 11.16 of these regulations; and

11.21.2.d. Standards for treatment, storage, and disposal and other permit conditions under Section 11 of these regulations.

11.21.3. A fact sheet prepared in accordance with Section 11.22 of these regulations shall accompany the draft permit.

11.22. Fact Sheet.

11.22.1. A fact sheet shall be prepared by the chief for every draft permit for each hazardous waste management facility or activity. The fact sheet shall briefly set forth the principal facts and the significant factual, legal, methodological, and policy questions considered in preparing the draft permit. The chief shall send this fact sheet to the applicant and, upon request, to any other person.

11.22.2. The fact sheet shall include, when applicable:

11.22.2.a. A brief description of the type of facility or activity which is the subject of the draft permit;

11.22.2.b. The type and quantity of wastes, fluids, or pollutants which are proposed to be or are being treated, stored, disposed of, injected, emitted, or discharged. A description of the type of wastes, fluids or pollutants shall include, but not limited to, the characteristics of the waste materials and the potential effects on public health and the environment;

11.22.2.c. A brief summary of the basis for the draft permit conditions including references to applicable statutory or regulatory provisions;

11.22.2.d. Reasons why any requested variances or alternatives to required standards do or do not appear justified;

11.22.2.e. A description of the procedures for reaching a final decision on the draft permit including:

11.22.2.e.1. The beginning and ending dates of the comment period and the address where comments will be received;

11.22.2.e.2. Procedures for requesting a hearing and the nature of that hearing; and

11.22.2.e.3. Any other procedures by which the public may participate in the final decision; and

11.22.2.f. Name and telephone number of a person to contact for additional information.

11.23. Public Access to Information.

11.23.1. Any records, reports, or information and any permit, permit applications, and related documentation within the chief's possession shall be available to the public for inspection

and copying; provided, however, that upon a satisfactory showing to the chief that such records, reports, permit documentation, or information, or any part thereof would, if made public, divulge methods or processes or activities entitled to protection as trade secrets, the chief shall consider, treat, and protect such records as confidential.

11.23.2. It shall be the responsibility of the person claiming any information as confidential under the provisions of Section 11.23.1 of these regulations to clearly mark each page containing such information with the word "CONFIDENTIAL" and to submit an affidavit setting forth the reasons that said person believes that such information is entitled to protection.

11.23.3. Any document submitted to the chief which contains information for which claim of confidential information is made shall be submitted in a sealed envelope marked "CONFIDENTIAL" and address to the chief. The document shall be submitted in two (2) separate parts. The first part shall contain all information which is not deemed by the person preparing the report as confidential and shall include appropriate cross-references to the second part which contains data, words, phrases, paragraphs, or pages and appropriate affidavits containing or relating to information which is claimed to be confidential.

11.23.4. No information shall be protected as confidential information by the chief unless it is submitted in accordance with the provisions of Section 11.23.3 of these regulations and no information which is submitted in accordance with the provisions of Section 11.23.3 of these regulations shall be afforded protection as confidential information unless the chief finds that such protection is necessary to protect trade secrets. The person who submits information claimed to be confidential shall receive written notice from the chief as to whether the information has been accepted as confidential or not.

11.23.5. All information which meets the tests of Section 11.23.4 of these regulations shall be marked with the term "ACCEPTED" and shall be protected as confidential information. If said person fails to satisfactorily demonstrate to the chief that such information in the form presented to him meets the criteria of Section 11.23.5 of these regulations, the chief shall mark the information "REJECTED" and promptly return such information to the person submitting such information.

11.23.6. Nothing contained herein shall be construed so as to restrict the release of relevant confidential information during situations declared to be emergencies by the chief or his designee.

11.23.7. Nothing in Section 11.23 of these regulations may be construed as limiting the disclosure of information by the division to any officer, employee, or authorized representative of

the State or federal government concerned with effecting the purposes of Section 11.23 of these regulations.

11.23.8. Persons interested in obtaining information pursuant to Section 11.23 of these regulations should submit a request in accordance with Title 46, Water Resources Board, Series 8 (46 C.S.R. 8).

11.23.9. Claims of confidentiality for the name and address of any permit applicant or permittee will be denied.

11.24. Public Participation in Permit Process.

11.24.1. Scope. Public notice shall be given that the following actions have occurred:

11.24.1.a. A draft permit has been prepared; or

11.24.1.b. A hearing has been scheduled.

11.24.2. Timing.

11.24.2.a. Public notice of the preparation of a draft permit required under Section 11.24 of these regulations shall allow at least forty-five (45) days for public comment.

11.24.2.b. Public notice of a public hearing shall be given at least thirty (30) days before the hearing.

11.24.3. Methods. Public notice of activities described in Section 11.24. of these regulations shall be given by the following methods:

11.24.3.a. By mailing a copy of the notice to the following persons:

11.24.3.a.1. The applicant;

11.24.3.a.2. Any federal or state agency which the chief knows has issued or is required to issue a RCRA, UIC, PSD, NPDES, or 404 permit for the facility or activity including, but not limited to, the U.S. Environmental protection Agency and the U.S. Army Corps of Engineers;

11.24.3.a.3. Each State agency having authority under State law with responsibility to the construction or operation of such facility;

11.24.3.a.4. Any unit of local government having jurisdiction over the area where the facility is proposed to be located;

11.24.3.a.5. Other appropriate federal or State agencies including, but not limited to, the U.S. Fish and Wildlife Service, the U.S. Forest Service, the West Virginia Department of Culture and History, the West Virginia Department of Health, other governmental authorities including any affected states, and the Advisory Council on Historic Preservation (Suite 430, 1522 K Street, N.W., Washington D.C. 20005); and

11.24.3.a.6. Persons on the mailing list developed by:

11.24.3.a.6.A. Including those who request in writing to be on the list.

11.24.3.a.6.B. Soliciting persons for "area lists" from participants in past permit proceedings in that area.

11.24.3.a.6.C. Notifying the public of the opportunity to be put on the mailing list through periodic publication in the public press and in appropriate publications of the State. The chief may update the mailing list by requesting written indication of continued interest from those listed. The chief may delete from the list the name of any person who fails to respond to such a request.

11.24.3.b. By publishing the public notice, in the form of a Class 1 legal advertisement in a qualified daily or weekly newspaper of general circulation and broadcasting the public notice over local radio stations in the area in which the facility is or is proposed to be located. A qualified daily or weekly newspaper is, for the purpose of Section 11.24 of these regulations, any newspaper which meets the provisions of W. Va. Code §59-3-1(b).

11.24.3.c. By any other method reasonably calculated to give actual notice of the action in question to the persons potentially affected by it, including press releases or any other forum of medium to elicit public participation.

11.24.3.d. Any person otherwise entitled to receive notice under Section 11.24 of these regulations may waive the right to receive notice for any classes and categories of permits.

11.24.4. Personal Notification by Facility Owner or Operator to Individual Residents.

11.24.4.a. Following the submittal of a Part B application which is deemed complete by the chief, and before the public notice of the preparation of a draft permit as required under Section 11.14.1 of these regulations, the facility owner or operator shall serve notice upon the residence of all persons residing within one-quarter mile of the boundaries of the specific hazardous waste management facility.

11.24.4.b. Service of such notice as herein provided shall be made by delivering a copy to the residence of each person upon whom service must be made or by mailing it by registered mail to the last known address of each person or by such other reasonable means as the chief and the owner or operator agree will provide an effective and practical method of notification.

11.24.4.c. Following completion of service of notice as set forth herein, and no later than the date of public notice required in Section 11.24.1 of these regulations, the owner or operator shall certify in writing to the chief that service has been completed, describe the method of service, and provide a copy of the written notice employed to the chief.

11.24.4.d. The personal notice required herein shall be a written notice containing at a minimum:

11.24.4.d.1. The name and address of the permit applicant;

11.24.4.d.2. The name, location, and type of hazardous waste management facility for which the application has been submitted;

11.24.4.d.3. A statement advising the recipients of the notice that a complete application for permit has been submitted; and

11.24.4.d.4. A statement advising the notice recipients that an opportunity for public comment upon the application and draft permit will be made available to them upon completion of division review of the application and that such notice will be published as a legal advertisement in a local newspaper and broadcast over the radio.

11.24.5. Contents.

11.24.5.a. All public notices issued under Section 11.24 of these regulations shall contain the following information:

11.24.5.a.1. Name and address of the office processing the permit action for which notice is being given;

11.24.5.a.2. Name and address of the permittee or permit applicant and, if different, of the facility or activity regulated by the permit;

11.24.5.a.3. A brief description of the business conducted at the facility described in the permit application or the draft permit;

11.24.5.a.4. The name, address, and telephone number

of a person from whom interested persons may obtain further information, including copies of the draft permit or fact sheet, and the application; and

11.24.5.a.5. A brief description of the comment procedures required by Sections 11.25 and 11.26 of these regulations and the time and place of any hearing that will be held, including a statement of procedures to request a hearing unless already scheduled, and other procedures by which the public may participate in the final permit decision.

11.24.5.b. In addition to the general public notice described in Section 11.24.5.a of these regulations, the public notice of a hearing shall contain the following information:

11.24.5.b.1. Reference to the date of previous public notices relating to the permit;

11.24.5.b.2. Date, time, and place of the hearing;

11.24.5.b.3. A brief description of the nature and purpose of the hearing, including the applicable rules and procedures; and

11.24.5.b.4. Name and address of the nearest district office where the file will be available for inspection.

~~11.24.5.c. In addition to the general public notice, all persons identified in Section 11.24.3 of these regulations shall be mailed a copy of the fact sheet, the permit application, and the draft permit.~~

11.25. Public Comment and Request for Public Hearings. During the public comment period provided that any interested person may submit written comments on the draft permit and may request a public hearing if no hearing has already been scheduled. A request for a public hearing shall be in writing and shall state the nature of the issues proposed to be raised in the hearing. All comments shall be considered in making the final decision and shall be answered as provided in Section 11.28 and 11.29 of these regulations.

11.26. Public Hearings.

11.26.1. The chief shall hold a public hearing whenever he finds, on the basis of requests, a significant degree of public interest in a draft permit(s). The chief may also hold a public hearing at his discretion whenever, for instance, such hearing may clarify one or more issues involved in the permit decision.

11.26.2. The chief shall hold a public hearing upon receiving written notice of opposition to a draft permit and a

request for a public hearing within forty-five (45) days of the public notice. Whenever possible the chief shall schedule a hearing under Section 11.26 of these regulations at a location convenient to the nearest population center to the nearest facility. Public notice of the hearing shall be given as specified in Section 11.24 of these regulations.

11.27. (Reserved).

11.28. Reopening of the Public Comment Period.

11.28.1. If any data, information, or arguments submitted during the public comment period appear to raise substantial new questions concerning a permit, the chief may take one or more of the following actions:

11.28.1.a. Prepare a new draft permit, appropriately modified, under Section 11 of these regulations.

11.28.1.b. Prepare a revised fact sheet under Section 11 of these regulations and reopen the comment period.

11.28.1.c. Reopen or extend the comment period under Section 11 of these regulations to give interested persons an opportunity to comment on the information or arguments submitted.

11.28.2. Comments filed during the reopened comment period shall be limited to the substantial new questions that caused its reopening. The public notice under Section 11 of these regulations shall define the scope of the reopening.

11.29. Response to Comments.

11.29.1. At the time that any final permit is issued, the chief shall issue a response to comments. This response shall be in writing and shall:

11.29.1.a. Specify which provisions, if any, of the draft permit have been changed in the final permit and the reasons for change; and

11.29.1.b. Briefly describe and respond to all significant comments on the draft permit raised during the public comment period or any hearing.

11.29.2. The response to comments shall be delivered to any person who commented or any person who requests the same.

11.30. Permits for Land Treatment Demonstrations Using Field Test or Laboratory Analysis.

11.30.1. For the purpose of allowing an owner or operator to

meet the treatment demonstration requirements of Section 8.12.3 of these regulations, the chief may issue a treatment demonstration permit. The permit must contain only those requirements necessary to meet the standards in Section 8.12.3.c of these regulations. The permit may be issued either as a treatment or disposal permit covering only the field test or laboratory analyses or a two-phase facility permit covering the field tests or laboratory analyses and design, construction, operation, and maintenance of the land treatment unit.

11.30.1.a. The chief may issue a two-phase facility permit if he finds that, based on information submitted in Part B of the application, substantial, although incomplete or inconclusive, information already exists upon which to base the issuance of a facility permit.

11.30.1.b. If the chief finds that not enough information exists upon which he can establish permit conditions to attempt to provide for compliance with all of the requirements of Section 8.12 of these regulations, he must issue a treatment demonstration permit covering only the field test or laboratory analyses.

11.30.2. If the chief finds that a phased permit may be issued, he will establish as requirements in the first phase of the facility permit conditions for conducting the field tests or laboratory analyses. These permit conditions will include design and operating parameters including the duration of the tests and analyses and, in the case of field tests, the horizontal and vertical dimensions of the treatment zone; monitoring procedures; post-demonstration clean-up activities; and any other conditions that the chief finds may be necessary under Section 8.12.c.3 of these regulations. The chief will include conditions in the second phase of the facility permit to attempt to meet all Section 8.12 requirements pertaining to unit design, construction, operation, and maintenance. The chief will establish these conditions in the second phase of the permit based upon the substantial but incomplete or inconclusive information contained in the Part B application. The first and second phases of the permit shall become effective as specified by the chief regarding that permit.

11.30.3. When the owner or operator who has been issued a two-phase permit has completed the treatment demonstration, he must submit to the chief a certification, signed by a person authorized to sign a permit application or report under Section 11.7 of these regulations, that the field tests or laboratory analyses have been carried out in accordance with the conditions specified in phase one of the permit for conducting such tests or analyses. The owner or operator must also submit all data collected during the field tests or laboratory analyses within ninety (90) days of completion of those tests or analyses unless the chief approves a later date.

11.30.4. If the chief determines that the results of the

field tests or laboratory analyses meet the requirements of Section 8.12.3 of these regulations, he will modify the second stage of the permit to incorporate any requirements necessary for operation of the facility in compliance with Section 8.12 of these regulations based upon the results of the field tests or laboratory analyses.

11.30.4.a. This permit modification may proceed as a modification under Section 11.20 of these regulations, provided that such a change will not proceed as a modification under Section 11.18.1 of these regulations.

11.30.4.b. If no modifications of the second phase of the permit are necessary, the chief will give notice of his final decision to the permit applicant and to each person who submitted written comments on the phased permit or who requested notice of the final decision on the second phase of the permit then will become effective as specified in 40 C.F.R. §124.15(b).

11.30.4.c. If modifications under Section 11.18.1 of these regulations are necessary, the second phase of the permit will become effective only after those modifications have been made.

11.31. Research, Development, and Demonstration Permits.

11.31.1. The chief may issue a research, development, and demonstration permit for any hazardous waste treatment facility which proposes to utilize an innovative and experimental hazardous waste treatment technology or process for which permit standards for such experimental activity have not been promulgated under these regulations. Any such permit shall include such terms and conditions as will assure protection of human health and the environment, such permits:

11.31.1.a. Shall provide for the construction of such facilities as necessary, and for operation of the facility for not longer than one (1) year unless renewed as provided in Section 11.31.4 of these regulations;

11.31.1.b. Shall provide for the receipt and treatment by the facility of only those types and quantities of hazardous waste which the chief deems necessary for purposes of determining the efficacy and performance capabilities of the technology or process and the effects of such technology or process on human health and the environment; and

11.31.1.c. Shall include such requirements as the chief deems necessary to protect human health and the environment including, but not limited to, requirements regarding monitoring, operation, financial responsibility, closure, and remedial action, and such requirements as the chief deems necessary regarding testing and providing of information to the chief with respect to

the operation of the facility.

11.31.2. For the purpose of expediting review and issuance of permits under this Section the chief may, consistent with protection of human health and the environment, modify or waive the permit application and permit issuance requirements. There may be no modification or waiver of regulations regarding financial responsibility or of procedures regarding public participation.

11.31.3. The chief may order an immediate termination of all operations at the facility at any time he determines that termination is necessary to protect human health and the environment.

11.31.4. Any permit issued under Section 11.31 of these regulations may be renewed not more than three (3) times. Each such renewal shall be for a period of not more than one (1) year.

§47-35-12. Location Standards for Hazardous Waste Management Facilities.

12.1. General. Section 12 of these regulations describes the location descriptions for the construction or placement of new hazardous waste management facilities.

12.1.1. Seismic Considerations.

12.1.1.a. Portions of new facilities where treatment, storage, or disposal of hazardous waste must not be located within 61 meters (200 feet) of a fault which has had displacement in the Holocene, as defined in Section 2 of these regulations.

12.1.2. Karst Terrain.

12.1.2.a. Facilities must not be located on areas of karst terrain, as defined in Section 2 of these regulations.

12.1.2.b. The location restriction of Section 12.1.2.a of these regulations shall be limited to all disposal facilities and to storage or treatment surface impoundments.

12.1.3. Subsurface Mining Areas.

12.1.3.a. Portions of new facilities where hazardous waste management will be conducted must not be located within 305 meters (1,000 feet) of a surface area likely to be influenced by underground mining. The outer limits of the surface area thus influenced are defined as that area beyond the point that may be considered the practicable limit of subsidence as determined by the angle of draw, as defined in Section 2 of these regulations.

12.1.3.b. The location restriction of Section 12.1.3.a of

these regulations shall be limited to all disposal facilities and to storage or treatment surface impoundments.

12.1.4. Critical Recharge Areas.

12.1.4.a. Facilities must not be located in critical recharge areas.

12.1.4.b. As used in Section 12.1.4.a of these regulations, "critical recharge areas" are those surface land areas which serve as recharge areas for those portions of aquifers used for public water supply.

12.1.4.c. The location restriction of Section 12.1.4.a of these regulations shall be limited to those surface land areas which recharge portions of aquifers serving as a public groundwater supply. A public groundwater supply means a groundwater supply system serving at least fifteen (15) service connections or an average of twenty-five (25) or more permanent residents on a year-round basis.

12.1.4.d. The location restriction of section 12.1.4.a of these regulations shall be limited to all disposal facilities and to storage or treatment surface impoundments.

12.1.5. Wetlands.

12.1.5.a. No facility shall be located in wetlands, as defined in Section 2 of these regulations, or in areas that may have an impact on wetlands.

12.1.5.b. The location of facilities that have the potential for influencing wetlands shall be determined by the chief.

12.1.6. Dam-related Flood Hazard Areas.

12.1.6.a. No facility shall be located within the danger release of a dam or any water impounding structure which have not received the necessary permits or approvals from the appropriate state or federal agencies. In no case should facilities be located within the flood pool of any dam.

12.1.7. Floodplains.

12.1.7.a. A new or existing hazardous waste management floodplains facility located in a 100-year floodplain must be designed, constructed, operated, and maintained to prevent washout of any hazardous waste by a 100-year flood unless the owner or operator can demonstrate to the chief that procedures are in effect that will cause the waste to be removed safely before floodwaters can reach the facility to a location where the wastes will not be

vulnerable to floodwaters.

Comment: The location where wastes are moved must be an approved facility which is either permitted by EPA under 40 C.F.R. Part 270, authorized to manage hazardous waste by a state with a hazardous waste management program authorized under 40 C.F.R. Parts 123 and 271, permitted by Section 11 of these regulations, or in interim status under 40 C.F.R. Parts 265 and 270 and Section 10 of the State Act.

12.1.8. Salt Dome Formations, Salt Bed Formations, Underground Mines and Caves. The placement of any hazardous waste in any salt dome formation, salt bed formation, underground mine or cave is prohibited.

Comment: Procedures for demonstrating compliance with each of these standards in Part B of the permit application are specified in Section 11.5.1 of these regulations.

§47-35-13. Financial Requirements.

13.1. The director hereby adopts and incorporates by reference the provisions contained in Subpart H of 40 C.F.R. Parts 264 and 265 as published in the Code of Federal Regulations on the date specified in Section 1.5 of these regulations, with the following modifications:

13.1.1. The adopted provisions contained in 40 C.F.R. §§ 264.143(f), 265.143(e), 264.145(f), 265.145(e), 264.147(f), and 265.147(f) shall be amended by the addition of the following paragraph:

"Notwithstanding the above, the director may disallow the use of this test on the basis of information that the owner or operator has violated or is in violation of any state or federal law or regulation pertaining to environmental protection. The owner or operator must provide alternate financial assurance as specified in this Section within thirty (30) days after notification of the disallowance."

13.1.2. The provisions contained in 40 C.F.R. §§264.149, 265.149, 264.150, and 265.150 shall be deleted.

13.1.3. Wherever the term Administrator or Regional Administrator is used, the term shall have the meaning of the director of the West Virginia Division of Natural Resources.

13.1.4. Wherever the term Environmental Protection Agency or EPA is used, the term shall have the meaning of the West Virginia Division of Natural Resources.

13.1.5. The adopted provisions contained in 40 C.F.R. §§

264.147(b)(4)(iii) and 265.147(b)(4)(iii) shall be amended to read: "All other owners or operators, thirty days after the effective date of these regulations."

§47-35-14. (Reserved).

§47-35-15. Deed and Lease Disclosures; Approval for Land Disturbance.

15.1. Notice in Deed to Property.

15.1.1. The owner of the property on which a hazardous waste management facility is located must record, in accordance with State law, a notation on the deed or lease to the facility property -- or on some other instrument that is normally examined during title search -- that will in perpetuity notify any potential purchaser of the property that:

15.1.1.a. The land has been used to manage hazardous wastes; and

15.1.1.b. Its use is restricted under Section 8.6.7.c of these regulations

15.1.2. Upon actual transfer of property which contains hazardous wastes that have been stored, treated, or disposed of, the previous owner shall notify the chief in writing of such transfer.

15.2. Approval for Land Disposal.

15.2.1. Before the owner or operator or any subsequent owner of the land upon which a hazardous waste disposal facility was located, engages in filling, grading, excavating, building, drilling, or mining on the property, or engaging in any activity which will disturb the closure of said area, the chief must be notified and the owner or operator must obtain authorization prior to commencing such activity.

15.3. Survey Plat. No later than the submission of the certification of closure of each hazardous waste disposal unit, the owner or operator must submit to the local zoning authority, or the authority with jurisdiction over local land use, and to the chief a survey plat indicating the location and dimensions of landfill cells or other hazardous waste disposal units with respect to permanently surveyed benchmarks. This plat must be prepared and certified by a professional land surveyor. The plat filed with the local zoning authority, or the authority with jurisdiction over local land use, must contain a prominently displayed note which states the owner's or operator's obligation to restrict disturbance of the hazardous waste disposal unit in accordance with Section 8.6.7.c of these regulations.

15.4. Post-Closure Notices.

15.4.1. No later than sixty (60) days after certification of closure of each hazardous waste disposal unit, the owner or operator must submit to the local zoning authority, or the authority with jurisdiction over local land use, and to the chief a record of the type, locations, and quantity of hazardous wastes disposed of within each cell or other disposal unit of the facility. For hazardous wastes disposed of before January 12, 1981, the owner or operator must identify the type, location, and quantity of the hazardous wastes to the best of his knowledge and in accordance with any records that he has kept.

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

15.4.2.a. Record, in accordance with State law, a notation on the deed to the facility property or on some other instrument which is normally examined during title search that will in perpetuity notify any potential purchaser of the property that:

15.4.2.a.1. The survey plat and record of the type, location, and quantity of hazardous wastes disposed of in each cell or other hazardous waste disposal unit of the facility required by Sections 15.3 and 15.4.1 of these regulations have been filed with the local zoning authority or the authority with jurisdiction over local land use and with the chief; and

15.4.2.b. Submit a certification, signed by the owner or operator, that he has recorded the notation specified in Section 15.4.2.a of these regulations, including a copy of the document in which the notation has been placed, to the chief.

15.4.3. If the owner or operator or any subsequent owner or operator of the land upon which a hazardous waste disposal unit is located wishes to remove hazardous wastes and hazardous waste residues, the liner (if any), or contaminated soils, he must request a modification to the post-closure permit in accordance with the applicable requirements in Section 11 of these regulations. The owner or operator must demonstrate that the removal of hazardous wastes will satisfy the criteria of Section 8.6.7.c of these regulations. By removing hazardous wastes, the owner or operator may become a generator of hazardous waste and must manage that waste in accordance with all applicable requirements of these regulations. If he is granted a permit modification or otherwise granted approval to conduct such removal activities, the owner or operator may request that the chief approve the addition of a notation to the deed or instrument indicating the removal of the hazardous waste.

15.5. Other Requirements. Nothing contained in Section 15 of these regulations shall relieve any person from complying with the requirements on deed and lease disclosures set forth in Section 20 of the State Act.

§47-35-16. Notices of Changes.

16.1. Notices of Amendments to Federal Law or Regulations. Persons desiring to call to the attention of the director amendments to RCRA or regulations promulgated pursuant thereto, may do so by filing a notice with the director identifying the amendment which has been made to RCRA or regulations promulgated pursuant thereto, and identifying the provision of these regulations which such person believes should be amended.

16.2. Petitions for Waste Exclusions.

16.2.1. Persons desiring to exclude a waste at a particular generating facility from the lists in Section 3.4 of these regulations must petition the director for such an exclusion. The petition shall include:

16.2.1.a. A copy of the petition submitted to the Administrator pursuant to 40 C.F.R. §260.22, including all demonstration information;

16.2.1.b. A copy of the Administrator's approval granting the exclusion pursuant to 40 C.F.R. §260.20(d); and

16.2.1.c. Any other additional information which may be required for the director to evaluate the petition.

16.2.2. Within one hundred and twenty (120) days of the filing of the petition the director shall decide whether to approve or to deny the petition and so advise the petitioner. Where a decision to deny a petition is made, the director shall notify the petitioner of such action in writing, setting forth the reasons therefor.

16.2.3. The director shall not deny a petition to exclude a waste at a particular facility that has been approved by the Administrator unless scientifically supportable reasons for such denial are advanced which had not been presented to the Administrator.

16.3. Variances from Classification as a Waste.

16.3.1. General. In accordance with the standards and criteria in Section 16.3.2 of these regulations and the procedures in Section 16.3.3 of these regulations, the director may determine on a case-by-case basis that the following recycled materials are not wastes:

16.3.1.a. Materials that are accumulated speculatively without sufficient amounts being recycled (as defined in Section 3.1.1.c.8 of these regulations);

16.3.1.b. Materials that are reclaimed and then reused within the original primary production process in which they were generated; or

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

16.3.2. Standards and Criteria.

16.3.2.a. The director may grant requests for a variance from classification as a waste for those materials that are accumulated speculatively without sufficient amounts being recycled if the applicant demonstrates that sufficient amounts of the material will be recycled or transferred for recycling in the following calendar year. A variance granted under Section 16 of these regulations is valid only from the date of approval through the following calendar year but may be renewed on an annual basis by filing a new application for such variance. The director will base the decision to grant or deny a variance under this subsection on the following standards and criteria:

16.3.2.a.1. The manner in which the material is expected to be recycled, and whether this expected disposition is likely to occur (e.g., because of past practice, market factors, the nature of the material, or contractual arrangements for recycling);

16.3.2.a.2. The reason that the applicant has accumulated the material for one or more years without recycling seventy-five percent (75%) of the volume accumulated at the beginning of the calendar year;

16.3.2.a.3. The quantity of material already accumulated and the quantity expected to be generated and accumulated before the material is recycled;

16.3.2.a.4. The extent to which the material is handled to minimize loss; and

16.3.2.a.5. Other relevant factors.

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

16.3.2.b.1. How economically viable the production process would be if it were to use virgin materials, rather than reclaimed materials;

16.3.2.b.2. The prevalence of the practice on an industry-wide basis;

16.3.2.b.3. The extent to which the material is handled before reclamation to minimize loss;

16.3.2.b.4. The time periods between generating the material and its reclamation and between reclamation and return to the original primary production process;

16.3.2.b.5. The location of the reclamation operation in relation to the production process;

16.3.2.b.6. Whether the reclaimed material is used for the purpose for which it was originally produced when it is returned to the original process and whether it is returned to the process in substantially its original form;

16.3.2.b.7. Whether the person who generates the material also reclaims it; and

16.3.2.b.8. Other relevant factors.

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

16.3.2.c.1. The degree of processing the material has undergone and the degree of further processing that is required to complete recovery of the material;

16.3.2.c.2. The value of the material after it is reclaimed;

16.3.2.c.3. The degree to which the reclaimed material has been like an analogous raw material;

16.3.2.c.4. The extent to which an end market for the reclaimed material is guaranteed;

16.3.2.c.5. The extent to which the reclaimed material is handled to minimize loss; and

16.3.2.c.6. Other relevant factors.

16.3.3. Variance Procedures.

16.3.3.a. An applicant for a variance from classification as a waste under Section 16 of these regulations must apply to the director. The application must address the applicable criteria or standards contained in Section 16.3.2 of these regulations.

16.3.3.b. The director will evaluate the application and issue a public notice of the tentative determination to grant or deny a variance from classification of a waste. Notification of this tentative determination will be provided in the manner prescribed in Section 11.24.3.b of these regulations. The director will accept public comment on the tentative variance determination for thirty (30) days, and may also hold a public hearing upon request or at his discretion. The director will issue a final decision after receipt of public comments and the hearing (if any). Such final decision may not be appealed to the State Water Resources Board.

TABLE I

Potential Waste Materials

	Use constituting disposal <u>(1)</u>	Energy recovery - fuel <u>(2)</u>	Reclamation <u>(3)</u>	Speculative accumulation <u>(4)</u>
Spent materials	*	*	*	*
Sludges listed in Sections 3.4.2 and 3.4.3 of these regulations	*	*	*	*
Sludges exhibiting a characteristic of hazardous waste	*	*		*
By-products listed in Sections 3.4.2 and 3.4.3 of these regulations	*	*	*	*
By-products exhibit- ing a characteristic of hazardous waste	*	*		*
Commercial chemical products listed in Section 3.4.4 of these regulations	*	*		
Scrap metal	*	*	*	*

NOTE: The terms "spent materials", "sludges", "by-products", and "scrap metal" are defined in Section 2 of these regulations.

TABLE II

Maximum Concentration of Contaminants
for Characteristic of EP Toxicity

EPA Hazardous Waste Number	Contaminant	Maximum Concentration (Milligrams per liter)

The following table has been superseded by the table adoption of the Toxicity Characteristic Leaching Procedure. However, it will remain in the text for the convenience of the reader.

D004	Arsenic	5.0
D005	Barium	100.0
D006	Cadmium	1.0
D007	Chromium	5.0
D008	Lead	5.0
D009	Mercury	0.2
D010	Selenium	1.0
D011	Silver	5.0
D012	Endrin (1,2,3,4,10,10-Hexachloro-1,7-epoxy-1,4,4a,5,6,7,8,8a-octahydro-1,4-endo, endo-5,8-dimethanonaphthalene)	0.02
D013	Lindane (1,2,3,4,5,6-Hexachloro-cyclohexane, gamma isomer)	0.4
D014	Methoxychlor (1,1,1-Trichloro-2,2-bis(p-methoxyphenyl)ethane)	10.0
D015	Toxaphene (Technical chlorinated camphene, 67-69% chlorine)	0.5
D016	2,4-D (2,4-Dichlorophenoxyacetic acid)	10.0
D017	2,4,5-TP (Silvex) (2,4,5-Trichlorophenoxypropionic acid)	1.0

Table II. -- Maximum Concentration of Contaminants for the Toxicity Characteristic

EPA No. ¹	HW	Contaminant	CAS No. ²	Regulatory Level (mg/L)
D004		Arsenic	7440-38-2	5.0
D005		Barium	7440-39-3	100.0
D018		Benzene	71-43-2	0.5
D006		Cadmium	7440-43-9	1.0
D019		Carbon tetrachloride	56-23-5	0.5
D020		Chlordane	57-74-9	0.03
D021		Chlorobenzene	108-90-7	100.0
D022		Chloroform	67-66-3	6.0
D007		Chromium	7440-47-3	5.0
D023		o-Cresol	95-48-7	⁴ 200.0
D024		m-Cresol	108-39-4	⁴ 200.0
D025		p-Cresol	106-44-5	⁴ 200.0
D026		Cresol		⁴ 200.0
D016		2,4-D	94-75-7	10.0
D027		1,4-Dichlorobenzene	106-46-7	7.5
D028		1,2-Dichloroethane	107-06-2	0.5
D029		1,1-Dichloroethylene	75-35-4	0.7
D030		2,4-Dinitrotoluene	121-14-2	³ 0.13
D012		Endrin	72-20-8	0.02
D031		Heptachlor (and its epoxide)	76-44-8	0.008
D032		Hexachlorobenzene	118-74-1	³ 0.13

D033	Hexachlorobutadiene	87-68-3	0.5
D034	Hexachloroethane	67-72-1	3.0
D008	Lead	7439-92-1	5.0
D013	Lindane	58-89-9	0.4
D009	Mercury	7439-97-6	0.2
D014	Methoxychlor	72-43-5	10.0
D035	Methyl ethyl ketone	78-93-3	200.0
D036	Nitrobenzene	98-95-3	2.0
D037	Pentachlorophenol	87-86-5	100.0
D038	Pyridine	110-86-1	³ 5.0
D010	Selenium	7782-49-2	1.0
D011	Silver	7440-22-4	5.0
D039	Tetrachloroethylene	127-18-4	0.7
D015	Toxaphene	8001-35-2	0.5
D040	Trichloroethylene	79-01-6	0.5
D041	2,4,5-Trichlorophenol	95-95-4	400.0
D042	2,4,6-Trichlorophenol	88-06-2	2.0
D017	2,4,5-TP (Silvex)	93-72-1	1.0
D043	Vinyl chloride	75-01-4	0.2

¹ Hazardous waste number.

² Chemical abstracts service number.

³ Quantitation limit is greater than the calculated regulatory level. The quantitation limit therefore becomes the regulatory level.

⁴ If o-, m-, and p-Cresol concentrations cannot be differentiated, the total cresol (D026) concentration is used. The regulatory level of total cresol is 200 mg/l.

Table III. -- Hazardous Waste from Nonspecific Sources.

Indus- try and E P A hazard- o u s waste No.	Hazardous waste	Hazard code

Generic:

F001	The following spent halogenated solvents used in degreasing: Tetrachloroethylene, trichloroethylene, methylene chloride, 1,1,1-trichloroethane, carbon tetrachloride, and chlorinated fluorocarbons; all spent solvent mixtures/blends used in degreasing containing, before use, a total of ten percent or more (by volume) of one or more of the above halogenated solvents or those solvents listed in F002, F004, and F005; and still bottoms from the recovery of these spent solvents and spent solvent mixtures	(T)
F002	The following spent halogenated solvents: Tetrachloroethylene, methylene chloride, trichloroethylene, 1,1,1-trichloroethane, c h l o r o b e n z e n e , 1,1,2-trichloro-1,2,2-trifluoroethane, ortho-dichlorobenzene, trichlorofluoromethane, and 1,1,2-trichloroethane; all spent solvent mixtures/blends containing, before use, a total of ten percent or more (by volume) of one or more of the above halogenated solvents or those listed in F001, F004, or F005; and still bottoms from the recovery of these spent solvents and spent solvent mixtures	(T)
F003	The following spent non-halogenated solvents: Xylene, acetone, ethyl acetate, ethyl benzene, ethyl ether, methyl isobutyl ketone, n-butyl alcohol, cyclohexanone, and methanol; all spent solvent mixtures/blends containing, before use, only the above spent non-halogenated solvents; and all spent solvent mixtures/blends containing, before use, one or more of the above non-halogenated solvents, and, a total of ten percent or more (by volume) of one or more of those solvents listed in F001, F002, F004, and F005; and	(I)*

still bottoms from the recovery of these spent solvents and spent solvent mixtures

- F004 The following spent non-halogenated solvents: (T)
Cresols and cresylic acid, and nitrobenzene;
all spent solvent mixtures/blends containing,
before use, a total of ten percent or more (by
volume) of one or more of the above
non-halogenated solvents or those solvents
listed in F001, F002, and F005; and still
bottoms from the recovery of these spent
solvents and spent solvent mixtures
- F005 The following spent non-halogenated solvents: (I,T)
Toluene, methyl ethyl ketone, carbon
disulfide, isobutanol, pyridine, benzene,
2-ethoxyethanol, and 2-nitropropane; all spent
solvent mixtures/blends containing, before
use, a total of ten percent or more (by
volume) of one or more of the above
non-halogenated solvents or those solvents
listed in F001, F002, or F004; and still
bottoms from the recovery of these spent
solvents and spent solvent mixtures
- F006 Wastewater treatment sludges from (T)
electroplating operations except from the
following processes: (1) Sulfuric acid
anodizing of aluminum; (2) tin plating on
carbon steel; (3) zinc plating (segregated
basis) on carbon steel; (4) aluminum or
zinc-aluminum plating on carbon steel; (5)
cleaning/stripping associated with tin, zinc
and aluminum plating on carbon steel; and (6)
chemical etching and milling of aluminum
- F007 Spent cyanide plating bath solutions from (R, T)
electroplating operations
- F008 Plating bath residues from the bottom of (R, T)
plating baths from electroplating operations
where cyanides are used in the process
- F009 Spent stripping and cleaning bath solutions (R, T)
from electroplating operations where cyanides
are used in the process
- F010 Quenching bath residues from oil baths from (R, T)
metal heat treating operations where cyanides
are used in the process
- F011 Spent cyanide solutions from salt bath pot (R, T)

cleaning from metal heat treating operations

- F012 Quenching waste water treatment sludges from metal heat treating operations where cyanides are used in the process (T)
- F019 Wastewater treatment sludges from the chemical conversion coating of aluminum except from zirconium phosphating in aluminum can washing when such phosphating is an exclusive conversion coating process (T)
- F020 Wastes (except wastewater and spent carbon from hydrogen chloride purification) from the production or manufacturing use (as a reactant, chemical intermediate, or component in a formulating process) of tri- or tetrachlorophenol, or of intermediates used to produce their pesticide derivatives. (This listing does not include wastes from the production of Hexachlorophene from highly purified 2,4,5-trichlorophenol.) (H)
- F021 Wastes (except wastewater and spent carbon from hydrogen chloride purification) from the production or manufacturing use (as a reactant, chemical intermediate, or component in a formulating process) of pentachlorophenol, or of intermediates used to produce its derivatives (H)
- F022 Wastes (except wastewater and spent carbon from hydrogen chloride purification) from the manufacturing use (as a reactant, chemical intermediate, or component in a formulating process) of tetra-, penta-, or hexachlorobenzenes under alkaline conditions (H)
- F023 Wastes (except wastewater and spent carbon from hydrogen chloride purification) from the production of materials on equipment previously used for the production or manufacturing use (as a reactant, chemical intermediate, or component in a formulating process) of tri- and tetrachlorophenols. (This listing does not include wastes from equipment used only for the production or use of Hexachlorophene from highly purified 2,4,5-trichlorophenol.) (H)
- F024 Process wastes, including but not limited to, distillation residues, heavy ends, tars, and (T)

reactor clean-out wastes, from the production of certain chlorinated aliphatic hydrocarbons by free radical catalyzed processes. These chlorinated aliphatic hydrocarbons are those having carbon chain lengths ranging from one to and including five, with varying amounts and positions of chlorine substitution. (This listing does not include wastewaters, wastewater treatment sludges, spent catalysts, and wastes listed in § 261.31 or § 261.32.)

- F025 Condensed light ends, spent filters and filter aids, and spent desiccant wastes from the production of certain chlorinated aliphatic hydrocarbons, by free radical catalyzed processes. These chlorinated aliphatic hydrocarbons are those having carbon chain lengths ranging from one to and including five, with varying amounts and positions of chlorine substitution (T)
- F026 Wastes (except wastewater and spent carbon from hydrogen chloride purification) from the production of materials on equipment previously used for the manufacturing use (as a reactant, chemical intermediate, or component in a formulating process) of tetra-, penta-, or hexachlorobenzene under alkaline conditions (H)
- F027 Discarded unused formulations containing tri-, tetra-, or pentachlorophenol or discarded unused formulations containing compounds derived from these chlorophenols. (This listing does not include formulations containing Hexachlorophene synthesized from prepurified 2,4,5-trichlorophenol as the sole component.) (H)
- F028 Residues resulting from the incineration or thermal treatment of soil contaminated with EPA Hazardous Waste Nos. F020, F021, F022, F023, F026, and F027 (T)
- F039 Leachate resulting from the treatment, storage, or disposal of wastes classified by more than one waste code under Subpart D, or from a mixture of wastes classified under Subparts C and D of this part. (Leachate resulting from the management of one or more of the following EPA Hazardous Wastes and no (T).

other hazardous wastes retains its hazardous
waste code(s): F020, F021, F022, F023, F026,
F027, and/or F028.)

FOOTNOTE: *(I,T) should be used to specify mixtures containing ignitable and toxic constituents.

Table IV -- Hazardous Waste from Specific Sources

Industry and EPA hazardous waste No.	Hazardous waste	Hazard code
Wood preservation:		
K001	Bottom sediment sludge from the treatment of wastewaters from wood preserving processes that use creosote and/or pentachlorophenol	(T)
Inorganic pigments:		
K002	Wastewater treatment sludge from the production of chrome yellow and orange pigments	(T)
K003	Wastewater treatment sludge from the production of molybdate orange pigments	(T)
K004	Wastewater treatment sludge from the production of zinc yellow pigments	(T)
K005	Wastewater treatment sludge from the production of chrome green pigments	(T)
K006	Wastewater treatment sludge from the production of chrome oxide green pigments (anhydrous and hydrated)	(T)
K007	Wastewater treatment sludge from the production of iron blue pigments	(T)
K008	Oven residue from the production of chrome oxide green pigments	(T)
Organic chemicals:		
K009	Distillation bottoms from the production of acetaldehyde from ethylene	(T)
K010	Distillation side cuts from the production of acetaldehyde from ethylene	(T)

K011	Bottom stream from the wastewater stripper in the production of acrylonitrile	(R, T)
K013	Bottom stream from the acetonitrile column in the production of acrylonitrile	(R, T)
K014	Bottoms from the acetonitrile purification column in the production of acrylonitrile	(T)
K015	Still bottoms from the distillation of benzyl chloride	(T)
K016	Heavy ends or distillation residues from the production of carbon tetrachloride	(T)
K017	Heavy ends (still bottoms) from the purification column in the production of epichlorohydrin	(T)
K018	Heavy ends from the fractionation column in ethyl chloride production	(T)
K019	Heavy ends from the distillation of ethylene dichloride in ethylene dichloride production	(T)
K020	Heavy ends from the distillation of vinyl chloride in vinyl chloride monomer production	(T)
K021	Aqueous spent antimony catalyst waste from fluoromethanes production	(T)
K022	Distillation bottom tars from the production of phenol/acetone from cumene	(T)
K023	Distillation light ends from the production of phthalic anhydride from naphthalene	(T)
K024	Distillation bottoms from the production of phthalic anhydride from naphthalene	(T)
K093	Distillation light ends from the production of phthalic anhydride from ortho-xylene	(T)
K094	Distillation bottoms from the production of phthalic anhydride from ortho-xylene	(T)
K025	Distillation bottoms from the production of nitrobenzene by the nitration of benzene	(T)
K026	Stripping still tails from the production of methy ethyl pyridines	(T)

K027	Centrifuge and distillation residues from toluene diisocyanate production	(R, T)
K028	Spent catalyst from the hydrochlorinator reactor in the production of 1,1,1-trichloroethane	(T)
K029	Waste from the product steam stripper in the production of 1,1,1-trichloroethane	(T)
K095	Distillation bottoms from the production of 1,1,1-trichloroethane	(T)
K096	Heavy ends from the heavy ends column from the production of 1,1,1-trichloroethane	(T)
K030	Column bottoms or heavy ends from the combined production of trichloroethylene and perchloroethylene	(T)
K083	Distillation bottoms from aniline production	(T)
K103	Process residues from aniline extraction from the production of aniline	(T)
K104	Combined wastewater streams generated from nitrobenzene/aniline production	(T)
K085	Distillation or fractionation column bottoms from the production of chlorobenzenes	(T)
K105	Separated aqueous stream from the reactor product washing step in the production of chlorobenzenes	(T)
<u>K107</u>	<u>Column bottoms from product separation from the production of 1,1-dimethyl-hydrazine (UDMH) from carboxylic acid hydrazines</u>	<u>(C,T)</u>
<u>K108</u>	<u>Condensed column overheads from product separation and condensed reactor vent gases from the production of 1,1-dimethylhydrazine (UDMH) from carboxylic acid hydrazides</u>	<u>(I,T)</u>
<u>K109</u>	<u>Spent filter cartridges from product purification from the production of 1,1-dimethylhydrazine (UDMH) from carboxylic acid hydrazides</u>	<u>(T)</u>

K110	<u>Condensed column overheads from intermediate separation from the production of 1,1-dimethylhydrazine (UDMH) from carboxylic acid hydrazides</u>	(T)
K111	Product washwaters from the production of dinitrotoluene via nitration of toluene	(C,T)
K112	Reaction by-product water from the drying column in the production of toluenediamine via hydrogenation of dinitrotoluene	(T)
K113	Condensed liquid light ends from the purification of toluenediamine in the production of toluenediamine via hydrogenation of dinitrotoluene	(T)
K114	Vicinals from the purification of toluenediamine in the production of toluenediamine via hydrogenation of dinitrotoluene	(T)
K115	Heavy ends from the purification of toluenediamine in the production of toluenediamine via hydrogenation of dinitrotoluene	(T)
K116	Organic condensate from the solvent recovery column in the production of toluene diisocyanate via phosgenation of toluenediamine	(T)
K117	Wastewater from the reactor vent gas scrubber in the production of ethylene dibromide via bromination of ethene	(T)
K118	Spent adsorbent solids from purification of ethylene dibromide in the production of ethylene dibromide via bromination of ethene	(T)
K136	Still bottoms from the purification of ethylene dibromide in the production of ethylene dibromide via bromination of ethene	(T)

Inorganic chemicals

:

K071	Brine purification muds from the mercury cell process in chlorine production, where separately prepurified brine is not used	(T)
K073	Chlorinated hydrocarbon waste from the	(T)

purification step of the diaphragm cell process using graphite anodes in chlorine production

K106 Wastewater treatment sludge from the mercury cell process in chlorine production (T)

Pesticides:

K031 By-product salts generated in the production of MSMA and cacodylic acid (T)

K032 Wastewater treatment sludge from the production of chlordane (T)

K033 Wastewater and scrub water from the chlorination of cyclopentadiene in the production of chlordane (T)

K034 Filter solids from the filtration of hexachlorocyclopentadiene in the production of chlordane (T)

K097 Vacuum stripper discharge from the chlordane chlorinator in the production of chlordane (T)

K035 Wastewater treatment sludges generated in the production of creosote (T)

K036 Still bottoms from toluene reclamation distillation in the production of disulfoton (T)

K037 Wastewater treatment sludges from the production of disulfoton (T)

K038 Wastewater from the washing and stripping of phorate production (T)

K039 Filter cake from the filtration of diethylphosphorodithioic acid in the production of phorate (T)

K040 Wastewater treatment sludge from the production of phorate (T)

K041 Wastewater treatment sludge from the production of toxaphene (T)

K098 Untreated process wastewater from the production of toxaphene (T)

K042 Heavy ends or distillation residues from the (T)

distillation of tetrachlorobenzene in the production of 2,4,5-T

K043	2,6-Dichlorophenol waste from the production of 2,4-D	(T)
K099	Untreated wastewater from the production of 2,4-D	(T)
K123	Process wastewater (including supernates, filtrates, and washwaters) from the production of ethylenebisdithiocarbamic acid and its salt	(T)
K124	Reactor vent scrubber water from the production of ethylenebisdithiocarbamic acid and its salts	(C, T)
K125	Filtration, evaporation, and centrifugation solids from the production of ethylenebisdithiocarbamic acid and its salts	(T)
K126	Baghouse dust and floor sweepings in milling and packaging operations from the production or formulation of ethylenebisdithiocarbamic acid and its salts	(T)
<u>K131</u>	<u>Wastewater from the reactor and spent sulfuric acid from the acid dryer from the production of methyl bromide</u>	<u>(C,T)</u>
<u>K132</u>	<u>Spent absorbent and wastewater separator solids from the production of methyl bromide</u>	<u>(T)</u>

Explosive
s:

K044	Wastewater treatment sludges from the manufacturing and processing of explosives	(R)
K045	Spent carbon from the treatment of wastewater containing explosives	(R)
K046	Wastewater treatment sludges from the manufacturing, formulation and loading of lead-based initiating compounds	(T)
K047	Pink/red water from TNT operations	(R)

Petroleum
refining:

K048	Dissolved air flotation (DAF) float from the petroleum refining industry	(T)

K049	Slop oil emulsion solids from the petroleum refining industry	(T)
K050	Heat exchanger bundle cleaning sludge from the petroleum refining industry	(T)
K051	API separator sludge from the petroleum refining industry	(T)
K052	Tank bottoms (leaded) from the petroleum refining industry	(T)
Iron and steel:		
K061	Emission control dust/sludge from the primary production of steel in electric furnaces	(T)
K062	Spent pickle liquor generated by steel finishing operations of facilities within the iron and steel industry (SIC Codes 331 and 332)	(C,T)
Primary copper:		
K064	Acid plant blowdown slurry/sludge resulting from the thickening of blowdown slurry from primary copper production	(T)
Primary lead:		
K065	Surface impoundment solids contained in and dredged from surface impoundments at primary lead smelting facilities	(T)
Primary zinc:		
K066	Sludge from treatment of process wastewater and/or acid plant blowdown from primary zinc production	(T)
Primary aluminum:		
K088	Spent potliners from primary aluminum reduction	(T)
Ferroalloys:		
K090	Emission control dust or sludge from ferrochromiumsilicon production	(T)
K091	Emission control dust or sludge from ferrochromium production	(T)

Secondary
lead:

K069 Emission control dust/sludge from secondary (T)
lead smelting

K100 Waste leaching solution from acid leaching of (T)
emission control dust/sludge from secondary
lead smelting

Veterinar
y
pharmaceu
ticals:

K084 Wastewater treatment sludges generated during (T)
the production of veterinary pharmaceuticals
from arsenic or organo-arsenic compounds

K101 Distillation tar residues from the (T)
distillation of aniline-based compounds in the
production of veterinary pharmaceuticals from
arsenic or organo-arsenic compounds

K102 Residue from the use of activated carbon for (T)
decolorization in the production of veterinary
pharmaceuticals from arsenic or organo-arsenic
compounds

I n k
formulati
on:

K086 Solvent washes and sludges, caustic washes and (T)
sludges, or water washes and sludges from
cleaning tubs and equipment used in the
formulation of ink from pigments, driers,
soaps, and stabilizers containing chromium and
lead

Coking:

K060 Ammonia still lime sludge from coking (T)
operations

K087 Decanter tank tar sludge from coking (T)
operations

TABLE V

Acute Hazardous Wastes (H)

EPA Haz. Waste Number	Chemical Abstracts Number	Substance
P023	107-20-0	Acetaldehyde, chloro-
P002	591-08-2	Acetamide, N-(aminothioxomethyl)-
P057	640-19-7	Acetamide, 2-fluoro-
P058	62-74-8	Acetic acid, fluoro-, sodium salt
P002	591-08-2	1-Acetyl-2-thiourea
P003	107-02-8	Acrolein
P070	116-06-3	Aldicarb
P004	309-00-2	Aldrin
P005	107-18-6	Allyl alcohol
P006	20859-73-8	Aluminum phosphide (R,T)
P007	2763-96-4	5-(Aminomethyl)-3-isoxazolol
P008	504-24-5	4-Aminopyridine
P009	131-74-8	Ammonium picrate (R)
P119	7803-55-6	Ammonium vanadate
P099	506-61-6	Argentate(1-), bis(cyano-C)-, potassium
P010	7778-39-4	Arsenic acid
P011	1303-28-2	Arsenic oxide
P012	1327-53-3	Arsenic oxide
P011	1303-28-2	Arsenic Pentoxide
P012	1327-53-3	Arsenic trioxide
P038	692-42-2	Arsine, diethyl
P036	696-28-6	Arsonous dichloride, phenyl-
P054	151-56-4	Aziridine
P067	75-55-8	Aziridine, 2-methyl-
P013	542-62-1	Barium cyanide
P024	106-47-8	Benzenamine, 4-chloro-
P077	100-01-6	Benzenamine, 4-nitro-
P028	100-44-7	Benzene, (chloromethyl)-
P042	51-43-4	1,2-Benzenediol, 4-(1-hydroxy-2-(methylamino)ethyl)- (R)
P046	122-09-8	Benzeneethanamine, alpha,alpha-dimethyl-
P014	108-98-5	Benzenethiol
P001	81-81-2*	2H-1-Benzopyran-2-one, 4-hydroxy-3-(3-oxo-1-phenylbutyl)-, and salts, when present at concentrations greater than 0.3%
P028	100-44-7	Benzyl chloride
P015	7440-41-7	Beryllium
P017	598-31-2	Bromoacetone
P018	357-57-3	Brucine
P045	39196-18-4	2-Butanone,3,3-dimethyl-1-(methylthio)-, O-((methylamino)carbonyl)oxime

* CAS Number given for parent compound only.

TABLE V

Acute Hazardous Wastes (H)

EPA Haz. Waste Number	Chemical Abstracts Number	Substance
P021	592-01-8	Calcium cyanide
P022	75-15-0	Carbon disulfide
P095	75-44-5	Carbonic dichloride
P023	107-20-0	Chloroacetaldehyde
P024	106-47-8	p-Chloroaniline
P026	5344-82-1	1-(o-Chlorophenyl)thiourea
P027	542-76-7	3-Chloropropionitrile
P029	544-92-3	Copper cyanide
P030	-----	Cyanides (soluble cyanide salts), not otherwise specified
P031	460-19-5	Cyanogen
P033	506-77-4	Cyanogen Chloride
P034	131-89-5	2-Cyclohexyl-4,6-dinitrophenol
P016	542-88-1	Dichloromethyl ether
P036	696-28-6	Dichlorophenylarsine
P037	60-57-1	Dieldrin
P038	692-42-2	Diethylarsine
P041	311-45-5	Diethyl-p-nitrophenyl phosphate
P040	297-97-2	O,O-Diethyl O-pyrazinyl phosphorothioate
P043	55-91-4	Diisopropylfluorophosphate (DFP)
P004	309-00-2	1,4,5,8-Dimethanonaphthalene 1,2,3,4,10,10-hexachloro- 1,4,4a,5,8,8a-hexahydro-, (1alpha,4alpha,4abeta,5alpha, 8alpha,8abeta)-
P060	465-73-6	1,4,5,8-Dimethanonaphthalene, 1,2,3,4,10,10-hexachloro- 1,4,4a,5,8,8a-hexahydro-, (1alpha,4alpha,4abeta,5alpha, 8alpha,8abeta)-
P037	60-57-1	2,7:3,6-Dimethanonaphth(2,3-b) oxirene 3,4,5,6,9,9-hexachloro- 1a,2,2a,3,6,6a,7,7a-octahydro-, (1aalpha,2beta,2aalpha,3beta, 6beta,6aalpha,7beta,7aalpha)-
P051	72-20-8	2,7:3,6-Dimethanonaphth(2,3-b) oxirene 3,4,5,6,9,9-hexachloro- 1a,2,2a,3,6,6a,7,7a-octahydro-, (1aalpha,2beta,2aalpha,3beta, 6beta,6aalpha,7beta,7aalpha)-, and metabolites.

* CAS Number given for parent compound only.

TABLE V
Acute Hazardous Wastes (H)

EPA Haz. Waste Number	Chemical Abstracts Number	Substance
P044	60-51-5	Dimethoate
P046	122-09-8	alpha,alpha-Dimethylphenethylamine
P047	534-52-1*	4,6-Dinitro-o-cresol, and salts
P048	51-28-5	2,4-Dinitrophenol
P020	88-85-7	Dinoseb
P085	152-16-9	Diphosphoramidate, octamethyl-
P111	107-49-3	Diphosphoric acid, tetraethyl ester
P039	298-04-5	Disulfoton
P049	541-53-7	Dithiobiuret
P050	115-29-7	Endosulfan
P088	145-73-3	Endothall
P051	72-20-8	Endrin
P051	72-20-8	Endrin & metabolites
P042	51-43-4	Epinephrine
P031	460-19-5	Ethanedinitrile
P066	16752-77-5	Ethanimidothioic acid, N-(((methylamino)- carbonyl)oxy)-, methyl ester
P101	107-12-0	Ethyl cyanide
P054	151-56-4	Ethyleneimine
P097	52-85-7	Famphur
P056	7782-41-4	Fluorine
P057	640-19-7	Fluoroacetamide
P058	62-74-8	Fluoroacetic acid, sodium salt
P065	628-86-4	Fulminic acid, mercury(2+) salt (R,T)
P059	76-44-8	Heptachlor
P062	757-58-4	Hexaethyltetraphosphate
P116	79-19-6	Hydrazinecarbothioamide
P068	60-34-4	Hydrazine, methyl-
P063	74-90-8	Hydrocyanic acid
P063	74-90-8	Hydrogen cyanide
P096	7803-51-2	Hydrogen phosphide
P060	465-73-6	Isodrin
P007	2763-96-4	3(2H)-Isoxazolone, 5-(aminomethyl)-
P092	62-38-4	Mercury, (acetato-O)phenyl-
P065	628-86-4	Mercury fulminate (R,T)
P082	62-75-9	Methanamine, N-methyl-N-nitroso-
P064	624-83-9	Methane, isocyanato-
P016	542-88-1	Methane, oxybis(chloro-
P122	509-14-8	Methane, tetranitro- (R)
P118	75-70-7	Methanethiol, trichloro-
P050	115-29-7	6,9-Methano-2,4,3-benzodioxathiepen

* CAS Number given for parent compound only.

TABLE V

Acute Hazardous Wastes (H)

EPA Haz. Waste Number	Chemical Abstracts Number	Substance
P059	76-44-8	6,7,8,9,10,10-hexachloro- 1,5,5a,6,9,9a-hexahydro-, 3-oxide 4,7-methano-1H-indene, 1,4,5,6,7,8,8-heptachloro- 3a,4,7,7a-tetrahydro-
P066	16752-77-5	Methomyl
P068	60-34-4	Methyl hydrazine
P064	624-83-9	Methyl isocyanate
P069	75-86-5	2-Methyl lactonitrile
P071	298-00-0	Methyl parathion
P072	86-88-4	alpha-Naphthylthiourea
P073	13463-39-3	Nickel Carbonyl
P074	557-19-7	Nickel cyanide
P075	54-11-5*	Nicotine, and salts
P076	10102-43-9	Nitric oxide (Nitrogen oxide)
P077	100-01-6	p-Nitroaniline
P078	10102-44-0	Nitrogen dioxide
P076	10102-43-9	Nitrogen oxide NO
P078	10102-44-0	Nitrogen oxide NO ₂
P081	55-63-0	Nitroglycerine (R)
P082	62-75-9	N-Nitrosodimethylamine
P084	4549-40-0	N-Nitrosomethylvinylamine
P085	152-16-9	Octamethylpyrophosphoramide
P087	20816-12-0	Osmium oxide
P087	20816-12-0	Osmium tetroxide
P088	145-73-3	7-Oxabicyclo(2.2.1)heptane- 2,3-dicarboxylic acid
P089	56-38-2	Parathion
P034	131-89-5	Phenol, 2-cyclohexyl-4,6-dinitro-
P048	51-28-5	Phenol, 2,4-dinitro-
P047	534-52-1*	Phenol, 2-methyl-4,6-dinitro-, and salts
P020	88-85-7	Phenol, 2-(1-methylpropyl)-4,6-dinitro-
P009	131-74-8	Phenol, 2,4,6-trinitro-, ammonium salt (R)
P092	62-38-4	Phenylmercury acetate
P093	103-85-5	Phenylthiourea
P094	298-02-2	Phorate
P095	75-44-5	Phosgene
P096	7803-51-2	Phosphine
P041	311-45-5	Phosphoric acid, diethyl 4-nitrophenyl ester
P039	298-04-4	Phosphorodithioic acid, O,O-diethyl S-(2-(ethylthio)ethyl) ester

* CAS Number given for parent compound only.

TABLE V

Acute Hazardous Wastes (H)

EPA Haz. Waste Number	Chemical Abstracts Number	Substance
P094	298-02-2	Phosphorodithioic acid, O,O-diethyl S-((ethylthio)methyl) ester
P044	60-51-5	Phosphorodithioic acid, o,o-dimethyl S-(2-(methylamino)-2-oxoethyl) ester
P043	55-91-4	Phosphorofluoric acid, bis(1-methylethyl) ester
P089	56-38-2	Phosphorothioic acid, O,O-diethyl O-(4-nitrophenyl) ester
P040	297-97-2	Phosphorothioic acid, O,O-diethyl O-pyrazinyl ester
P097	52-85-7	Phosphorothioic acid, O-(4-((dimethylamino)- sulfonyl)phenyl) O,O-dimethyl ester
P071	298-00-0	Phosphorothioic acid, O,O-dimethyl O-(4-nitrophenyl) ester
P110	78-00-2	Plumbane, tetraethyl-
P098	151-50-8	Potassium cyanide K(Cn)
P099	506-61-6	Potassium silver cyanide
P070	116-06-3	Propanal, 2-methyl-2-(methylthio)-, O-((methylamino)carbonyl)oxime
P101	107-12-0	Propanenitrile
P027	542-76-7	Propanenitrile, 3-chloro-
P069	75-86-5	Propanenitrile, 2-hydroxy-2-methyl-
P081	55-63-0	1,2,3-Propanetriol, trinitrate (R)
P017	598-31-2	2-Propanone, 1-bromo-
P102	107-19-7	Propargyl alcohol
P003	107-02-8	2-Propenal
P005	107-18-6	2-Propen-1-ol
P067	75-55-8	1,2-Propylenimine
P102	107-19-7	2-Propyn-1-ol
P008	504-24-5	4-Pyridinamine
P075	54-11-5*	Pyridine, 3-(1-methyl-2-pyrrolidinyl)-, (S)-, and salts
P114	12039-52-0	Selenious acid, dithallium(1+) salt
P103	630-10-4	Selenourea
P104	506-64-9	Silver cyanide
P105	26628-22-8	Sodium azide
P106	143-33-9	Sodium cyanide
P108	57-24-9*	Strychnidin-10-one, and salts
P018	357-57-3	Strychnidin-10-one, 2,3-dimethoxy-
P108	57-24-9*	Strychnine, and salts

* CAS Number given for parent compound only.

TABLE V

Acute Hazardous Wastes (H)

EPA Haz. Waste Number	Chemical Abstracts Number	Substance
P115	7446-18-6	Sulfuric acid, dithallium(1+) salt
P109	3689-24-5	Tetraethyldithiopyrophosphate
P110	78-00-2	Tetraethyl lead
P111	107-49-3	Tetraethylpyrophosphate
P112	509-14-8	Tetranitromethane (R)
P062	757-58-4	Tetraphosphoric acid, hexaethyl ester
P113	1314-32-5	Thallic oxide (Thallium oxide)
P114	12039-52-0	Thallium(I) selenite
P115	7446-18-6	Thallium(I) sulfate
P109	3689-24-5	Thiodiphosphoric acid, tetraethyl ester
P045	39196-18-4	Thiofanox
P049	541-53-7	Thiomidodicarbonic diamide
P014	108-98-5	Thiophenol
P116	79-19-6	Thiosemicarbazide
P026	5344-82-1	Thiourea, (2-chlorophenyl)-
P072	86-88-4	Thiourea, 1-naphthalenyl-
P093	103-85-5	Thiourea, phenyl-
P123	8001-35-2	Toxaphene
P118	75-70-7	Trichloromethanethiol
P119	7803-55-6	Vanadic acid, ammonium salt
P120	1314-62-1	Vanadium oxide
P120	1314-62-1	Vanadium pentoxide
P084	4549-40-0	Vinylamine, N-methyl-N-nitroso-
P001	81-81-2*	Warfarin, and salts, when present at concentrations greater than 0.3%
P121	557-21-1	Zinc cyanide
P122	1314-84-7	Zinc phosphide, when present at concentrations greater than 10% (R,T)

* CAS Number given for parent compound only.

TABLE VI
Toxic Wastes (T)

EPA Haz. Waste Number	Chemical Abstracts Number	Substance
U001	75-07-0	Acetaldehyde (I)
U034	75-87-6	Acetaldehyde, trichloro-
U187	62-44-2	Acetamide, N-(4-ethoxyphenyl)-
U005	53-96-3	Acetamide, N-9H-fluoren-2-yl
U240	94-75-7*	Acetic acid, (2,4-dichlorophenoxy)-, salts and esters
U112	141-78-6	Acetic acid, ethyl ester (I)
U144	301-04-2	Acetic acid, lead(2+) salt
U214	563-68-8	Acetic acid, thallium(1+) salt
++	93-76-5	Acetic acid, (2,4,5-trichlorophenoxy)-
U002	67-64-1	Acetone (I)
U003	75-05-8	Acetonitrile (I,T)
U004	98-86-2	Acetophenone
U005	53-96-3	2-Acetylaminofluorene
U006	75-36-5	Acetyl chloride (C,R,T)
U007	79-06-1	Acrylamide
U008	79-10-7	Acrylic acid (I)
U009	107-13-1	Acrylonitrile
U011	61-82-5	Amitrole
U012	62-53-3	Aniline (I,T)
U136	75-60-5	Arsinic acid, dimethyl
U014	492-80-8	Auramine
U015	115-02-6	Azaserine
U010	50-07-7	Azirino(2',3':3,4)pyrrolo(1,2-a)indole- 4,7-dione, 6-amino-8-(((aminocarbonyl)- oxy)methyl)-1,1a,2,8,8a,8b-hexahydro- 8a-methoxy-5-methyl-, (1aS-(1aalpha, 8beta,8aalpha,8balph))-
U157	56-49-5	Benz(j)aceanthrylene, 1,2-dihydro-3-methyl-
U016	225-51-4	Benz(c)acridine
U017	98-87-3	Benzal chloride
U192	23950-58-5	Benzamide, 3,5-dichloro-N-(1,1-dimethyl- 2-propynyl)-
U018	56-55-3	Benz(a)anthracene
U094	57-97-6	Benz(a)anthracene, 7,12-dimethyl-
U012	62-53-3	Benzenamine (I,T)
U014	492-80-8	Benzinamine, 4,4'-carbonimidoyl- bis(N,N-dimethyl)-
U049	3165-93-3	Benzenamine, 4-chloro-2-methyl-, hydrochloride
U093	60-11-7	Benzenamine, N,N-dimethyl-4-(phenylazo)-
U328	95-53-4	Benzenamine, 2-methyl-

* CAS Number given for parent compound only

++ See F027.

TABLE VI
Toxic Wastes (T)

EPA Haz. Waste Number	Chemical Abstracts Number	Substance
U353	106-49-0	Benzenamine, 4-methyl-
U158	101-14-4	Benzenamine, 4,4'-methylenebis(2-chloro-
U222	636-21-5	Benzenamine, 2-methyl-, hydrochloride
U181	99-55-8	Benzemamine, 2-methyl-5-nitro-
U019	71-43-2	Benzene (I,T)
U038	510-15-6	Benzenecetic acid, 4-chloro-alpha-(4-chlorophenyl)-alpha-hydroxy-, ethyl ester
U030	101-55-3	Benzene, 1-bromo-4-phenoxy-
U035	305-03-3	Benzenebutanoic acid. 4-(bis(2-chloro-ethyl)amino)-
U037	108-90-7	Benzene, chloro-
U221	25376-45-8	Benzenediamine, ar-methyl-
U028	117-81-7	1,2-Benzenedicarboxylic acid, bis(2-ethylhexyl) ester
U069	84-74-2	1,2-Benzenedicarboxylic acid, dibutyl ester
U088	84-66-2	1,2-Benzenedicarboxylic acid, diethyl ester
U102	131-11-3	1,2-Benzenedicarboxylic acid, dimethyl ester
U107	117-84-0	1,2-Benzenedicarboxylic acid, dioctyl ester
U070	95-50-1	Benzene, 1,2-dichloro-
U071	541-73-1	Benzene, 1,3-dichloro-
U072	106-46-7	Benzene, 1,4-dichloro-
U060	72-54-8	Benzene, 1,1'-(2,2-dichloroethylidene)-bis(4-chloro-
U017	98-87-3	Benzene, (dichloromethyl)-
U223	26471-62-5	Benzene, 1,3-diisocyanatomethyl- (R,T)
U239	1330-20-7	Benzene, dimethyl- (I,T)
U201	108-46-3	1,3-Benzenediol
U127	118-74-1	Benzene, Hexachloro-
U056	110-82-7	Benzene, Hexahydro-
U220	108-88-3	Benzene, methyl-
U105	121-14-2	Benzene, 1-methyl-2,4-dinitro-
U106	606-20-2	Benzene, 2-methyl-1,3-dinitro-
U055	98-82-8	Benzene, (1-methylethyl)- (I)
U169	98-95-3	Benzene, nitro- (I,T)
U183	608-93-5	Benzene, pentachloro-
U185	82-68-8	Benzene, pentachloronitro-
U020	98-09-9	Benzenesulfonic acid chloride (C,R)
U020	98-09-9	Benzenesufonyl chloride (C,R)
U207	95-94-3	Benzene, 1,2,3,4,5-tetrachloro-
U061	50-29-3	Benzene, 1,1'-(2,2,2-trichloroethylidene)-bis(4-chloro-

* CAS Number given for parent compound only

++ See F027.

TABLE VI
Toxic Wastes (T)

EPA Haz. Waste Number	Chemical Abstracts Number	Substance
U247	72-43-5	Benzene, 1,1'-(2,2,2-trichloroethylidene)-bis(methoxy-
U023	98-07-7	Benzene, (trichloromethyl)-
U234	99-35-4	Benzene, 1,3,5-trinitro-
U021	92-87-5	Benzidine
U202	81-07-2*	1,2-Benzisothiazol-3-(2H)-one, 1,1-dioxide, and salts
U203	94-59-7	1,3-Benzodioxole, 5-(2-propenyl)-
U141	120-58-1	1,3-Benzodioxole, 5-(1-propenyl)-
U090	94-58-6	1,3-Benzodioxole, 5-propyl-
U064	189-55-9	Benzo(rst)pentaphene
U248	81-81-2*	2H-1-Benzopyran-2-one, 4-hydroxy-3-(3-oxo-1-phenylbutyl)-, and salts when present at concentrations of 0.3% or less
U022	50-32-8	Benzo(a)pyrene
U197	106-51-4	p-Benzoquinone
U023	98-07-7	Benzotrichloride (C,R,T)
U085	1464-53-5	2,2'-Bioxirane
U021	92-87-5	(1,1'-Biphenyl)-4,4'-diamine
U073	91-94-1	(1,1'-Biphenyl)-4,4'-diamine, 3,3'-dichloro-
U091	119-90-4	(1,1'-Biphenyl)-4,4'-diamine, 3,3'-dimethoxy-
U095	119-93-7	(1,1'-Biphenyl)-4,4'-diamine, 3,3'-dimethyl-
U225	75-25-2	Bromoform
U030	101-55-3	4-Bromophenyl phenyl ether
U128	87-68-3	1,3-Butadiene, 1,1,2,3,4,4-hexachloro-
U172	924-16-3	1-Butanamine, N-butyl-N-nitroso-
U031	71-36-3	1-Butanol (I)
U159	78-93-3	2-Butanone (I,T)
U160	1338-23-4	2-Butanone, peroxide (I,T)
U053	4170-30-3	2-Butenal
U074	764-41-0	2-Butene, 1,4-dichloro- (I,T)
U143	303-34-4	2-Butenoic acid, 2-methyl-, 7-((2,3-dihydroxy-2-(1-methoxyethyl)-3-methyl-1-oxobutoxy)methyl)-2,3,5,7a-tetrahydro-1H-pyrrolizin-1-yl ester, (1S-(1alpha(Z),7(2S*,3R*),7aalpha))-
U031	71-36-3	n-Butyl alcohol (I)
U136	75-60-5	Cacodylic acid
U032	13765-19-0	Calcium chromate
U238	51-79-6	Carbamic acid, ethyl ester
U178	615-53-2	Carbamic acid, methylnitroso-, ethyl ester
U097	79-44-7	Carbamic chloride, dimethyl-

* CAS Number given for parent compound only

++ See F027.

TABLE VI
Toxic Wastes (T)

EPA Haz. Waste Number	Chemical Abstracts Number	Substance
U114	111-54-6*	Carbamodithioic acid, 1,2-ethanediylbis-, salts and esters
U062	2303-16-4	Carbamothioic acid, bis(1-methylethyl)-S-(2,3-dichloro-2-propenyl) ester
U215	6533-73-9	Carbonic acid, dithallium(1+) salt
U033	353-50-4	Carbonic difluoride
U156	79-22-1	Carbonochloridic acid, methyl ester (I,T)
U033	353-50-4	Carbon oxyfluoride (R,T)
U211	56-23-5	Carbon tetrachloride
U034	75-87-6	Chloral
U035	305-03-3	Chlorambucil
U036	57-74-9	Chlordane, alpha and gamma isomers
U026	494-03-1	Chlornaphazine
U037	108-90-7	Chlorobenzene
U038	510-15-6	Chlorobenzilate
U039	59-50-7	p-Chloro-m-cresol
U042	110-75-8	2-Chloroethyl vinyl ether
U044	67-66-3	Chloroform
U046	107-30-2	Chloromethyl methyl ether
U047	91-58-7	beta-Chloronaphthalene
U048	95-57-8	o-Chlorophenol
U049	3165-93-3	4-chloro-o-toluidine, hydrochloride
U032	13765-19-0	Chromic acid, calcium salt
U050	218-01-9	Chrysene
U051	-----	Creosote
U052	1319-77-3	Cresol (Cresylic acid)
U053	4170-30-3	Crotonaldehyde
U055	98-82-8	Cumene (I)
U246	506-68-3	Cyanogen bromide
U197	106-51-4	2,5-Cyclohexadiene-1,4-dione
U056	110-82-7	Cyclohexane (I)
U129	58-88-9	Cyclohexane, 1,2,3,4,5,6-hexachloro-(1alpha, 2alpha,3beta,4alpha,5alpha,6beta)-
U057	108-94-1	Cyclohexanone (I)
U130	77-47-4	1,3-Cyclopentadiene, 1,2,3,4,5,5-hexachloro-
U058	50-18-0	Cyclophosphamide
U240	94-75-7*	2,4-D, salts and esters
U059	20830-81-3	Daunomycin
U060	72-54-8	DDD
U061	50-29-3	DDT
U062	2303-16-4	Diallate
U063	53-70-3	Dibenz(a,h)anthracene

* CAS Number given for parent compound only

++ See F027.

TABLE VI
Toxic Wastes (T)

EPA Haz. Waste Number	Chemical Abstracts Number	Substance
U064	189-55-9	Dibenzo(a,i)pyrene
U066	96-12-8	1,2-Dibromo-3-chloropropane
U069	84-74-2	Dibutyl phthalate
U070	95-50-1	o-Dichlorobenzene
U071	541-73-1	m-Dichlorobenzene
U072	106-46-7	p-Dichlorobenzene
U073	91-94-1	3,3'-Dichlorobenzidine
U074	764-41-0	1,4-Dichloro-2-butene (I,T)
U075	75-71-8	Dichlorodifluoromethane
U078	75-35-4	1,1-Dichloroethylene
U079	156-60-5	1,2-Dichloroethylene
U025	111-44-1	Dichloroethyl ether
U027	108-60-1	Dichloroisopropyl ether
U024	111-91-1	Dichloromethoxy ethane
U081	120-83-2	2,4-Dichlorophenol
U082	87-65-0	2,6-Dichlorophenol
U084	542-75-6	1,3-Dichloropropene
U085	1464-53-5	1,2:3,4-Diepoxybutane (I,T)
U108	123-91-1	1,4-Diethyleneoxide
U028	117-81-7	Diethylhexyl phthalate
U086	1615-80-1	N,N'-Diethylhydrazine
U087	3288-58-2	O,O-Diethyl-S-methyl-dithiophosphate
U088	84-66-2	Diethyl phthalate
U089	56-53-1	Diethylstilbestrol
U090	94-58-6	Dihydrosafrole
U091	119-90-4	3,3'-Dimethoxybenzidine
U092	124-40-3	Dimethylamine (I)
U093	60-11-7	p-Dimethylaminoazobenzene
U094	57-97-6	7,12-Dimethylbenz(a)anthracene
U095	119-93-7	3,3'-Dimethylbenzidine
U096	80-15-9	alpha,alpha-Dimethylbenzylhydroperoxide (R)
U097	79-44-7	Dimethylcarbamoyl chloride
U098	57-14-7	1,1-Dimethylhydrazine
U099	540-73-8	1,2-Dimethylhydrazine
U101	105-67-9	2,4-Dimethylphenol
U102	131-11-3	Dimethyl phthalate
U103	77-78-1	Dimethyl sulfate
U105	121-14-2	2,4-Dinitrotoluene
U106	606-20-2	2,6-Dinitrotoluene
U107	117-84-0	Di-n-octyl phthalate
U108	123-91-1	1,4-Dioxane

* CAS Number given for parent compound only

++ See F027.

TABLE VI
Toxic Wastes (T)

EPA Haz. Waste Number	Chemical Abstracts Number	Substance
U109	122-66-7	1,2-Diphenylhydrazine
U110	142-84-7	Dipropylamine (I)
U111	621-64-7	Di-n-propylnitrosamine
U041	106-89-8	Epichlorohydrin
U001	75-07-0	Ethanal (I)
U174	55-18-5	Ethanamine, N-ethyl-N-nitroso-
U155	91-80-5	1,2-Ethanediamine, N,N-dimethyl- N'-2-pyridinyl-N'-(2-thienylmethyl)-
U067	106-93-4	Ethane, 1,2-dibromo-
U076	75-34-3	Ethane, 1,1-dichloro-
U077	107-06-2	Ethane, 1,2-dichloro-
U131	67-72-1	Ethane, hexachloro-
U024	111-91-1	Ethane, 1,1'-(methylenebis(oxy))bis(2-chloro-
U117	60-29-7	Ethane, 1,1'-oxybis- (I)
U025	111-44-4	Ethane, 1,1'-oxybis(2-chloro-
U184	76-01-7	Ethane, pentachloro-
U208	630-20-6	Ethane, 1,1,1,2-tetrachloro-
U209	79-34-5	Ethane, 1,1,2,2-tetrachloro-
U218	62-55-5	Ethanethioamide
U226	71-55-6	Ethane, 1,1,1-trichloro-
U227	79-00-5	Ethane, 1,1,2-trichloro-
U359	110-80-5	Ethanol, 2-ethoxy-
U173	1116-54-7	Ethanol, 2,2'-(nitrosoimino)bis-
U004	98-86-2	Ethanone, 1-phenyl-
U043	75-01-4	Ethene, chloro-
U042	110-75-8	Ethene, (2-chloroethoxy)-
U078	75-35-4	Ethene, 1,1-dichloro-
U079	156-60-5	Ethene, 1,2-dichloro- (E)-
U210	127-18-4	Ethene, tetrachloro-
U228	79-01-6	Ethene, trichloro-
U112	141-78-6	Ethyl acetate (I)
U113	140-88-5	Ethyl acrylate (I)
U238	51-79-6	Ethyl carbamate (urethane)
U117	60-29-7	Ethyl ether (I)
U114	111-54-6*	Ethylenebisdithiocarbamic acid, salts and esters
U067	106-93-4	Ethylene dibromide
U077	107-06-2	Ethylene dichloride
U359	110-80-5	Ethylene glycol monoethyl ether
U115	75-21-8	Ethylene oxide (I,T)
U116	96-45-7	Ethylenethiourea

* CAS Number given for parent compound only

++ See F027.

TABLE VI
Toxic Wastes (T)

EPA Haz. Waste Number	Chemical Abstracts Number	Substance
U076	75-34-3	Ethylidene dichloride
U118	97-63-2	Ethyl methacrylate
U119	62-50-0	Ethyl methanesulfonate
U120	206-44-0	Fluoranthene
U122	50-00-0	Formaldehyde
U123	64-18-6	Formic acid (C,T)
U124	110-00-9	Furan (I)
U125	98-01-1	2-Furancarboxaldehyde (I)
U147	108-31-6	2,5-Furandione
U213	109-99-9	Furan, tetrahydro- (I)
U125	98-01-1	Furfural (I)
U124	110-00-9	Furfuran (I)
U206	18883-66-4	Glucopyranose, 2-deoxy-2-(3-methyl- 3-nitrosoureido)-, D-
U206	18883-66-4	D-Glucose, 2-deoxy-2-((methylnitroso- amino)carbonyl)amino)-
U126	765-34-4	Glycidylaldehyde
U163	70-25-7	Guanidine, N-methyl-N'-nitro-N-nitroso-
U127	118-74-1	Hexachlorobenzene
U128	87-68-3	Hexachlorobutadiene
U130	77-47-4	Hexachlorocyclopentadiene
U131	67-72-1	Hexachloroethane
U132	70-30-4	Hexachlorophene
U243	1888-71-7	Hexachloropropene
U133	302-01-2	Hydrazine (R,T)
U086	1615-80-1	Hydrazine, 1,2-diethyl-
U098	57-14-7	Hydrazine, 1,1-dimethyl-
U099	540-73-8	Hydrazine, 1,2-dimethyl-
U109	122-66-7	Hydrazine, 1,2-diphenyl-
U134	7664-39-3	Hydrofluoric acid (C,T)
U134	7664-39-3	Hydrogen fluoride (C,T)
U135	7783-06-4	Hydrogen sulfide
U096	80-15-9	Hydroperoxide, 1-methyl-1-phenylethyl- (R)
U116	96-45-7	2-Imidazolidinethione
U137	193-39-5	Indeno(1,2,3-cd)pyrene
U190	85-44-9	1,3-Isobenzofurandione
U140	78-83-1	Isobutyl alcohol (I,T)
U141	120-58-1	Isosafrole
U142	143-50-0	Kepone
U143	303-34-4	Lasiocarpine

* CAS Number given for parent compound only

++ See F027.

TABLE VI
Toxic Wastes (T)

EPA Haz. Waste Number	Chemical Abstracts Number	Substance
U144	301-04-2	Lead acetate
U146	1335-32-6	Lead, bis(acetato-O)tetrahydroxytri-
U145	7446-27-7	Lead phosphate
U146	1335-32-6	Lead subacetate
U129	58-89-9	Lindane
U163	70-25-7	MNNG
U147	108-31-6	Maleic anyhydride
U148	123-33-1	Maleic hydrazide
U149	109-77-3	Malononitrile
U150	148-82-3	Melphalan
U151	7439-97-6	Mercury
U152	126-98-7	Methacrylonitrile (I,T)
U092	124-40-3	Methanamine, N-methyl- (I)
U029	74-83-9	Methane, bromo-
U045	74-87-3	Methane, chloro- (I,T)
U046	107-30-2	Methane, chloromethoxy-
U068	74-95-3	Methane, dibromo-
U080	75-09-2	Methane, dichloro-
U075	75-71-8	Methane, dichlorodifluoro-
U138	74-88-4	Methane, iodo-
U119	62-50-0	Methanesulfonic acid, ethyl ester
U211	56-23-5	Methane, tetrachloro-
U153	74-93-1	Methanethiol (I,T)
U225	75-25-2	Methane, tribromo-
U044	67-66-3	Methane, trichloro-
U121	75-69-4	Methane, trichlorofluoro-
U036	57-74-9	4,7-Methano-1H-indene, 1,2,3,4,5,6,7,8,8-octa- chloro-2,3,3a,4,7,7a-hexahydro-
U154	67-56-1	Methanol (I)
U155	91-80-5	Methapyrilene
U142	143-50-0	1,3,4-Metheno-2H-cyclo- buta(cd)pentalen-2-one, 1,1a,3,3a,4,5,5,5a,5b,6-deca- chlorooctahydro-
U247	72-43-5	Methoxychlor
U154	67-56-1	Methyl alcohol (I)
U029	74-83-9	Methyl bromide
U186	504-60-9	1-Methylbutadiene (I)
U045	74-87-3	Methyl chloride (I,T)
U156	79-22-1	Methyl chlorocarbonate (I,T)
U226	71-55-6	Methyl chloroform
U157	56-49-5	3-Methylcholanthrene

* CAS Number given for parent compound only

++ See F027.

TABLE VI
Toxic Wastes (T)

EPA Haz. Waste Number	Chemical Abstracts Number	Substance
U158	101-14-4	4,4'-Methylenebis(2-chloroaniline)
U068	74-95-3	Methylene bromide
U080	75-09-2	Methylene chloride
U159	78-93-3	Methyl ethyl ketone (MEK) (I,T)
U160	1338-23-4	Methyl ethyl ketone peroxide (R,T)
U138	74-88-4	Methyl iodide
U161	108-10-1	Methyl isobutyl ketone (I)
U162	80-62-6	Methyl methacrylate (I,T)
U161	108-10-1	4-methyl-2-pentanone (I)
U164	56-04-2	Methylthiouracil
U010	50-07-7	Mitomycin C
U059	20830-81-3	5,12-Naphthacenedione, 8-acetyl-10-((3-amino-2,3,6-trideoxy)-alpha-L-lyxo-hexopyranosyl)oxy)-7,8,9,10-tetrahydro-6,8,11-trihydroxy-1-methoxy-, (8S-cis)-
U167	134-32-7	1-Naphthalenamine
U168	91-59-8	2-Naphthalenamine
U026	494-03-1	Naphthalenamine, N,N'-bis(-chloroethyl)-
U165	91-20-3	Naphthalene
U047	91-58-7	Naphthalene, 2-chloro-
U166	130-15-4	1,4-Naphthalenedione
U236	72-57-1	2,7-Naphthalenedisulfonic acid, 3,3'-dimethyl-(1,1'-biphenyl)-4,4'-diyl))-bis(azo)bis-(5-amino-4-hydroxy)-, tetrasodium salt
U166	130-15-4	1,4-Naphthoquinone
U167	134-32-7	alpha-Naphthylamine
U168	91-59-8	beta-Naphthylamine
U217	10102-45-1	Nitric acid, thallium(1+) salt
U169	98-95-3	Nitrobenzene (I,T)
U170	100-02-7	p-Nitrophenol
U171	79-46-9	2-Nitropropane (I,T)
U172	924-16-3	N-Nitrosodi-n-butylamine
U173	1116-54-7	N-Nitrosodiethanolamine
U174	55-18-5	N-Nitrosodiethylamine
U176	759-73-9	N-Nitroso-N-ethylurea
U177	684-93-5	N-Nitroso-N-methylurea
U178	615-53-2	N-Nitroso-N-methylurethane
U179	100-75-4	N-Nitrosopiperidine
U180	930-55-2	N-Nitrosopyrrolidine
U181	99-55-8	5-Nitro-o-toluidine
U193	1120-71-4	1,2-Oxathiolane, 2,2-dioxide
U058	50-18-0	2H-1,3,2-Oxazaphosphorin-2-amine, N,N-bis-

* CAS Number given for parent compound only

++ See F027.

TABLE VI
Toxic Wastes (T)

EPA Haz. Waste Number	Chemical Abstracts Number	Substance
		(2-chloroethyl)tetrahydro-, 2-oxide
U115	75-21-8	Oxirane (I,T)
U126	765-34-4	Oxiranecarboxyaldehyde
U041	106-89-8	Oxirane, (chloromethyl)-
U182	123-63-7	Paraldehyde
U183	608-93-5	Pentachlorobenzene
U184	76-01-7	Pentachloroethane
U185	82-68-8	Pentachloronitrobenzene (PCNB)
++	87-86-5	Pentachlorophenol
U161	108-10-1	Pentanol, 4-methyl-
U186	504-60-9	1,3-Pentadiene (I)
U187	62-44-2	Phenacetin
U188	108-95-2	Phenol
U048	95-57-8	Phenol, 2-chloro-
U039	59-50-7	Phenol, 4-chloro-3-methyl-
U081	120-83-2	Phenol, 2,4-dichloro-
U082	87-65-0	Phenol, 2,6-dichloro-
U089	56-53-1	Phenol, 4,4'-(1,2-diethyl- 1,2-ethenediyl)bis-, (E)-
U101	105-67-9	Phenol, 2,4-dimethyl-
U052	1319-77-3	Phenol, methyl-
U132	70-30-4	Phenol, 2,2'-methylenebis(3,4,6-trichloro-
U170	100-02-7	Phenol, 4-nitro-
++	87-86-5	Phenol, pentachloro-
++	58-90-2	Phenol, 2,3,4,6-tetrachloro-
++	95-94-4	Phenol, 2,4,5-trichloro-
++	88-06-2	Phenol, 2,4,6-trichloro-
U150	148-82-3	L-Phenylalanine, 4-(bis(2-chloroethyl)amino)-
U145	7446-27-7	Phosphoric acid, lead(2+) salt (2:3)
U087	3288-58-2	Phosphorodithioic acid, O,O-diethyl S-methyl ester
U189	1314-80-3	Phosphorus sulfide (R)
U190	85-44-9	Phthalic anhydride
U191	109-06-8	2-Picoline
U179	100-75-4	Piperidine, 1-nitroso-
U192	23950-58-5	Pronamide
U194	107-10-8	1-Propanamine (I,T)
U111	621-64-7	1-Propanamine, N-nitroso-N-propyl-
U110	142-84-7	1-Propanamine, N-propyl- (I)
U066	96-12-8	Propane, 1,2-dibromo-3-chloro-
U083	78-87-5	Propane, 1,2-dichloro-

* CAS Number given for parent compound only

++ See F027.

TABLE VI
Toxic Wastes (T)

EPA Haz. Waste Number	Chemical Abstracts Number	Substance
U149	109-77-3	Propanedinitrile
U171	79-46-9	Propane, 2-nitro- (I,T)
U027	108-60-1	Propane, 2,2'-oxybis(2-chloro-
U193	1120-71-4	1,3-Propane sultone
++	93-72-1	Propanoic acid, 2-(2,4,5-trichlorophenoxy)-
U235	126-72-7	1-Propanol, 2,3-dibromo-, phosphate (3:1)
U140	78-83-1	1-Propanol, 2-methyl- (I,T)
U002	67-64-1	2-Propanone (I)
U007	79-06-1	2-Propenamide
U084	542-75-6	1-Propene, 1,3-dichloro-
U243	1888-71-7	1-Propene, 1,1,2,3,3,3-hexachloro-
U009	107-13-1	2-Propenenitrile
U152	126-98-7	2-Propenenitrile, 2-methyl- (I,T)
U008	79-10-7	2-Propenoic acid (I)
U113	140-88-5	2-Propenoic acid, ethyl ester (I)
U118	97-63-2	2-Propenoic acid, 2-methyl-, ethyl ester
U162	80-62-2	2-Propenoic acid, 2-methyl-, methyl ester (I,T)
U194	107-10-8	n-Propylamine (I,T)
U083	78-87-5	Propylene dichloride
U148	123-33-1	3,6-Pyridazinedione, 1,2-dihydro-
U196	110-86-1	Pyridine
U191	109-06-8	Pyridine, 2-methyl-
U237	66-75-1	2,4-(1H,3H)-Pyrimidinedione, 5-(bis(2-chloroethyl)amino)-
U164	56-04-2	4-(1H)-Pyrimidinone, 2,3-dihydro- 6-methyl-2-thioxo-
U180	930-55-2	Pyrrolidine, 1-nitroso-
U200	50-55-5	Reserpine
U201	108-46-3	Resorcinol
U202	81-07-2*	Saccharin, and salts
U203	94-59-7	Safrole
U204	7783-00-8	Selenious acid
U204	7783-00-8	Selenium dioxide
U205	7446-34-6	Selenium sulfide (R,T)
U015	115-02-6	L-Serine, diazoacetate (ester)
++	93-72-1	Silvex (2,4,5-TP)
U206	18883-66-4	Streptozotocin
U103	77-78-1	Sulfuric acid, dimethyl ester
U189	1314-80-3	Sulfur phosphide (R)
++	93-76-5	2,4,5-T
U207	95-94-3	1,2,4,5-Tetrachlorobenzene
U208	630-20-6	1,1,1,2-Tetrachloroethane

* CAS Number given for parent compound only

++ See F027.

TABLE VI
Toxic Wastes (T)

EPA Haz. Waste Number	Chemical Abstracts Number	Substance
U209	79-34-5	1,1,2,2-Tetrachloroethane
U210	127-18-4	Tetrachloroethylene
++	58-90-2	2,3,4,6-Tetrachlorophenol
U213	109-99-9	Tetrahydrofuran (I)
U214	563-68-8	Thallium(I) acetate
U215	6533-73-9	Thallium(I) carbonate
U216	7791-12-0	Thallium(I) chloride
U217	10102-45-1	Thallium(I) nitrate
U218	62-55-5	Thioacetamide
U153	74-93-1	Thiomethanol (I,T)
U244	137-26-8	Thioperoxydicarbonic diamide, tetramethyl-
U219	62-56-6	Thiourea
U244	137-26-8	Thiram
U220	108-88-3	Toluene
U221	25376-45-8	Toluenediamine
U223	26471-62-5	Toluene diisocyanate (R,T)
U328	95-53-4	o-Toluidine
U353	106-49-0	p-Toluidine
U222	636-21-5	o-Toluidine hydrochloride
U011	61-82-5	1H,1,2,4-Triazol-3-amine
U227	79-00-5	1,1,2-Trichloroethane
U228	79-01-6	Trichloroethylene
U121	75-69-4	Trichloromonofluoromethane
++	95-95-4	2,4,5-Trichlorophenol
++	88-06-2	2,4,6-Trichlorophenol
U234	99-35-4	1,3,5-Trinitrobenzene (R,T)
U182	123-63-7	1,3,5-Trioxane, 2,4,6-trimethyl-
U235	126-72-7	Tris(2,3-dibromopropyl) phosphate
U236	72-57-1	Trypan blue
U237	66-75-1	Uracil mustard
U176	759-73-9	Urea, N-ethyl-N-nitroso-
U177	684-93-5	Urea, N-methyl-N-nitroso-
U043	75-01-4	Vinyl chloride
U248	81-81-2*	Warfarin, and salts, when present at concentrations of 0.3% or less
U239	1330-20-7	Xylene (I)
U200	50-55-5	Yohimban-16-carboxylic acid, 11,17-dimethoxy- 18-((3,4,5-trimethoxybenzoyl)oxy)-, methyl ester, (3beta,16beta,17alpha,18beta,20alpha)-
U249	1314-84-7	Zinc Phosphide, when present at concentrations of 10% or less

* CAS Number given for parent compound only

++ See F027.

TABLE VII
Permit Application Fee Schedule

-- STORAGE --

EPA Code	Activity	Fee	
S01	Drum	100 tons capacity \$1,000.00	≥100 tons capacity \$3,000.00
S02	Tank	100 tons capacity \$1,000.00	≥100 tons capacity \$3,000.00
S03	Waste Pile	100 tons capacity \$1,500.00	≥100 tons capacity \$3,000.00
S04	Surface Impoundment	1,000 tons capacity \$2,500.00	≥1,000 tons capacity \$3,000.00

-- DISPOSAL --

EPA Code	Activity	Fee	
D80	Landfill	1,000 tons/year \$2,500.00	≥1,000 tons/year \$5,000.00
D81	Land Application	1,000 tons/year \$2,500.00	≥1,000 tons/year \$5,000.00
D83	Surface Impoundment	1,000 tons/year \$2,500.00	≥1,000 tons/year \$5,000.00

-- TREATMENT --

EPA Code	Activity	Fee	
T01	Tank	100 tons capacity \$1,000.00	≥100 tons capacity \$3,000.00
T02	Surface Impoundment	1,000 tons/year \$2,500.00	≥1,000 tons/year \$3,000.00
T03	Incinerator	1,000 tons/year \$1,000.00	≥1,000 tons/year \$3,000.00
T04	Other	(Reserved)	(Reserved)

APPENDIX I

Representative Sampling Methods

The methods and equipment used for sampling waste materials will vary with the form and consistency of the waste materials to be sampled. Samples collected using the sampling protocols listed below, for sampling waste with properties similar to the indicated materials, will be considered by the Division to be representative of the waste.

~~Extremely viscous liquid: ASTM Standard D140-70.~~

~~Crushed or powdered material: ASTM Standard D346-75.~~

~~Rock-like material: ASTM Standard D120-69.~~

~~Soil-like material: ASTM Standard D1452-65.~~

~~Fly Ash-like material: ASTM Standard D2234-76.~~

~~Note: ASTM Standards are available from the American Society for Testing and Materials (ASTM), 1916 Race Street, Philadelphia, PA 19103.~~

~~Containerized liquid wastes: "COLIWASA" described in SW-846.~~

~~Liquid waste in pits, ponds, lagoons, and similar reservoirs: "Pond Sampler" described in SW-846.~~

Extremely viscous liquid -- ASTM Standard D140-70
Crushed or powdered material -- ASTM Standard D346-75
Soil or rock-like material -- ASTM Standard D420-69
Soil-like material -- ASTM Standard D1452-65

Fly Ash-like material -- ASTM Standard D2234-76 [ASTM Standards are available from ASTM, 1916 Race St., Philadelphia, PA 19103]

Containerized liquid wastes -- "COLIWASA" described in "Test Methods for the Evaluation of Solid Waste, Physical/Chemical Methods," U.S. Environmental Protection Agency, Office of Solid Waste, Washington, D.C. 20460. [Copies may be obtained from Solid Waste Information, U.S. Environmental Protection Agency, 26 W. St. Clair St., Cincinnati, Ohio 45268]

Liquid waste in pits, ponds, lagoons, and similar reservoirs. -- "Pond Sampler" described in "Test Methods for the Evaluation of Solid Waste, Physical/Chemical Methods."

These methods are also described in "Samplers and Sampling Procedures for Hazardous Waste Streams," EPA 600/2-91-013, January 1991.

The following text (EP Toxicity Characteristic) has been superseded by the Toxicity Characteristic Leaching Procedure, however, for the convenience of the user, the superseded text is set forth below.

APPENDIX II

EP Toxicity Test Procedure

A. Extraction Procedure (EP).

1. A representative sample of the waste to be tested (minimum size 100 grams) should be obtained using the methods specified in Appendix I of these regulations or any other methods capable of yielding a representative sample within the meaning of 40 C.F.R. Part 260. (For detailed guidance of conducting the various aspects of the EP, see SW-846.)

2. The sample should be separated into its component liquid and solid phases using the method described in "Separation Procedure" below. If the solid residue obtained using this method totals less than 0.5 percent (0.5%) of the original weight of the waste, the residue can be discarded and the operator should treat the liquid phase as the extract and proceed immediately to Step 8 below. The percent solids is determined by drying the filter pad at 80 degrees C until it reaches the constant weight and then calculating the percent solids using the following equation:

$$\frac{(\text{Weight of pad + solid}) - (\text{tare weight of pad})}{\text{Initial weight of sample}} \times 100 = \% \text{ solids}$$

3. The solid material obtained from the "Separation Procedure" should be evaluated for its particle size. If the solid material has a surface area per gram of material equal to or greater than 3.1 centimeters squared or passes through a 9.5 millimeter (0.375 inch) standard sieve, the operator should proceed to Step 4 below. If the surface area is smaller or the particle size larger than specified above, the solid material should be prepared for extraction by crushing, cutting, or grinding the material so that it passes through a 9.5 millimeter (0.375 inch) sieve or, if the material is in a single piece, by subjecting the material to the "Structural Integrity Procedure" described below.

4. The solid material obtained in Step 3 above should be weighed and placed in an extractor with sixteen (16) times its weight of deionized water. Do not allow the material to dry prior to weighing. For purposes of this test, an acceptable extractor is one which will impart sufficient agitation to the mixture to not only prevent stratification of the sample and extraction fluid but also insure that all sample surfaces are continuously brought into contact with well mixed extraction fluid.

5. After the solid material and deionized water are placed in the extractor, the operator should begin agitation and measure the pH of the solution in the extractor. If the pH is greater than 5.0, the pH of the solution should be decreased to 5.0 plus or minus 0.2 by adding 0.5N acetic acid. If the pH is equal to or less than 5.0, no acetic acid should be added. The pH of the solution should be monitored, as described below, during the course of the extraction and, if the pH rises above 5.2, 0.5N acetic acid should be added to bring the pH down to 5.0 plus or minus 0.2. However, in no event shall the aggregate amount of acid added to the solution exceed 4 milliliters of acid per gram of solid. The mixture should be agitated for twenty-four (24) hours and maintained at 20 to 40 degrees C (68 to 104 degrees F) during this time. It is recommended that the operator monitor and adjust the pH during the course of the extraction with a device such as the Type 45-A pH Controller manufactured by Chemtrix, Inc., Hillsboro, Oregon 97123 or its equivalent, in conjunction with a metering pump and reservoir of 0.5N acetic acid. If such a system is not available, the following manual procedure shall be employed:

(a) A pH meter should be calibrated in accordance with the manufacturer's specifications.

(b) The pH of the solution should be checked and, if necessary, 0.5N acetic acid should be manually added to the extractor until the pH reaches 5.0 plus or minus 0.2. The pH of the solution should be adjusted at fifteen-, thirty-, and sixty-minute intervals, moving to the next longer interval if the pH does not have to be adjusted more than 0.5N pH units.

(c) The adjustment procedure should be continued for at least six (6) hours.

(d) If at the end of the twenty-four hour extraction period the pH of the solution is not below 5.2 and the maximum amount of acid (4 milliliters per gram of solids) has not been added, the pH should be adjusted to 5.0 plus or minus 0.2 and the extraction continued for an additional four (4) hours, during which the pH should be adjusted at one hour intervals.

6. At the end of the twenty-four hour extraction period, deionized water should be added to the extractor in an amount determined by the following equation:

$$V = (20)(W) - 16(W) - A$$

V = milliliters of deionized water to be added

W = weight in grams of solid charged to extractor

A = milliliters of 0.5N acetic acid added during extraction

7. The material in the extractor should be separated into its component liquid and solid phases as described under "Separation Procedure" below.

8. The liquids resulting from steps 2 and 7 above should be combined. This combined liquid (or the waste itself if it has less than 0.5 percent solids, as noted in Step 2) is the extract and should be analyzed for the presence of any of the contaminants specified in Table II of these regulations using the "Analytical Procedures" designated below.

B. Separation Procedure.

1. Equipment. A filter holder designed for filtration media having a nominal pore size of 0.45 micrometers and capable of applying a 5.3 kg/cm (75 pounds per square inch (psi)) hydrostatic pressure to the solution being filtered shall be used. For mixtures containing nonabsorptive solids, where separation can be affected without imposing a 5.3 kg/cm (75 psi) pressure differential, vacuum filters employing a 0.45 micrometer filter media can be used. (For further guidance on filtration equipment or procedures, see SW-846.)

2. Procedure. This procedure is intended to result in separation of the "free" liquid portion of the waste from any solid matter having a particle size of less than 0.45 micrometer. If the sample will not filter, various other separation techniques can be used to aid in the filtration. As described above, pressure filtration is employed to speed up the filtration process. This does not alter the nature of the separation. If liquid does not separate during filtration, the waste can be centrifuged. If separation occurs during centrifugation, the liquid portion (centrifugate) is filtered through the 0.45 micrometer filter prior to becoming mixed with the liquid portion of the waste obtained from the initial filtration. Any material that will not pass through the filter after centrifugation is considered a solid and is extracted.

(a) Following manufacturers' directions, the filter unit should be assembled with a filter bed consisting of a 0.45 micrometer filter membrane. For difficult or slow-to-filter mixtures, a prefilter bed consisting of the following prefilters in increasing pore size (0.65 micrometer membrane, fine glass fiber prefilter, and coarse glass fiber prefilter) can be used.

(b) The waste should be poured into the filtration unit.

(c) The reservoir should be slowly pressurized until liquid begins to flow from the filtrate outlet at which point the pressure in the filter should be immediately lowered to 10 to 15 psig. Filtration should be continued until liquid flow ceases.

(d) The pressure should be increased stepwise in 10 psi increments to 75 psig and filtration continued until flow ceases or the pressurizing gas begins to exit from the filtrate outlet.

(e) The filter unit should be depressurized, the solid material removed and weighed and then transferred to the extraction apparatus, or, in the case of final filtration prior to analysis, discarded. Do not allow the material retained on the filter pad to dry prior to weighing.

(f) The liquid phase should be stored at 4 degrees C for subsequent use in Step 8 above.

C. Structural Integrity Procedure.

1. Equipment. A structural integrity tester having a 3.18 centimeter (1.25 inch) diameter hammer weighing 0.33 kilograms (0.73 pounds) and having a free fall of 15.24 centimeters (6 inches) shall be used. This device is available from Associated Design and Manufacturing Company, Alexandria, VA 22314 (as Part No. 125) or it may be fabricated to meet the specifications shown in Figure 1 of these regulations.

2. Procedure.

(a) The sample holder should be filled with the material to be tested. If the sample of waste is a large monolithic block, a portion should be cut from the block having the dimensions of a 3.3 centimeter (1.3 inch) diameter by 7.1 centimeter (2.8 inch) cylinder. For a fixated waste, samples may be cast in the form of a 3.3 centimeter (1.3 inch) diameter by 7.1 centimeter (2.8 inch) cylinder for purposes of conducting this test. In such cases, the waste may be allowed to cure for thirty (30) days prior to further testing.

(b) The sample holder should be placed into the structural integrity tester, then the hammer should be raised to its maximum height and dropped. This should be repeated fifteen (15) times.

(c) The material should be removed from the sample holder, weighed, and transferred to the extraction apparatus for extraction.

D. Analytical Procedures for Analyzing Extract Contaminants.

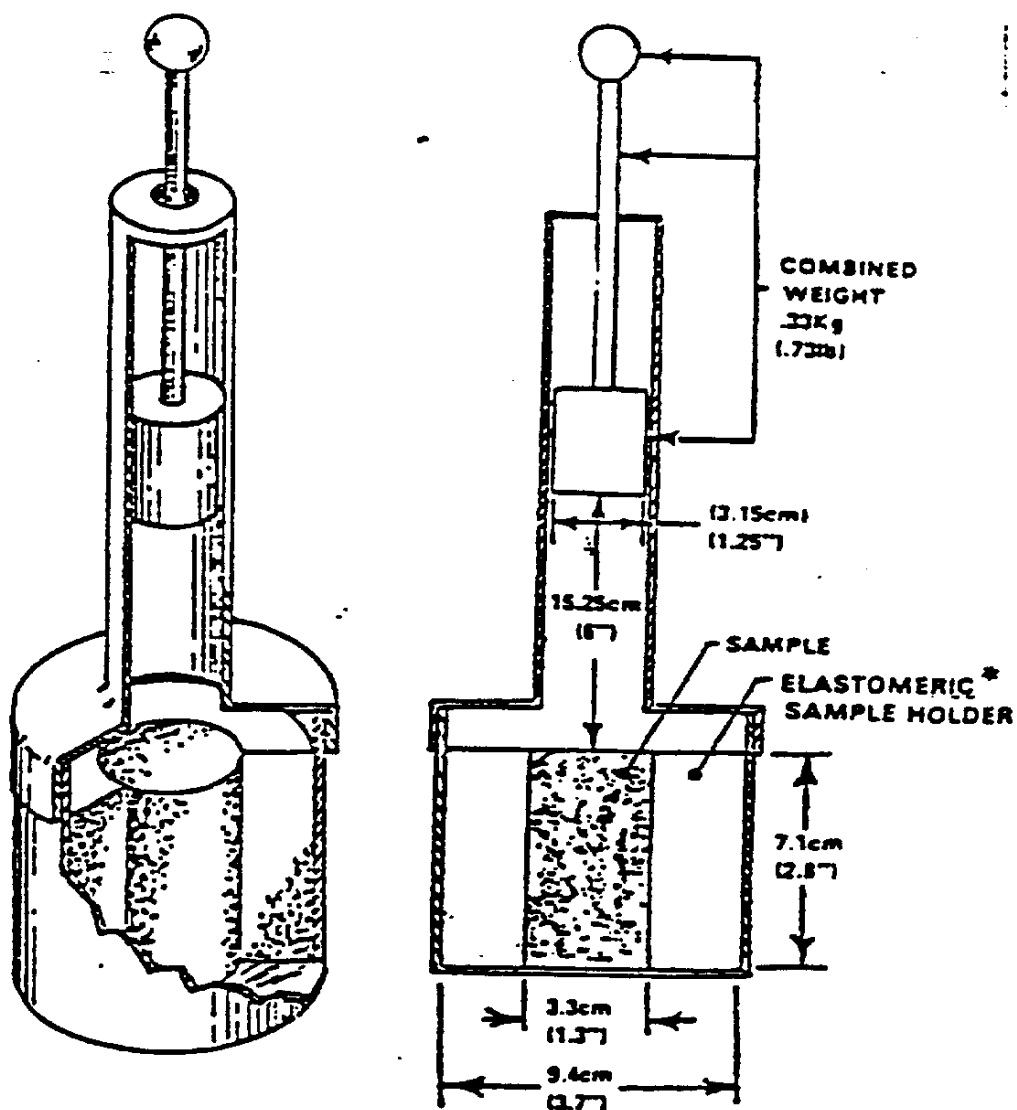
1. The test methods for analyzing the extract are as follows:

(a) For arsenic, barium, cadmium, chromium, lead, mercury, selenium, silver, endrin, lindane, methoxychlor, toxaphene, 2,4-D (2,4-dichlorophenoxyacetic acid) or 2,4,5-TP

(2,4,5-trichlorophenoxypropionic acid): see SW-846.

(b) (Reserved).

2. For all analyses, the methods of standard addition shall be used for quantification of species concentration.



*ELASTOMERIC SAMPLE HOLDER FABRICATED OF MATERIAL FIRM ENOUGH TO SUPPORT THE SAMPLE

Figure 1
COMPACTION TESTER

APPENDIX II

TOXICITY CHARACTERISTIC LEACHING PROCEDURE

1.0 Scope and Application

- 1.1 The TCLP is designed to determine the mobility of both organic and inorganic analytes present in liquid, solid, and multiphasic wastes.
- 1.2 If a total analysis of the waste demonstrates that individual analytes are not present in the waste, or that they are present but at such low concentrations that the appropriate regulatory levels could not possibly be exceeded, the TCLP need not be run.
- 1.3 If any analysis of any one of the liquid fractions of the TCLP extract indicates that a regulated compound is present at such high concentrations that, even after accounting for dilution from the other fractions of the extract, the concentration would be equal to or above the regulatory level for that compound, then the waste is hazardous and is not necessary to analyze the remaining fractions of the extract.
- 1.4 If an analysis of extract obtained using a bottle extractor shows that the concentration of any regulated volatile analyte equals or exceeds the regulatory level for that compound, then the waste is hazardous and extraction using the ZHE is not necessary. However, extract from a bottle extractor cannot be used to demonstrate that the concentration of volatile compound is below the regulatory level.

2.0 Summary of Method

- 2.1 For liquid wastes (i.e., those containing less than 0.5% dry solid material), the waste, after filtration through a 0.6 to 0.8 μ m glass fiber filter, is defined as the TCLP extract.
- 2.2 For wastes containing greater than or equal to 0.5% solids, the liquid, if any, is separated from the solid phase and stored for later analysis; the particle size of the solid phase is reduced, if necessary. The solid phase is extracted with an amount of extraction fluid equal to twenty (20) times the weight of the solid phase. The extraction fluid employed is a function of the alkalinity of the solid phase of the waste. A special extractor vessel is used when testing for volatile analytes (see Table 1 of this Appendix for a list of volatile compounds). Following extraction, the liquid extract is separated from the solid phase by filtration through a 0.6 to 0.8 μ m glass fiber filter.
- 2.3 If compatible (i.e., multiple phases will not form on combination), the initial liquid phase of the waste is added to the liquid extract, and these are analyzed together. If incompatible, the liquids are analyzed separately and the

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TOXICITY CHARACTERISTIC LEACHING PROCEDURE

results are mathematically combined to yield a volume-weighted average concentration.

3.0 Interferences

3.1 Potential interferences that may be encountered during analysis are discussed in the individual analytical methods.

4.0 Apparatus and Materials

4.1 Agitation apparatus. The agitation apparatus must be capable of rotating the extraction vessel in an end-over-end fashion (see figure 1 of this Appendix) at 30 ± 2 rpm. Suitable devices known to EPA are identified in Table 2 of this Appendix.

4.2 Extraction Vessels.

4.2.1 Zero-Headspace Extraction Vessel (ZHE). This device is for use only when the waste is being tested for the mobility of volatile analytes (i.e., those listed in Table 1 of this Appendix). The ZHE (depicted in Figure 2 of this Appendix) allows for liquid/solid separation within the device, and effectively precludes headspace. This type of vessel allows for initial liquid/solid separation, extraction, and final extract filtration without opening the vessel (see Section 4.3.1 of this Appendix). The vessels shall have an internal volume of 500-600 mL, and be equipped to accommodate a 90-110 mm filter. The devices contain VITON O-rings which should be replaced frequently. Suitable ZHE devices known to EPA are identified in Table 3 of this Appendix.

For the ZHE to be acceptable for use, the piston within the ZHE should be able to be moved with approximately fifteen pounds per square inch (15 psi) or less. If it takes more pressure to move the piston, the O-rings in the device should be replaced. If this does not solve the problem, the ZHE is unacceptable for TCLP analyses and the manufacturer should be contacted.

The ZHE should be checked for leaks after every extraction. If the device contains a built-in pressure gauge, pressurize the device to fifty pounds per square inch (50 psi), allow it to stand unattended for one (1) hour, and recheck the pressure. If the device does not have a built-in pressure gauge, pressurize the device to fifty pounds per square inch (50 psi), submerge it in water, and check for the presence of air bubbles escaping from any of the fittings. If pressure is lost, check all

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fittings and inspect and replace O-rings, if necessary. Retest the device. If leakage problems cannot be solved, the manufacturer should be contacted.

Some ZHEs use gas pressure to actuate the ZHE piston, while others use mechanical pressure (see Table 3 of this Appendix). Whereas the volatiles procedures (see Section 7.3 of this Appendix) refers to pounds per square inch (psi), for the mechanically actuated piston, the pressure applied is measured in torque-inch-pounds. Refer to the manufacturer's instructions as to the proper conversion.

4.2.2

Bottle Extraction Vessel. When the waste is being evaluated using the nonvolatile extraction, a jar with sufficient capacity to hold the sample and the extraction fluid is needed. Headspace is allowed in this vessel.

The extraction bottles may be constructed from various materials, depending on the analytes to be analyzed and the nature of the waste (see Section 4.3.3 of this Appendix). It is recommended that borosilicate glass bottles be used instead of other types of glass, especially when inorganics are of concern. Plastic bottles, other than polytetrafluoroethylene, shall not be used if organics are to be investigated. Bottles are available from a number of laboratory suppliers. When this type of extraction vessel is used, the filtration device discussed in Section 4.3.2 is used for initial liquid/solid separation and final extract filtration.

4.3

Filtration Devices: It is recommended that all filtrations be performed in a hood.

4.3.1

Zero-Headspace Extractor Vessel (ZHE): When the waste is evaluated for volatiles, the zero-headspace extraction vessel described in Section 4.2.1 is also used for filtration. The device shall be capable of supporting and keeping in place the glass fiber filter and be able to withstand the pressure needed to accomplish separation (50 psi).

Note: When it is suspected that the glass fiber filter has been ruptured, an in-line glass fiber filter may be used to filter the material within the ZHE.

4.3.2

Filter Holder: When the waste is evaluated for other than volatile analytes, any filter holder capable of supporting a glass fiber filter and able to withstand the pressure needed to accomplish separation may be used. Suitable filter holders range from simple vacuum units to relatively complex systems capable of exerting pressures

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TOXICITY CHARACTERISTIC LEACHING PROCEDURE

of up to fifty pounds per square inch (50 psi) or more. The type of filter holder used depends on the properties of the material to be filtered (see Section 4.3.3 of this Appendix). These devices shall have a minimum internal volume of 300 mL and be equipped to accommodate a minimum filter size of 47 mm (filter holders having an internal capacity of 1.5 L or greater, and equipped to accommodate a 142 mm diameter filter, are recommended). Vacuum filtration can only be used for wastes with low solids content (<10%) and for highly granular, liquid-containing wastes. All other types of wastes should be filtered using positive pressure filtration. Suitable filter holders known to EPA are shown in Table 4 of this Appendix.

4.3.3 Materials of Construction: Extraction vessels and filtration devices shall be made of inert materials which will not leach or absorb waste components. Glass, polytetrafluoroethylene (PTFE), or type 316 stainless steel equipment may be used when evaluating the mobility of both organic and inorganic components. Devices made of high density polyethylene (HDPE), polypropylene (PP), or polyvinyl chloride (PVC) may be used only when evaluating the mobility of metals. Borosilicate glass bottles are recommended for use over other types of glass bottles, especially when inorganics are analytes of concern.

4.4 Filters: Filters shall be made of borosilicate glass fiber, shall contain no binder materials, and shall have an effective pore size of 0.6 to 0.8 μm , or equivalent. Filters known to EPA which meet these specifications are identified in Table 5 of this Appendix. Pre-filters must not be used. When evaluating the mobility of metals, filters shall be acid washed prior to use by rinsing with 1N nitric acid followed by three (3) consecutive rinses with deionized distilled water (a minimum of one Liter (1L) per rinse is recommended). Glass fiber filter are fragile and should be handled with care.

4.5 pH Meters: The meter should be accurate to ± 0.05 units at 25 degrees Celsius.

4.6 ZHE Extract Collection Devices: TEDLAR® bags or glass, stainless steel or PTFE gag-tight syringes are used to collect the initial liquid phase of the final extract of the waste when using the ZHE device. The devices listed are recommended for use under the following conditions:

4.6.1 If the waste contains an aqueous liquid phase or if the waste does not contain a significant amount of nonaqueous liquid (i.e., less than 1% of total waste), the TEDLAR® bag or a 600 mL syringe should be used to collect and

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- combine the initial liquid and solid extract.
- 4.6.2 If the waste contains a significant amount of nonaqueous liquid in the initial liquid phase (i.e., greater than 1% of total waste), the syringe or the TEDLAR® bag may be used for both the initial solid/liquid separation and the final extract filtration. However, analysts should use one or the other, not both.
- 4.6.3 If the waste contains no initial liquid phase (is 100% solid) or has no significant solid phase (is 100% liquid), either the TEDLAR® bag or the syringe may be used. If the syringe is used, discard the first 5 mL liquid expressed from the device. The remaining aliquots are used for analysis.
- 4.7 ZHE Extraction Fluid Transfer Devices: Any device capable of transferring the extraction fluid into the ZHE without changing the nature of the extraction fluid is acceptable (e.g., a positive displacement or peristaltic pump, a gas tight syringe, pressure filtration unit (see Section 4.3.2 of this Appendix), or other ZHE device).
- 4.8 Laboratory Balance: Any laboratory balance accurate to within ± 0.01 grams may be used (all weight measurements are to be within ± 0.1 grams).
- 4.9 Beaker or Erlenmeyer flask, glass, 500 mL.
- 4.10 Watchglass, appropriate diameter to cover beaker or erlenmeyer flask.
- 4.11 Magnetic stirrer.
- 5.0 Reagents.
- 5.1 Reagent grade chemicals shall be used in all tests. Unless otherwise indicated, it is intended that all reagents shall conform to the specifications of the Committee on Analytical Reagents of the American Chemical Society, where such specifications are available. Other grades may be used, provided it is first ascertained that the reagent is of sufficiently high purity to permit its use without lessening the accuracy of the determination.
- 5.2 Reagent water. Reagent water is defined as water in which an interferant is not observed at or above the methods detection limit of the analyte(s) of interest. For nonvolatile extractions, ASTM Type II water or equivalent meets the definition of reagent water. For volatile extractions, it is recommended that the reagent water be generated by any of the following methods. Reagent water should be monitored periodically for impurities.
- 5.2.1 Reagent water for volatile extractions may be generated

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TOXICITY CHARACTERISTIC LEACHING PROCEDURE

by passing tap water through a carbon filter bed containing about 500 grams of activated carbon (Calgon Corp., Filtrisorb-300 or equivalent).

5.2.2 A water purification system (Millipore Super-Q or equivalent) may also be used to generate reagent water for volatile extractions.

5.2.3 Reagent water for volatile extractions may also be prepared by boiling water for fifteen (15) minutes. Subsequently, while maintaining the water at 90 ± 5 degrees C, bubble a contaminant-free inert gas (e.g., nitrogen) through the water for one (1) hour. While still hot, transfer the water to a narrow mouth screw-cap bottle under zero-headspace and seal with a Teflon-lined septum and cap.

5.3 Hydrochloric acid (1N), HCl, made from ACS reagent grade.

5.4 Nitric acid (1N), HNO₃, made from ACS reagent grade.

5.5 Sodium hydroxide (1N), NaOH, made from ACS reagent grade.

5.6 Glacial acetic acid, CH₃COOH, ACS reagent grade.

5.7 Extraction fluid.

5.7.1 Extraction fluid #1: Add 5.7 mL glacial CH₃COOH with reagent water to 500 mL of reagent water (see Section 5.2 of this Appendix), add 64.3 mL of 1N NaOH, and dilute to a volume of one (1) liter. When correctly prepared, the pH of this fluid will be 4.93 ± 0.05 .

5.7.2 Extraction fluid #2: Dilute 5.7 mL glacial CH₃COOH with reagent water (see Section 5.2 of this Appendix) to a volume of one (1) liter. When correctly prepared the pH of this fluid will be 2.88 ± 0.05 .

Note: These extraction fluids should be monitored frequently for impurities. The pH should be checked prior to use to ensure that these fluids are made up accurately. If impurities are found or the pH is not within the above specifications, the fluid shall be discarded and fresh extraction fluid prepared.

5.8 Analytical standards shall be prepared according to the appropriate analytical method.

6.0 Sample Collection.

6.1 All samples shall be collected using an appropriate sampling plan.

6.2 The TCLP may place requirements on the minimal size of the field sample, depending upon the physical state or states of the waste and the analytes of concern. An aliquot is needed for preliminary evaluation of which extraction fluid is to be

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used for the nonvolatile analyte extraction procedure. Another aliquot may be needed to actually conduct the nonvolatile extraction (see Section 1.4 of this Appendix concerning the use of this extract for volatile organics). If volatile organics are of concern, another aliquot may be needed. Quality control measures may require additional aliquots. Further, it is always wise to collect more samples just in case something goes wrong with the initial attempt to conduct the test.

6.3 Preservatives shall not be added to samples before extraction.

6.4 Samples may be refrigerated unless refrigeration results in irreversible physical change to the waste. If precipitation occurs, the entire sample (including the precipitate) should be extracted.

6.5 When the waste is to be evaluated for volatile analytes, care should be taken to minimize the loss of volatiles. Samples shall be collected and stored in a manner intended to prevent the loss of volatile analytes (e.g., samples should be collected in Teflon-lined septum capped vials and stored at four (4) degrees Celsius. Samples should be opened only immediately prior to extraction).

6.6 TCLP extracts should be prepared for analysis and analyzed as soon as possible following extraction. Extracts or portions of extracts for metallic analyte determinations must be acidified with nitric acid to a pH less than 2 unless precipitation occurs see Section 7.2.14 of this Appendix if precipitation occurs). Extracts should be preserved for other analytes according to the guidance given in the individual analysis methods. Extracts or portions of extracts for organic analyte determinations shall not be allowed to come into contact with the atmosphere (i.e., no headspace) to prevent losses. See Section 8.0 (QA Requirements) of this Appendix for acceptable sample and extract holding times.

7.0 Procedure.

7.1 Preliminary Evaluations. Perform preliminary TCLP evaluations on a minimum 100 gram aliquot of waste. This aliquot may not actually undergo TCLP extraction. These preliminary evaluations include: (1) Determination of the percent solids (Section 7.1.1 of this Appendix); (2) Determination of whether the waste contains insignificant solids and is, therefore, its own extract after filtration (Section 7.1.2 of this Appendix); (3) determination of whether the solid portion of the waste requires particle size

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reduction (Section 7.1.3 of this Appendix); and (4) Determination of which of the two extraction fluids are to be used for the nonvolatile TCLP extraction of the waste (Section 7.1.4 of this Appendix).

- 7.1.1 Preliminary determination of percent solids: Percent solids is defined as that fraction of a waste sample (as a percentage of the total sample) for which no liquid may be forced out by an applied pressure, as described below.
- 7.1.1.1 If the waste will obviously yield no liquid when subjected to pressure filtration (i.e., is 100% solids) proceed to Section 7.1.3 of this Appendix.
- 7.1.1.2 If the sample is liquid or multiphasic, liquid/solid separation to make a preliminary determination of percent solids is required. This involves the filtration device described in Section 4.3.2 of this Appendix and is outlined in Sections 7.1.1.3 through 7.1.1.9 of this Appendix.
- 7.1.1.3 Pre-weigh the filter and the container that will receive the filtrate.
- 7.1.1.4 Assemble the filter holder and filter following the manufacturer's instructions. Place the filter on the support screen and secure.
- 7.1.1.5 Weigh out a subsample of the waste (100 gram minimum) and record the weight.
- 7.1.1.6 Allow slurries to stand to permit the solid phase to settle. Wastes that settle slowly may be centrifuged prior to filtration. Centrifugation is to be used only as an aid to filtration. If used, the liquid should be decanted and filtered followed by filtration of the solid portion of the waste through the same filtration system.
- 7.1.1.7 Quantitatively transfer the waste sample to the filter holder (liquid and solid phases). Spread the waste sample evenly over the surface of the filter. If filtration of the waste at 4 degrees C reduces the amount of expressed liquid over what would be expressed at room temperature then allow the sample to warm up to room temperature in the device before filtering.

Note: If the waste material (greater than 1% of original sample weight) has obviously adhered to the container used to transfer the sample to the filtration apparatus, determine the weight of this residue and subtract it from the sample weight determined in Section 7.1.1.5 of this Appendix to determine the weight of the waste sample that will be filtered.

Gradually apply vacuum or gentle pressure of 1-10 psi,

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until air or pressurizing gas moves through the filter. If this point is not reached under 10 psi, and if no additional liquid has passed through the filter in any two (2) minute interval, slowly increase the pressure in 10 psi increments to a maximum of 50 psi. After each incremental increase of 10 psi, if the pressurizing gas has not moved through the filter, and if no additional liquid has passed through the filter in any two (2) minute interval, proceed to the next 10 psi increment. When the pressurizing gas begins to move through the filter, or when liquid flow has ceased at 50 psi (i.e., filtration does not result in any additional filtrate within any two (2) minute period), stop the filtration.

Note: Instantaneous application of high pressure can degrade the glass fiber filter and may cause premature plugging.

7.1.1.8 The material in the filter holder is defined as the solid phase of the waste, and the filtrate is defined as the liquid phase.

Note: Some wastes, such as oily wastes and some paint wastes, will obviously contain some material that appears to be a liquid. Even after applying vacuum or pressure filtration, as outlined in Section 7.1.1.7 of this Appendix, this material may not filter. If this is the case, the material within the filtration device is defined as a solid. Do not replace the original filter with a fresh filter under any circumstances. Use only one (1) filter.

7.1.1.9 Determine the weight of the liquid phase by subtracting the weight of the filtrate container (see Section 7.1.1.3 of this Appendix) from the total weight of the filtrate-filled container. Determine the weight of the solid phase of the waste sample by subtracting the weight of the liquid phase from the weight of the total waste sample as determined in Sections 7.1.1.5 or 7.1.1.7 of this Appendix.

Record the weight of the liquid and solid phases. Calculate the percent solids as follows:

Percent Solids = $\frac{\text{Weight of Solid (Section 7.1.1.9)}}{\text{Total Weight of Waste (Section 7.1.1.5 or 7.1.1.7)}} \times 100$

7.1.2 If the percent solids determined in Section 7.1.1.9 of

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this Appendix is equal to or greater than 0.5%, then proceed to either Section 7.1.3 of this Appendix to determine whether the solid material requires particle size reduction or to Section 7.1.2.1 of this Appendix if it is noticed that a small amount of the filtrate is entrained in wetting of the filter. If the percent solids determined in Section 7.1.1.9 of this Appendix is less than 0.5%, then proceed to Section 7.2.9 of this Appendix if the nonvolatile TCLP is to be performed and to Section 7.3 of this Appendix with a fresh portion of the waste if the volatile TCLP is to be performed.

7.1.2.1 Remove the solid phase and filter from the filtration apparatus.

7.1.2.2 Dry the filter and solid phase at 100 ± 20 degrees C until two (2) successive weighings yield the same value within ± 1%. Record the final weight.

Note: Caution should be taken to ensure that the subject solid will not flash upon heating. It is recommended that the drying oven be vented to a hood or other appropriate device.

7.1.2.3 Calculate the percent dry solids as follows:

percent dry solids = (weight of dry waste + filter) - tared weight of filter

X 100

.....
initial weight of waste (Section 7.1.1.5 or 7.1.1.7)

7.1.2.4 If the percent dry solids is less than 0.5%, then proceed to Section 7.2.9 of this Appendix if the nonvolatile TCLP is to be performed, and to Section 7.3 of this Appendix if the volatile TCLP is to be performed. If the percent dry solids is greater than or equal to 0.5%, and if the nonvolatile TCLP is to be performed, return to the beginning of this Section (7.1) and, with a fresh portion of waste, determine whether particle size reduction is necessary (section 7.1.3 of this Appendix) and determine the appropriate extraction fluid (Section 7.1.4 of this Appendix). If only the volatile TCLP is to be performed, see the note in Section 7.1.4 of this Appendix.

7.1.3 Determination of whether the waste requires particle size reduction (particle size is reduced during this step): Using the solid portion of the waste, evaluate the solid for particle size. Particle size reduction is

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required, unless the solid has a surface area per gram of material equal to or greater than 3.1 cm², or is smaller than 1 cm in its narrowest dimension (i.e., is capable of passing through a 9.5 mm (0.375 inch) standard sieve). If the surface area is smaller or the particle size is larger than described above, prepare the solid portion of the waste for extraction by crushing, cutting, or grinding the waste to a surface area or particle size as described above. If the solids are prepared for organic volatiles extraction, special precautions must be taken (see Section 7.3.6 of this Appendix).

Note: Surface area criteria are meant for filamentous (e.g., paper, cloth, and similar) waste materials. Actual measurement of surface area is not required, nor is it recommended. For materials that do not obviously meet the criteria, sample-specific methods would need to be developed and employed to measure the surface area. Such methodology is currently not available.

7.1.4. Determination of appropriate extraction fluid: If the solid content of the waste is greater than or equal to 0.5% and the sample will be extracted for nonvolatile constituents (Section 7.2 of this Appendix), determine the appropriate fluid (Section 5.7 of this Appendix) for the nonvolatiles extraction as follows:

Note: TCLP extraction for volatile constituents uses only extraction fluid #1 (Section 5.7.1 of this Appendix). Therefore, if TCLP extraction for nonvolatiles is not required, proceed to Section 7.3 of this Appendix.

7.1.4.1 Weigh out a small subsample of the solid phase of the waste, reduce the solid (if necessary) to a particle size of approximately 1 mm in diameter or less, and transfer 5.0 grams of the solid phase of the waste to a 500 mL beaker or Erlenmeyer flask.

7.1.4.2 Add 96.5 mL of reagent water to the beaker, cover with a watchglass, and stir vigorously for 5 minutes using a magnetic stirrer. Measure and record the pH. If the pH is less than 5.0, use extraction fluid #1. Proceed to Section 7.2 of this Appendix.

7.1.4.3 If the pH from Section 7.1.4.2 of this Appendix is greater than 5.0, add 3.5 mL 1N HCl, slurry briefly, cover with a watchglass, heat to 50 degrees C for 10 minutes.

7.1.4.4 Let the solution cool to room temperature and record

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the pH. If the pH is less than 5.0, use extraction fluid #1. If the pH is greater than 5.0, use extraction fluid #2. Proceed to Section 7.2 of this Appendix.

7.1.5 If the aliquot of the waste used for the preliminary evaluation (Sections 7.1.1 through 7.1.4 of this Appendix) was determined to be 100% solid at Section 7.1.1.1 of this Appendix, then it can be used for the Section 7.2 extraction of this Appendix (assuming at least 100 grams remain), and the Section 7.3 extraction of this Appendix (assuming at least 25 grams remain). If the aliquot was subjected to the procedure in Section 7.1.1.7 of this Appendix, then another aliquot shall be used for the volatile extraction procedure in Section 7.3 of this Appendix. The aliquot of the waste subjected to the procedure in Section 7.1.1.7 of this Appendix might be appropriate for use for Section 7.2 extraction of this Appendix if an adequate amount of solid (as determined by Section 7.1.1.9 of this Appendix) was obtained. The amount of solid necessary is dependent upon whether a sufficient amount of extract will be produced to support the analyses. If an adequate amount of solid remains, proceed to Section 7.2.10 of the nonvolatile TCLP extraction found in this Appendix.

7.2 Procedure When Volatiles are not Involved. A minimum sample size of 100 grams (solid and liquid phases) is recommended. In some cases, a larger sample size may be appropriate, depending on the solids content of the waste sample (percent solids, see Section 7.1.1 of this Appendix), whether the initial liquid phase of the waste will be miscible with the aqueous extract of the solid, and whether inorganics, semivolatile organics, pesticides, and herbicides are all analytes of concern. Enough solids should be generated for extraction such that the volume of TCLP extract will be sufficient to support all the analyses required. If the amount of extract generated by a single TCLP extraction will not be sufficient to perform all of the analyses, more than one extraction may be performed and the extracts from each combined and aliquoted for analysis.

7.2.1 If the waste will obviously yield no liquid when subjected to pressure filtration (i.e., is 100% solid, see Section 7.1.1 of this Appendix), weigh out a subsample of the waste (100 gram minimum) and proceed to Section 7.2.9 of this Appendix.

7.2.2 If the sample is liquid or multiphasic, liquid/solid separation is required. This involves the filtration device described in Section 4.3.2 of this Appendix and is outlined in Sections 7.2.3 to 7.2.8 of this Appendix.

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- 7.2.3 Pre-weigh the container that will receive the filtrate.
- 7.2.4 Assemble the filter holder and filter following the manufacturer's instructions. Place the filter on the support screen and secure. Acid-wash the filter if evaluating the mobility of metals (see Section 4.4 of this Appendix).

Note: Acid-washed filters may be used for all nonvolatile extractions even when metals are not of concern.

- 7.2.5 Weigh out a subsample of the waste (100 gram minimum) and record the weight. If the waste contains less than 0.5% dry solids (Section 7.1.2 of this Appendix), the liquid portion of the waste, after filtration, is defined as the TCLP extract. Therefore, enough of the sample should be filtered so that the amount of filtered liquid will support all of the analyses required of the TCLP extract. For wastes containing greater than 0.5% dry solids (Sections 7.1.1 of 7.1.2 of this Appendix), use the percent solids information obtained in Section 7.1.1 of this Appendix to determine the optimum sample size (100 gram minimum) for filtration. Enough solids should be generated by filtration to support the analyses to be performed on the TCLP extract.
- 7.2.6 Allow slurries to stand to permit the solid phase to settle. Wastes that settle slowly may be centrifuged prior to filtration. Use centrifugation only as an aid to filtration. If the waste is centrifuged, the liquid should be decanted and filtered followed by filtration of the solid portion of the waste through the same filtration system.
- 7.2.7 Quantitatively transfer the waste sample (liquid and solid phases) to the filter holder (see Section 4.3.2 of this Appendix). Spread the waste sample evenly over the surface of the filter. If filtration of the waste at 4 degrees C reduces the amount of expressed liquid over what would be expressed at room temperature, then allow the sample to warm up to room temperature in the device before filtering.

Note: If waste material (greater than 1% of the original sample weight) has obviously adhered to the container used to transfer the sample to the filtration apparatus, determine the weight of this residue and subtract it from the sample weight determined in Section 7.2.5 to determine the weight of the waste sample that will be filtered.

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Gradually apply vacuum or gentle pressure of 1-10 psi, until air or pressurizing gas moves through the filter. If this point is reached under 10 psi, and if no additional liquid has passed through the filter in any 2 minute interval, slowly increase the pressure in ten psi increments to a maximum of 50 psi. After each incremental increase of 10 psi, if the pressurizing gas has not moved through the filter, and if no additional liquid has passed through the filter in any 2 minute interval, proceed to the next 10 psi increment. When the pressurizing gas begins to move through the filter, or when the liquid flow has ceased at 50 psi (i.e., filtration does not result in any additional filtrate within a 2 minute period), stop the filtration.

Note: Instantaneous application of high pressure can degrade the glass fiber filter and may cause premature plugging.

7.2.8 The material in the filter holder is defined as the solid phase of the waste, and the filtrate is defined as the liquid phase. Weigh the filtrate. The liquid phase may now be either analyzed (see Section 7.2.12 of this Appendix) or stored at 4 degrees C until time of analysis.

Note: Some wastes, such as oily wastes and some paint wastes, will obviously contain some material that appears to be a liquid. Even after applying vacuum or pressure filtration, as outlined in Section 7.2.7 of this Appendix, this material may not filter. If this is the case, the material within the filtration device is defined as a solid and is carried through the extraction as a solid. Do not replace the original filter with a fresh filter under any circumstances. Use only one filter.

7.2.9 If the waste contains less than 0.5% dry solids (see Section 7.1.2 of this Appendix), proceed to Section 7.2.13 of this Appendix. If the waste contains greater than 0.5% dry solids (See Sections 7.1.1 or 7.1.2 of this Appendix), and if particle size reduction of the solid waste was needed in Section 7.1.3 of this Appendix, proceed to Section 7.2.10 of this Appendix. If the waste as received passes a 9.5 mm sieve, quantitatively transfer the solid material into the extractor bottle along with the filter used to separate the initial liquid from the solid phase, and proceed to Section 7.2.11 of this Appendix.

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7.2.10 Prepare the solid portion of the waste for extraction by crushing, cutting, or grinding the waste to a surface area or particle size as described in Section 7.1.3 of this Appendix. When the surface area or particle size has been appropriately altered, quantitatively transfer the solid material into an extractor bottle. Include the filter used to separate the initial liquid from the solid phase.

Note: Sieving of the waste is not normally required. Surface area requirements are meant for filamentous (e.g., paper, cloth) and similar waste materials. Actual measurement of surface area is not recommended. If sieving is necessary, a Teflon-coated sieve should be used to avoid contamination of the sample.

7.2.11 Determine the amount of extraction fluid to add to the extractor vessel as follows:

Weight of Extraction = 20 X % solids (section 7.11) X weight of waste
filtered (section
Fluid 7.2.5 or 7.2.7

100

Slowly add this amount of appropriate extraction fluid (see Section 7.1.4 of this Appendix) to the extractor vessel. Close the extractor bottle tightly (it is recommended that Teflon tape be used to ensure a tight seal), secure in rotary agitation device, and rotate at 30 ± 2 for 18 ± 2 hours. Ambient temperature (i.e., temperature of room in which extraction takes place) shall be maintained at 23 ± 2 degrees C during the extraction period.

Note: As agitation continues, pressure may build within the extractor bottle for some types of wastes (e.g., limed or calcium carbonate containing waste may evolve gases such as carbon dioxide). To relieve excess pressure, the extractor bottle may be periodically opened (e.g., after 15 minutes, 30 minutes, and 1 hour) and vented into a hood.

7.2.12 Following the 18 ± 2 hour extraction, separate the material in the extractor vessel into its component liquid and solid phases by filtering through a new glass fiber filter, as outlined in Section 7.2.7 of this

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Appendix. For final filtration of the TCLP extract, the glass fiber filter may be changed, if necessary, to facilitate filtration. Filter(s) shall be acid-washed (see Section 4.4 of this Appendix) if evaluating the mobility of metals.

7.2.13 Prepare the TCLP extract as follows:

7.2.13.1 If the waste contained no initial liquid phase, the filtered liquid material contained from Section 7.2.12 is defined as the TCLP extract. Proceed to Section 7.2.14 of this Appendix).

7.2.13.2 If compatible (e.g., multiple phases will not result on combination), combine the filtered liquid resulting from Section 7.2.12 of this Appendix with the initial liquid phase of the waste obtained in Section 7.2.7 of this Appendix. This combined liquid is defined as the TCLP extract. Proceed to Section 7.2.14.

7.2.13.3 If the initial liquid phase of the waste, as obtained from Section 7.2.7 of this Appendix, is not or may not be compatible with the filtered liquid resulting from Section 7.2.12 of this Appendix, do not combine these liquids. Analyze these liquids, collectively defined as the TCLP extract, and combine the results mathematically, as described in Section 7.2.14 of this Appendix.

7.2.14 Following collection of the TCLP extract, the pH of the extract should be recorded. Immediately aliquot and preserve the extract for analysis. Metals aliquots must be acidified with nitric acid to pH less than 2. If precipitation is observed upon addition of nitric acid to a small aliquot of the extract, then the remaining portion of the extract for metals analyses shall not be acidified and the extract shall be analyzed as soon as possible. All other aliquots must be stored under refrigeration (4 degrees C) until analyzed. The TCLP extract shall be prepared and analyzed according to appropriate analytical methods. TCLP extracts to be analyzed for metals shall be acid digested except in those instances where digestion causes loss of metallic analytes. If an analysis of the undigested extract shows that the concentration of any regulated metallic analyte exceeds the regulatory waste, the waste is hazardous and digestion of the extract is not necessary. However, data on undigested extracts alone cannot be used to demonstrate that the waste is not hazardous. If the individual phases are to be analyzed separately, determine the volume of the individual phases (to $\pm 0.5\%$), conduct the appropriate analyses, and combine the

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results mathematically by using a simple volume-weighted average:

$$\text{Final Analyte Concentration} = \frac{(V_1)(C_1) + (V_2)(C_2)}{V_1 + V_2}$$

where:

V₁ = The volume of the first phase (L).

C₁ = The concentration of the analyte of concern in the first phase (mg/L).

V₂ = The volume of the second phase (L).

C₂ = The concentration of the analyte of concern in the second phase (mg/L).

7.2.15 Compare the analyte concentrations in the TCLP extract with the levels identified in the appropriate regulations. Refer to Section 8.0 of this Appendix for quality assurance requirements.

7.3 Procedure When Volatiles are Involved. Use the ZHE device to obtain TCLP extract for analysis of volatile compounds only. Extract resulting from the use of the ZHE shall not be used to evaluate the mobility of nonvolatile analytes (e.g., metals, pesticides, etc.).

The ZHE device has approximately a 500 mL internal capacity. The ZHE can thus accommodate a maximum of 25 grams of solid (defined as that fraction of a sample from which no additional liquid may be forced out by an applied pressure of 50 psi) due to the need to add an amount of extraction fluid equal to 20 times the weight of the solid phase.

Charge the ZHE with sample only once and do not open the device until the final extract (of the solid) has been collected. Repeat filling of the ZHE to obtain 25 grams of solid is not permitted.

Do not allow the waste, the initial liquid phase, or the extract to be exposed to the atmosphere for any more time than is absolutely necessary. Any manipulation of these materials should be done when cold (4 degrees C) to minimize loss of volatiles.

7.3.1 Preweigh the (evacuated) filtrate collection container (see Section 4.6 of this Appendix) and set aside. If using an TEDLAR® bag, express all liquid from the ZHE device into the bag, whether for the initial or final liquid/solid separation, and take an aliquot from the liquid in the bag for analysis. The containers listed in Section 4.6 of this Appendix are recommended for use

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under the conditions stated in Sections 4.6.1 through 4.6.3 of this Appendix.

7.3.2 Place the ZHE piston within the body of the ZHE (it may be helpful first to moisten the piston O-rings slightly with extraction fluid). Adjust the piston within the ZHE body to a height that will minimize the distance the piston will have to move once the ZHE is charged with sample (based upon sample size requirements determined from Section 7.3, Section 7.1.1 and/or Section 7.1.2 of this Appendix). Secure the gas inlet/outlet flange (bottom flange) onto the ZHE body in accordance with the manufacturer's instructions. Secure the glass fiber filter between the support screens and set aside. Set liquid inlet/outlet flange (top flange) aside.

7.3.3 If the waste is 100% solid (see Section 7.1.1 of this Appendix) weigh out a subsample (25 gram maximum) of the waste, record weight, and proceed to Section 7.3.5 of this Appendix).

7.3.4 If the waste contains less than 5% dry solids (Section 7.1.2 of this Appendix), the liquid portion of waste, after filtration, is defined as the TCLP extract. Filter enough of the sample so that the amount of filtered liquid will support all of the volatile analyses required. For wastes containing greater than 5% dry solids (Sections 7.1.1 and/or 7.1.2 of this Appendix), use the percent solids information obtained in Section 7.1.1 to determine the optimum sample size to charge into the ZHE. The recommended sample size is as follows:

7.3.4.1 For wastes containing less than 5% solids (see Section 7.1.1 of this Appendix) weigh out a 500 gram subsample of waste and record the weight.

7.3.4.2 For waste containing greater than 5% solids (see Section 7.1.1 of this Appendix), determine the amount of waste to charge into the ZHE as follows:

Weight of Waste to Charge ZHE = 25
.....
X 100 percent solids (see Section 7.1.1 of this Appendix)

Weigh out a sample of the waste of the appropriate size and record the weight.

7.3.5 If particle size reduction of the solid portion of the waste was required in Section 7.1.3 of this Appendix, proceed to Section 7.3.6 of this Appendix. If particle size reduction was not required in Section 7.1.3 of this

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Appendix, proceed to Section 7.3.7 of this Appendix.

7.3.6

Prepare the waste for extraction by crushing, cutting, or grinding the solid portion of the waste to a surface area or particle size as described in Section 7.1.3.1 of this Appendix. Wastes and appropriate reduction equipment should be refrigerated, if possible, to 4 degrees C prior to particle size reduction. The means used to effect particle size reduction must not generate heat in and of itself. If reduction of the solid phase of the waste is necessary, exposure of the waste to the atmosphere should be avoided to the extent possible.

Note: Sieving of the waste is not recommended due to the possibility that volatiles may be lost. The use of an appropriately graduated ruler is recommended as an acceptable alternative. Surface area requirements are meant for filamentous (e.g., paper, cloth) and similar waste materials. Actual measurement of surface area is not recommended.

When the surface area or particle size has been appropriately altered, proceed to Section 7.3.7 of this Appendix.

7.3.7

Waste slurries need not be allowed to stand to permit the solid phase to settle. Do not centrifuge wastes prior to filtration.

7.3.8

Quantitatively transfer the entire sample (liquid and solid phases) quickly to the ZHE. Secure the filter and support screens onto the top flange of the device and secure the top flange to the ZHE body in accordance with the manufacturer's instructions. Tighten all ZHE fittings and place the device in the vertical position (gas inlet/outlet flange on the bottom). Do not attach the extract collection device to the top plate.

Note: If waste material (greater than 1% of original sample weight) has obviously adhered to the container used to transfer the sample to the ZHE, determine the weight of this residue and subtract it from the sample weight determined in Section 7.3.4 of this Appendix to determine the weight of the waste sample that will be filtered.

Attach a gas line to the gas inlet/outlet valve (bottom flange) and, with the liquid inlet/outlet valve (top flange) open, begin applying gentle pressure of 1-10 psi (or more if necessary) to force all headspace slowly out of the ZHE device into a hood. At the first appearance of

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liquid from the liquid inlet/outlet valve, quickly close the valve and discontinue pressure. If filtration of the waste at 4 degrees C reduces the amount of expressed liquid over what would be expressed at room temperature, then allow the sample to warm up to room temperature in the device before filtering. If the waste is 100% solid (see Section 7.1.1 of this Appendix), slowly increase the pressure to a maximum of 50 psi to force most of the headspace out of the device and proceed to Section 7.3.12 of this Appendix.

7.3.9

Attach the evacuated pre-weighed filtrate collection container to the liquid inlet/outlet valve and open the valve. Begin applying gentle pressure of 1-10 psi to force the liquid phase of the sample into the filtrate collection container. If no additional liquid has passed through the filter in any 2 minute interval, slowly increase the pressure in 10 psi increments to a maximum of 50 psi. After each incremental increase of 10 psi, if no additional liquid has passed through the filter in any 2 minute interval, proceed to the next 10 psi increment. When liquid flow has ceased such that continued pressure filtration at 50 psi does not result in any additional filtrate within a 2 minute period, stop the filtration. Close the liquid inlet/outlet valve, discontinue pressure to the piston, and disconnect and weigh the filtrate collection container.

Note: Instantaneous application of high pressure can degrade the glass fiber filter and may cause premature plugging.

7.3.10

The material in the ZHE is defined as the solid phase of the waste and the filtrate is defined as the liquid phase.

Note: Some wastes, such as oily wastes and some paint wastes, will obviously contain some material that appears to be a liquid. Even after applying pressure filtration, this material will not filter. If this is the case, the material within the filtration device is defined as a solid and is carried through the TCLP extraction as a solid.

If the original waste contained less than 0.5% dry solids (see Section 7.1.2 of this Appendix), this filtrate is defined as the TCLP extract and is analyzed directly. Proceed to Section 7.3.15 of this Appendix.

7.3.11

The liquid phase may now be either analyzed immediately

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(see Sections 7.3.13 through 7.3.15 of this Appendix) or stored at 4 degrees C under minimal headspace conditions until time of analysis.

Determine the weight of extraction fluid #1 to add to the ZHE as follows:

Weight of Extraction Fluid = 20 W percent solids Section 7.3.1 of this Appendix X Weight of Waste filtered Section 7.3.4 or 7.3.8 of this Appendix

100

7.3.12 The following Sections detail how to add the appropriate amount of extraction fluid to the solid material within the ZHE and agitation of the ZHE vessel. Extraction fluid # 1 is used in all cases (see Section 5.7 of this Appendix).

7.3.12.1 With the ZHE in the vertical position, attach a line from the extraction fluid reservoir to the liquid inlet/outlet valve. The line used shall contain fresh extraction fluid and should be preflushed with fluid to eliminate any air pockets in the line. Release gas pressure on the ZHE piston (from the gas inlet/outlet valve, open the liquid inlet/outlet valve, and begin transferring extraction fluid (by pumping or similar means) into the ZHE. Continue pumping extraction fluid into the ZHE until the appropriate amount of fluid has been introduced into the device.

7.3.12.2 After the extraction fluid has been added, immediately close the liquid inlet/outlet valve and disconnect the extraction fluid line. Check the ZHE to ensure that all valves are in their closed positions. Manually rotate the device in an end-over-end fashion 2 or 3 times. Reposition the ZHE in the vertical position with the liquid inlet/outlet valve on top. Pressurize the ZHE to 5-10 psi (if necessary) and slowly open the liquid inlet/outlet valve to bleed out any headspace (into a hood) that may have been introduced due to the addition of extraction fluid. This bleeding shall be done quickly and shall be stopped at the first appearance of liquid from the valve. Re-pressurize the ZHE with 5-10 psi and check all ZHE fittings to ensure that they are closed.

7.3.12.3 Place the ZHE in the rotary agitation apparatus (if it is not already there) and rotate at 30 ± 2 rpm for 18 ± 2 hours. Ambient temperature (i.e., temperature of room in which extraction occurs) shall be maintained at $22 \pm$

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3 degrees C during agitation.

7.3.13

Following the 18 ± 2 hour agitation period, check the pressure behind the ZHE piston by quickly opening and closing the gas inlet/outlet valve and noting the escape of gas. If the pressure has not been maintained (i.e., no gas release observed), the device is leaking. Check the ZHE for leaking as specified in Section 4.2.1 of this Appendix, and perform the extraction again with a new sample of waste. If the pressure within the device has been maintained, the material in the extractor vessel is once again separated into its component liquid and solid phases. If the waste contained an initial liquid phase, the liquid may be filtered directly into the same filtrate collection container (i.e., TEDLAR bag) holding the initial liquid phase of the waste. A separate filtrate collection container must be used if combining would create multiple phases, or there is not enough volume left within the filtrate collection container. Filter through the glass fiber filter, using the ZHE device as discussed in Section 7.3.9 of this Appendix. All extract shall be filtered and collected if the TEDLAR bag is used, if the extract is multiphasic, or if the waste contained an initial liquid phase (see Section 4.6 and 7.3.1 of this Appendix).

Note: An in-line glass fiber filter may be used to filter the material within the ZHE if it is suspected that the glass fiber filter has been ruptured.

7.2.14

If the original waste contained no initial liquid phase, the filtered liquid material obtained from Section 7.3.13 of this Appendix is defined as the TCLP extract. If the waste contained an initial liquid phase, the filtered liquid material obtained from Section 7.3.13 of this Appendix and the initial liquid phase (Section 7.3.9 of this Appendix) are collectively defined as the TCLP extract.

7.3.15

Following collection of the TCLP extract, immediately prepare the extract for analysis and store with minimal headspace at 4 degrees C until analyzed. Analyze the TCLP extract according to the appropriate analytical methods. If the individual phases are to be analyzed separately (i.e., are not miscible), determine the volume of the individual phases (to 0.5%), conduct the appropriate analyses, and combine the results mathematically by using a simple volume-weighted average:

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$$\text{Final Analyte Concentration} = \frac{(V_1)(C_1) + (V_2)(C_2)}{(V_1) + (V_2)}$$

where:

V₁ = The volume of the first phases (L).

C₁ = The concentration of the analyte of concern in the first phase (mg/L).

V₂ = The volume of the second phase (L).

C₂ = The concentration of the analyte of concern in the second phase (mg/L).

7.3.16 Compare the analyte concentrations in the TCLP extract with the levels identified in the appropriate regulations. Refer to Section 8.0 of this Appendix for quality assurance requirements.

8.0 Quality Assurance

8.1 A minimum of one blank (using the same extraction fluid as used for the samples) must be analyzed for every 20 extractions that have been conducted in an extraction vessel.

8.2 A matrix spike shall be performed for each waste type (e.g., wastewater treatment sludge, contaminated soil, etc.) unless the result exceeds the regulatory level and the data is being used solely to demonstrate that the waste property exceeds the regulatory level. A minimum of one matrix spike must be analyzed for each analytical batch. The bias determined from the matrix spike determination shall be used to correct the measured values. (See Sections 8.2.4 and 8.2.5 of this Appendix.) As a minimum, follow the matrix spike addition guidance provided in each analytical method.

8.2.1 Matrix spikes are to be added after filtration of the TCLP extract and before preservation. Matrix spikes should not be added prior to TCLP extraction of the sample.

8.2.2 In most cases, matrix spikes should be added at a concentration equivalent to the corresponding regulatory level. If the analyte concentration is less than one half the regulatory level, the spike concentration may be as low as one half of the analyte concentration, but may not be less than five times the method detection limit. In order to avoid differences in matrix effects, the matrix spikes must be added to the same nominal volume of TCLP extract as that which was analyzed for the unspiked sample.

8.2.3 The purpose of the matrix spike is to monitor the

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performance of the analytical methods used, and to determine whether matrix interferences exist. Use of other internal calibration methods, modification of the analytical methods, or use of alternate analytical methods may be needed to accurately measure the analyte concentration of the TCLP extract when the recovery of the matrix spike is below the expected analytical method performance.

8.2.4 Matrix spike recoveries are calculated by the following formula:

$$\%R (\% \text{ Recovery}) = 100 (X_s - X_u)/K$$

where:

X_s = measured value for the spiked sample.

X_u = measured value for the unspiked sample.

K = Known value of the spike in the sample.

8.2.5 Measured values are corrected for analytical bias using the following formula:

$$X_c = 100 (X_u / \%R)$$

where:

X_c = Corrected value.

X_u = measured value of the unspiked sample

8.3 All quality control measures described in the appropriate analytical methods shall be followed.

8.4 Samples must undergo TCLP extraction within the following time periods:

SAMPLE MAXIMUM HOLDING TIMES (DAYS)

	From Field collection to TCLP extraction	From TCLP extraction to preparative extraction	From preparative extraction to determinative analysis	Total elapsed time
Volatiles	14	NA	14	28
Semivolatiles	14	7	40	61
Mercury	28	NA	28	56
Metals, except mercury	180	NA	180	360

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NA = Not Applicable

If sample holding times are exceeded, the value obtained will be considered minimal concentrations. Exceeding the holding time is not acceptable in establishing that a waste does not exceed the regulatory level. Exceeding the holding time will not invalidate characterization if the waste exceeds the regulatory level.

TABLE 1. - VOLATILE ANALYTES

Compound	CAS No.
Acetone	67-64-1
Benzene	71-43-2
n-Butyl alcohol	71-36-3
Carbon disulfide	75-15-0
Carbon tetrachloride	56-23-5
Chlorobenzene	108-90-7
Chloroform	67-66-3
1,2-Dichloroethane	107-06-2
1,1-Dichloroethylene	75-35-4
Ethyl acetate	141-78-6
Ethyl benzene	100-41-4
Ethyl ether	60-29-7
Isobutanol	78-83-1
Methanol	67-56-1
Methylene chloride	75-09-2
Methyl ethyl ketone	78-93-3
Methyl isobutyl ketone	108-10-1
Tetrachloroethylene	127-18-4
Toluene	108-88-3
1,1,1-Trichloroethane	71-55-6
Trichloroethylene	79-01-6
Trichlorofluoromethane	75-69-4
1,1,2-Trichloro-1,2,2-trifluoroethane	76-13-1
Vinyl chloride	75-01-4
Xylene	1330-20-7

When testing for any or all of these analytes, the zero-headspace extractor vessel shall be used instead of the bottle extractor.

Benzene, carbon tetrachloride, chlorobenzene, chloroform, 1,2 dichloroethane, 1,1-dichloroethylene, methyl ethyl ketone, tetrachloroethylene, trichloroethylene, and vinyl chloride are toxicity characteristic constituents.

TABLE 2. - SUITABLE ROTARY AGITATION APPARATUS

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Company	Location	Model No.
Analytical Testing and Consulting Services, Inc.	Warrington, PA, (215) 343-4490	4-vessel (DC20S), 8-vessel (DC20), 12-vessel (DC20B)
Associated Design and Manufacturing Company	Alexandria, VA, (703) 549-5999	2-vessel (3740-2), 4-vessel (3740- 4), 6-vessel (3740-6), 8- vessel (3740-8), 12-vessel (3740- 12), 24-vessel (3740-24)
Environmental Machine and Design Inc.	Lynchburg, VA, (804) 845-6424	8-vessel (08-00- 00), 4-vessel (04-00-00)
IRA Machine Shop and Laboratory	Santruce, PR, (809) 752-4004	8-vessel (011001)
Lars Lande Manufacturing	Whitmore Lake, MI, (313) 449-4116	10-vessel (01VRE) 5- vessel (5VRE)
Millipore Corp.	Bedford, MA, (800) 225-3384	4-ZHE or 4 1-liter bottle extractor (YT300RAHW)

Any device that rotates the extraction vessel in an end-over-end fashion at 30 ± 2 rpm is acceptable.

TABLE 3 - SUITABLE ZERO-HEADSPACE EXTRACTOR VESSELS

Company	Location	Model No.
Analytical Testing & Consulting Services, Inc.	Warrington, PA, (215) 343-4490	C102, Mechanical Pressure Device
Associated Design and Manufacturing Company	Alexandria, VA, (703) 549-5999	3745-ZHE, Gas Pressure Device
Lars Lande Manufacturing	Whitmore Lake, MI, (313) 449- 4116	ZHE-11, Gas Pressure Device
Millipore Corporation	Bedford, MA, (800) 225-3384	YT30090HW, Gas Pressure Device
Environmental Machine and	Lynchburg, VA, (804) 845-6424	VOLA-TOX1, Gas Pressure

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Design, Inc.

Device

- This device uses a 110 mm filter.

Any device that meets the specifications listed in Section 4.2.1 of this Appendix of the method is acceptable.

TABLE 4 - SUITABLE FILTER HOLDERS

Company	Location	Model/Catalogue No.	Size
Nucleopore Corporation	Pleasanton, CA, (800) 882-7711	425910	142 mm
		410400	47 mm
Micro Filtration Systems	Dublin, CA, (800) 344 - 7132, (415) 828-6010	302400	142 mm
		311400	47 mm
Millipore Corporation	Bedford, MA, (800) 225 - 3384	YT30142HW	142 mm
		XX1004700	47 mm

Any device capable of separating the liquid from the solid phase of the waste is suitable, providing that it is chemically compatible with the waste and the constituents to be analyzed. Plastic devices (not listed above) may be used when only inorganic analytes are of concern. The 142 mm size filter holder is recommended.

TABLE 5 - SUITABLE FILTER MEDIA

Company	Location	Model	Pore Size (μ m)
Millipore Corporation	Bedford, MA, (800) 225-3384	AP40	0.7
Nucleopore Corporation	Pleasanton, CA, (415) 463-2530	211625	0.7
Whatman Laboratory Products, Inc.	Clifton, NJ, (201) 773-5800	GFF	0.7
Micro Filtration Systems	Dublin, CA, (800) 334-7132, (415) 828-6010	GF75	0.7

Any filter that meets the specifications in Section 4.4 in this Appendix of the Method is suitable.

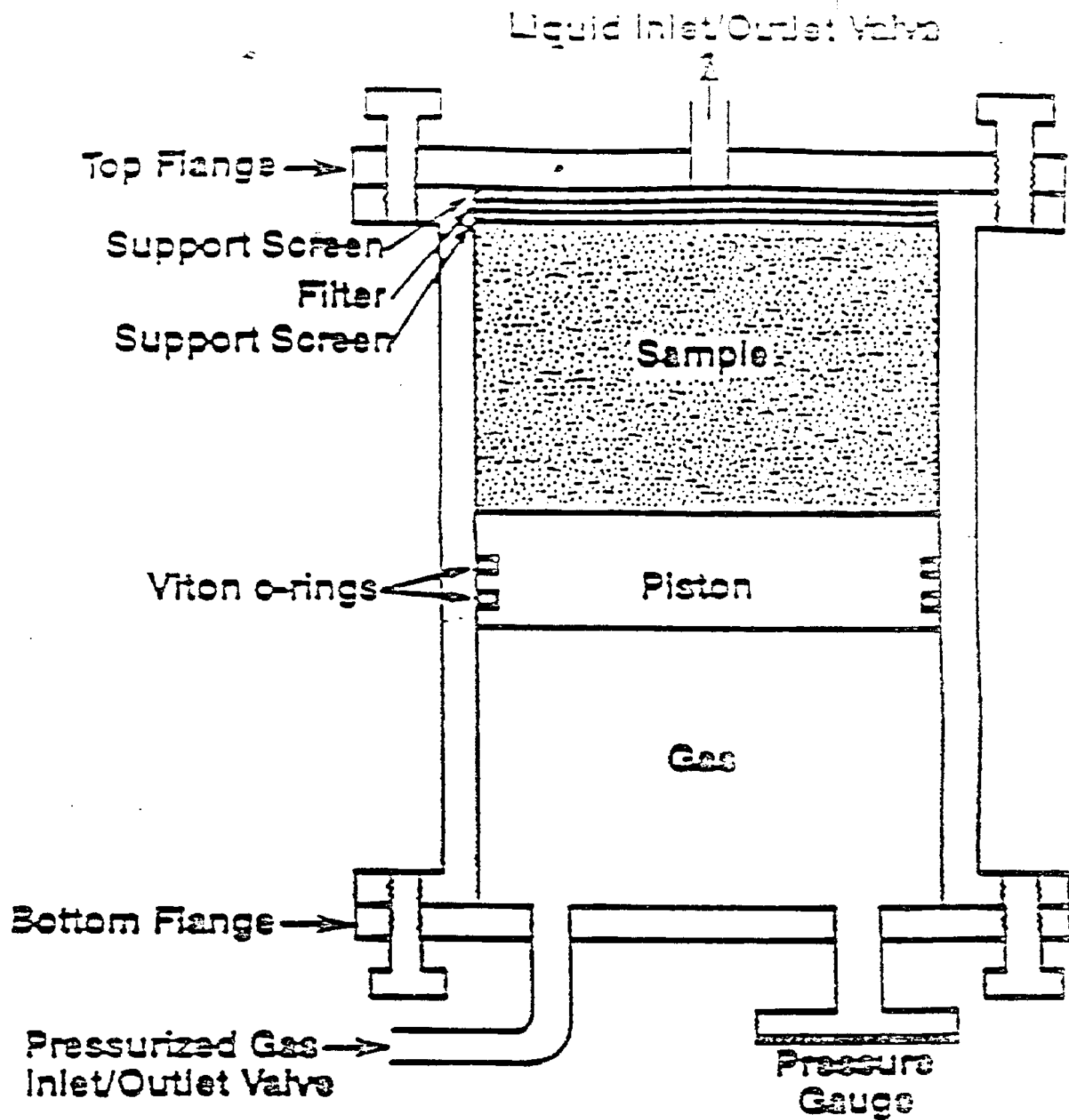


Figure 2. Zero-Headspace Extractor (ZHE)

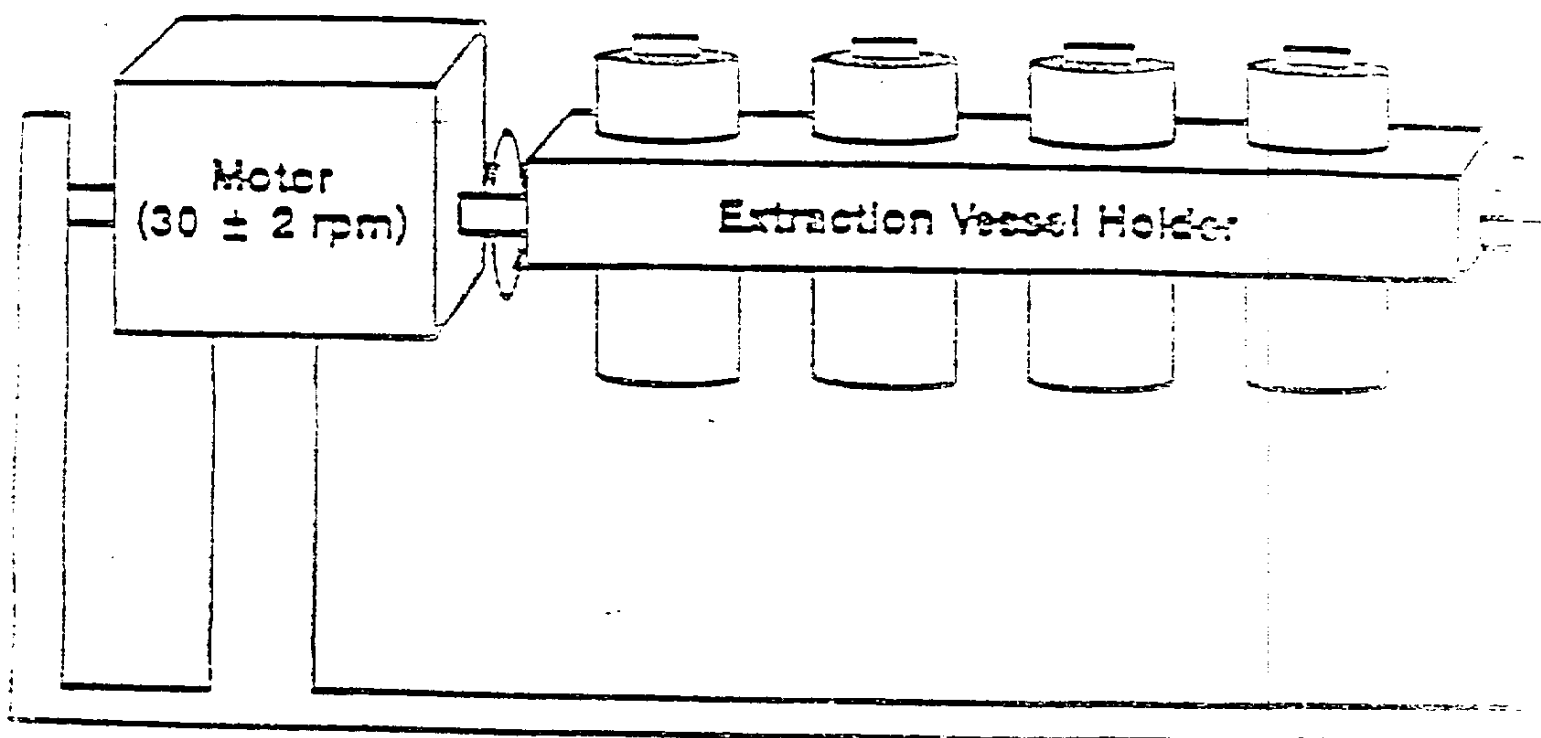


Figure 1. Rotary Agitation Apparatus

APPENDIX III Chemical Analysis Test Methods

Tables A, B, and C below specify the appropriate analytical procedures, described in SW-846, which shall be used to determine whether a sample contains a given toxic constituent listed in Appendix VII or VIII of these regulations.

Table A identifies each Appendix VII or VIII organic constituent along with the approved measurement method. Table B identifies the corresponding methods for inorganic species. Table C summarizes the contents of SW-846 and supplies specific section and method numbers for sampling and analysis methods.

Prior to final sampling and analysis method selection the analyst should consult the specific section or method described in SW-846 for additional guidance on which of the approved methods should be employed for a specific sample analysis situation.

Note: For information regarding updates or revisions of EPA Publication SW-846 refer to 40 C.F.R. Part 260.11.

TABLE A

Analysis Methods for Organic Chemicals Contained in SW-846

Compound	Method Numbers
Acetonitrile	8030,8240
Acrolein	8030,8240
Acrylamide	8015,8240
Acrylonitrile	8030,8240
2-Amino-1-methylbenzene (o-Toluidine)	8250
2-Amino-1-methylbenzene (p-Toluidine)	8250
Aniline	8250
Benzene	8020,8024
Benz(a)anthracene	8100,8250,8310
Benzo(a)pyrene	8100,8250,8310
Benzotrichloride	8120,8250
Benzyl chloride	8120,8250
Benzo(b)fluoranthene	8100,8250,8310
Bis(2-chloroethoxymethane)	8010,8240
Bis(2-chloroethyl)ether	8010,8240
Bis(2-chloroisopropyl)ether	8010,8240
Carbon disulfide	8015,8240
Carbon tetrachloride	8010,8240
Chlordane	8080,8250
Chlorinated biphenyls	8080,8250
Chlorinated dibenzo-p-dioxins	8280
Chlorinated dibenzofurans	8280
Chloroacetaldehyde	8010,8240
Chlorobenzene	8020,8240
Chloroform	8010,8240
Chloromethane	8010,8240
2-Chlorophenol	8040,8250
Chrysene	8100,8250,8310
Creosote*	8100,8250
Cresol(s)	8040,8250
Cresylic Acid(s)	8040,8250
Dichlorobenzene(s)	8010,8120,8250
Dichloroethane(s)	8010,8240
Dichloromethane	8010,8240
Dichlorophenoxyacetic acid	8150,8250
Dichloropropanol	8120,8250
1,1-Dimethylhydrazine (UDMH)	8250
2,4-Dimethylphenol	8040,8250
Dimethyl sulfate	8250,8270
Dinitrobenzene	8090,8250
4,6-Dinitro-o-cresol	8040,8250

* Analyze for phenanthrene and carbazole; if these are present in a ratio between 1.4:1 and 5:1 creosote should be considered present.

TABLE A

Analysis Methods for Organic Chemicals Contained in SW-846

Compound	Method Numbers
2,4-Dinitrotoluene	8090,8250
2,6-Dinitrotoluene	8060,8250
Endrin	8080,8250
2-Ethoxyethanol	8030,8240
Ethyl ether	8015,8240
Ethylene dibromide	8010,8240
Ethylene thiourea	8250,8330
Formaldehyde	8015,8240
Formic acid	8250
Heptachlor	8080,8250
Hexachlorobenzene	8120,8250
Hexachlorobutadiene	8120,8250
Hexachloroethane	8010,8240
Hexachlorocyclopentadiene	8120,8250
Lindane	8080,8250
Maleic anhydride	8250
Methanol	8010,8240
Methomyl	8250
Methyl bromide	8010,8240,8260
Methyl ethyl ketone	8015,8240
Methyl isobutyl ketone	8015,8240
Napthalene	8100,8250
Napthoquinone	8090,8250
Nitrobenzene	8090,8250
4-Nitrophenol	8040,8240
2-Nitropropane	8030,8240
Paraldehyde (trimer of acetaldehyde)	8015,8240
Pentachlorophenol	8040,8250
Phenol	8040,8250
Phorate	8140
Phosphorodithioic acid esters	8140
Phthalic anhydride	8090,8250
2-Picoline	8090,8250
Pyridine	8090,8250
Tetrachlorobenzene(s)	8120,8250
Tetrachloroethane(s)	8010,8240
Tetrachloroethane	8010,8240
Tetrachlorophenol	8040,8250
Toluene	8020,8024
Toluene diisocyanate(s)	8250
Toluenediamine	8250
2,4-Toluenediamine	8250
2,6-Toluenediamine	8250
3,4-Toluenediamine	8250

TABLE A

Analysis Methods for Organic Chemicals Contained in SW-846

Compound	Method Numbers
Toxaphene	8080,8250
Trichloroethane	8010,8240
Trichloroethane(s)	8010,8240
Trichlorofluoromethane	8010,8240
Trichlorophenol(s)	8040,8250
2,4,5-Trichlorophenoxy propionic acid	8150,8250
Trichloropropane	8010,8240
Vinyl chloride	8010,8240
Vinylidene chloride	8010,8240
Xylene	8020,8240

Table B-- Analysis Methods for Inorganic Chemicals and Miscellaneous Groups of Analytes Contained in SW-846^a

Compound	Third Edition Method(s)	Second Edition Method(s)
Aluminum	6010	
Antimony	6010	7040, 7041
Arsenic	6010	7060, 7061
Barium	6010	7080, 7081
Beryllium	6010, 7090, 7091	
Boron	6010	
Cadmium	6010	7130, 7131
Calcium	6010	
Chromium	6010	7190, 7191
C h r o m i u m , Hexavalent	7198	7195, 7196, 7197
Cobalt	6010	
Copper	6010, 7210, 7211	
Iron	6010, 7380, 7381	
Lead	6010	7420, 7421
Magnesium	6010	
Manganese	6010, 7460, 7461	
Mercury		7470, 7471
Molybdenum	6010	
Nickel	6010	7520, 7521
Osmium	7550	
Potassium	6010	

Selenium	6010	7740, 7741
Silicon	6010	
Silver	6010	7760, 7761
Sodium	6010, 7770	
Thallium	6010, 7840, 7841	
Vanadium	6010, 7910, 7911	
Zinc	6010, 7950, 7951	
Cyanides		9010
Total Organic Halides	9022	9020
Sulfides		9030
Sulfates	9035, 9036, 9038	
Total Organic Carbon	9060	
Phenolics	9065, 9066*, 9067	
Oil and Grease	9070, 9071	
Total Coliform	9131, 9132	
Nitrate	9200	
Chlorides	9250, 9251, 9252	
Gross Alpha and Gross Beta	9310	
Alpha-Emitting Radium Isotopes	9315	
Radium-228	9320	

FOOTNOTE: ^aThe Third Edition of SW-846 and its Revision I are available from the Government Printing Office, Superintendent of Documents, Washington, DC 20402, (202) 783-3238, document number 955-001-00000-1.

Table C -- Sampling and Analysis Methods Contained in SW-846^a

Title	Third Edition		Second Edition	
	Section No.	Method No.	Section No.	Method No.
Quality Control	1.0		10.0	
Introduction	1.1		10.1	
Quality Control	1.2			
Method Detection Limit	1.3			
Data Reporting	1.4			
Quality Control Documentation	1.5			
References	1.6			
Choosing the Correct Procedure	2.0			
Purpose	2.1			
Required Information	2.2			
Implementing the Guidance	2.3			
Characteristics	2.4			
Ground Water	2.5			
References	2.6			
Metallic Analytes	3.0			
Sampling Considerations	3.1			
Sample Preparation Methods	3.2			
Acid Digestion of Waters for Total Recoverable or Dissolved Metals for Analysis by Flame AAS or ICP	3.2	3005		
Acid Digestion of Aqueous Samples and Extracts for Total Metals for Analysis by Flame AAS or ICP	3.2	3010	4.1	3010

Acid Digestion of Aqueous Samples and Extracts for Total Metals for Analysis by Furnace AAS	3.2	3020	4.1	3020
Dissolution Procedure for Oils, Greases, or Waxes	3.2	3040	4.1	3040
Acid Digestion of Sediments, Sludges and Soils	3.2	3050	4.1	3050
Methods for the Determination of Metals	3.3			
Inductively Coupled Plasma Atomic Emissions Spectroscopy	3.3	*6010		
Atomic Absorption Methods	3.3	7000		
Aluminum, Flame AAS	3.3	7020		
Antimony, Flame AAS	3.3	7040	7.0	7040
Antimony, Furnace AAS	3.3	7041	7.0	7041
Arsenic, Furnace AAS	3.3	7060	7.0	7060
Arsenic, Gaseous Hydride AAS	3.3	7061	7.0	7061
Barium, Flame AAS	3.3	7080	7.0	7080
Barium, Furnace AAS	3.3	7881	7.0	7881
Beryllium, Flame AAS	3.3	*7090		
Beryllium, Furnace AAS	3.3	*7091		
Cadmium, Flame AAS	3.3	7130	7.0	7130
Cadmium, Furnace AAS	3.3	7131	7.0	7131
Calcium, Flame AAS	3.3	7140		
Chromium, Flame AAS	3.3	7190	7.0	7190
Chromium, Furnace AAS	3.3	7191	7.0	7191
Chromium, Hexavalent, Coprecipitation	3.3	7195	7.0	7195
Chromium, Hexavalent, Colorimetric	3.3	7196	7.0	7196
Chromium, Hexavalent, Chelation/Extraction	3.3	7197	7.0	7197

Chromium, Hexavalent, Differential Pulse Polarography	3.3	*7198		
Cobalt, Flame AAS	3.3	7200		
Cobalt, Furnace AAS	3.3	7201		
Copper, Flame AAS	3.3	*7210		
Copper, Furnace AAS	3.3	*7211		
Iron, Flame AAS	3.3	*7380		
Iron, Furnace AAS	3.3	*7381		
Lead, Flame AAS	3.3	7420	7.0	7420
Lead, Furnace AAS	3.3	7421	5.0	7421
Magnesium, Flame AAS	3.3	7450		
Manganese, Flame AAS	3.3	*7460		
Manganese, Furnace AAS	3.3	*7461		
Mercury in Liquid Waste, Manual Cold Vapor Technique	3.3	7470	7.0	7470
Mercury in Solid or Semisolid Waste, Manual Cold Vapor Technique	3.3	7471	7.0	7471
Molybdenum, Flame AAS	3.3	7480		
Molybdenum, Furnace AAS	3.3	7481		
Nickel, Flame AAS	3.3	7520	7.0	7520
Osmium, Flame AAS	3.3	*7550		
Potassium, Flame AAS	3.3	7610		
Selenium, Furnace AAS	3.3	7740	7.0	7740
Selenium, Gaseous Hydride AAS	3.3	7741	7.0	7741
Silver, Flame AAS	3.3	7760	7.0	7760
Silver, Furnace AAS	3.3	7761	7.0	7761
Sodium, Flame AAS	3.3	*7770		
Thallium, Flame AAS	3.3	*7840		

Thallium, Furnace AAS	3.3	*7841		
Tin, Flame AAS	3.3	7870		
Vanadium, Flame AAS	3.3	*7910		
Vanadium, Furnace AAS	3.3	*7911		
Zinc, Flame AAS	3.3	*7950		
Zinc, Furnace AAS	3.3	*7951		
Organic Analytes	4.0		8.0	
Sampling Considerations	4.1			
Sample Preparation Methods	4.2			
Extractions and Preparations	4.2.1			
Organic Extraction and Sample Preparation	4.2.1	3500		
Separatory Funnel Liquid-Liquid Extraction	4.2.1	3510	4.2	3510
Continuous Liquid-Liquid Extraction	4.2.1	3520	4.2	3520
Soxhlet Extraction	4.2.1	3540	4.2	3540
Ultrasonic Extraction	4.2.1	3550	4.2	3550
Waste Dilution	4.2.1	3580		
Purge-and-Trap	4.2.1	5030	5.0	5030
Protocol for Analysis of Sorbent Cartridges from VOST	4.2.1	*5040		
Cleanup	4.2.2			
Cleanup	4.2.2	3600		
Alumina Column Cleanup	4.2.2	3610		
Alumina Column Cleanup and Separation of Petroleum Wastes	4.2.2	*3611		
Florisil Column Cleanup	4.2.2	3620		
Silica Gel Cleanup	4.2.2	3630		

Gel-Permeation Cleanup	4.2.2	3640		
Acid-Base Partition Cleanup	4.2.2	3650	4.2	3530
Sulfur Cleanup	4.2.2	3660		
Determination of Organic Analytes	4.3			
Gas Chromatographic Methods	4.3.1		8.1	
Gas Chromatography	4.3.1	8000		
Halogenated Volatile Organics	4.3.1	8010	8.1	8010
EDB and DBCP	4.3.1	8011		
Nonhalogenated Volatile Organics	4.3.1	8015	8.1	8015
Aromatic Volatile Organics	4.3.1	8020	8.1	8020
Volatile Organic Compounds in Water by Purge-and-Trap Capillary Column GC with PID and Electrolytic Conductivity Detector in Series	4.3.1	8021		
Acrolein, Acrylonitrile, Acetonitrile	4.3.1	8030	8.1	8030
Phenols	4.3.1	8040	8.1	8040
Phthalate Esters	4.3.1	8060	8.1	8060
Nitrosamines	4.3.1	8070		
Organochlorine Pesticides and PCBs as Aroclors	4.3.1	8080	8.1	8080
Nitroaromatics and Cyclic Ketones	4.3.1	8090	8.1	8090
Polynuclear Aromatic Hydrocarbons	4.3.1	8100	8.1	8100
Haloethers	4.3.1	8110		
Chlorinated Hydrocarbons	4.3.1	8120	8.1	8120
Organophosphorus Pesticides	4.3.1	8140	8.1	8140
Organophosphorus Pesticides: Capillary Column	4.3.1	8141		
Chlorinated Herbicides	4.3.1	8150	8.1	8150

Gas Chromatographic / Mass Spectroscopic Methods	4.3.2		8.2	
GC/MS Volatiles	4.3.2	8240	8.2	8240
GC/MS Semivolatiles, Packed Column	4.3.2	8250	8.2	8250
GC/MS for Volatiles Capillary Column	4.3.2	8260		
GC/MS Semivolatiles, Capillary Column	4.3.2	8270	8.2	8270
Analysis of Chlorinated Dioxins and Dibenzofurans	4.3.2	8280		
High Performance Liquid Chromatographic Methods (HPLC)	4.3.3		8.3	
Polynuclear Aromatic Hydrocarbons	4.3.3	8310	8.3	8310
Miscellaneous Screening Methods	4.4			
Headspace	4.4	3810	5.0	5020
Hexadecane Extraction and Screening of Purgeable Organics	4.4	3820		
Miscellaneous Test Methods	5.0		9.0	
Total and Amenable Cyanide (Colorimetric, Manual)	5.0	9010	9.0	9010
Total and Amenable Cyanide (Colorimetric, Automated)	5.0	9012		
Total Organic Halides (TOX)	5.0	9020	9.0	9020
Purgeable Organic Halides (POX)	5.0	9021		
Total Organic Halides (TOX) by Neutron Activation Analysis	5.0	*9022		
Acid-Soluble and Acid-Insoluble Sulfides	5.0	9030	9.0	9030
Extractable Sulfides	5.0	9031		
Sulfate, (Colorimetric, Automated, Chloranilate)	5.0	*9035		
Sulfate, (Colorimetric, Automated, Methylthymol Blue, AA II)	5.0	*9036		

Sulfate, (Turbidimetric)	5.0	*9038		
Total Organic Carbon	5.0	*9060		
Phenolics, (Spectrophotometric, Manual 4-AAP)	5.0	*9065		
Phenolics, (Colorimetric, Automated 4-AAP)	5.0	*9066		
Phenolics, (Spectrophotometric, MBTH)	5.0	*9067		
Total Recoverable Oil and Grease (Gravimetric, Separatory Funnel Extraction)	5.0	*9070		
Oil and Grease Extraction Method for Sludge Samples	5.0	*9071		
Total Coliform: Multiple Tube Fermentation	5.0	*9131		
Total Coliform: Membrane Filter	5.0	*9132		
Nitrate	5.0	*9200		
Chloride (Colorimetric, Automated Ferricyanide AAI)	5.0	*9250		
Chloride (Colorimetric, Automated Ferricyanide AAI)	5.0	*9251		
Chloride (Titrimetric, Mercuric Nitrate)	5.0	*9252		
Properties	6.0			
Multiple Extraction Procedure	6.0	*1320		
Extraction Procedure for Oily Wastes	6.0	*1330		
pH Electrometric Measurement	6.0	9040	9.0	9040
pH Paper Method	6.0	9041		
Soil pH	6.0	9045		
Specific Conductance	6.0	9050		
Cation-Exchange Capacity of Soils (Ammonium Acetate)	6.0	*9080		

Cation-Exchange Capacity of Soils (Sodium Acetate)	6.0	*9081		
Compatibility Test for Wastes and Membrane Liners	6.0	9090		
Paint Filter Liquids Test	6.0	9095	9.0	9095
Saturated Hydraulic Conductivity, Saturated Leachate Conductivity, and Intrinsic Permeability	6.0	*9100		
Gross Alpha and Gross Beta	6.0	*9310		
Alpha-Emitting Radium Isotopes	6.0	*9315		
Radium-228	6.0	*9320		
Introduction and Regulatory Definitions	7.0		2.0	
Ignitability	7.1		2.1.1	
Corrosivity	7.2		2.1.2	
Reactivity	7.3		2.1.3	
Test Method to Determine Hydrogen Cyanide Released from Wastes	7.3			
Test Method to Determine Hydrogen Sulfide Released from Wastes	7.3			
Extraction Procedure Toxicity	7.4		2.1.4	
Methods for Determining Characteristics	8.0		2.0	
Ignitability	8.1		2.1.1	
Pensky-Martens Closed-Cup Method	8.1	1010	2.1.1	1010
Setaflash Closed-Cup Method	8.1	1020	2.1.1	1020
Corrosivity	8.2		2.1.2	
Corrosivity Toward Steel	8.2	1110	2.1.2	1110
Reactivity	8.3		2.1.3	
Toxicity	8.4		2.1.4	

Extraction Procedure (EP) Toxicity Test Method and Structural Integrity Test	8.4	1310	2.1.4	1310
Sampling Plan	9.0		1.0	
Design and Development	9.1		1.0 , 1.1	
Implementation	9.2		1.2 , 1.3 , 1.4	
Sampling Methods	10.0			
Modified Method 5 Sampling Train, Appendix A and B	10.0	*0010		
Source Assessment Sampling System (SASS)	10.0	*0020		
Volatile Organic Sampling Train	10.0	*0030		
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Acceptable Designs and Practices	11.4			
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Land Treatment Monitoring	12.0			
Background	12.1			
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Regulatory Definition	12.3			
Monitoring and Sampling Strategy	12.4			
Analysis	12.5			
References and Bibliography	12.6			
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Introduction	13.1
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Waste Characterization Strategy	13.3
Stack-Gas Effluent Characterization Strategy	13.4
Additional Effluent Characterization Strategy	13.5
Selection of Specific Sampling and Analysis Methods	13.6
References	13.7

FOOTNOTE: ^aThe Third Edition and its Updates will supersede the Second Edition and its Updates I and II when it is adopted. Until the Third Edition is adopted, in a final rule, the Second Edition and its updates must be used for regulatory purposes. Therefore, reference to the Third Edition, in these tables is provided for convenience. The Third Edition of SW-846 and Update I are available from the Government Printing Office, Superintendent of Documents, Washington, DC 20402, (202) 738-3238, document number 955-001-00000-1.

FOOTNOTE: *This method may be used in conjunction with or in addition to the methods found in the Second Edition of SW-846 as amended by Updates I and II.

FOOTNOTE: When Method 9066 is used it must be preceded by the manual distillation specified in procedure 7.1 of Method 9065. Just prior to distillation in Method 9065, adjust the sulfuric acid-preserved sample to pH 4 with 1+9 NaOH. After the manual distillation is completed, the autoanalyzer manifold is simplified by connecting the re-sample line directly to the sampler.

APPENDIX IV
Radioactive Waste Test Methods
(reserved)

APPENDIX V

Appendix V -- Examples of Potentially Incompatible Waste

Many hazardous wastes, when mixed with other waste or materials at a hazardous waste facility, can produce effects which are harmful to human health and the environment, such as (1) heat or pressure, (2) fire or explosion, (3) violent reaction, (4) toxic dusts, mists, fumes, or gases, or (5) flammable fumes or gases.

Below are examples of potentially incompatible wastes, waste components, and materials, along with the harmful consequences which result from mixing materials in one group with materials in another group. The list is intended as a guide to owners or operators of treatment, storage, and disposal facilities, and to enforcement and permit granting officials, to indicate the need for special precautions when managing these potentially incompatible waste materials or components.

This list is not intended to be exhaustive. An owner or operator must, as the regulations require, adequately analyze his wastes so that he can avoid creating uncontrolled substances or reactions of the type listed below, whether they are listed below or not.

It is possible for potentially incompatible wastes to be mixed in a way that precludes a reaction (e.g., adding acid to water rather than water to acid) or that neutralizes them (e.g., a strong acid mixed with a strong base), or that controls substances produced (e.g., by generating flammable gases in a closed tank equipped so that ignition cannot occur, and burning the gases in an incinerator).

In the lists below, the mixing of a Group A material with a Group B material may have the potential consequence as noted.

Group 1-A

Acetylene sludge
Alkaline caustic liquids
Alkaline cleaner
Alkaline corrosive liquids
Alkaline corrosive battery fluid
Caustic wastewater
Lime sludge and other corrosive alkalies
Lime wastewater
Lime and water
Spent caustic

Group 1-B

Acid sludge

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Acid and water
Battery acid
Chemical cleaners
Electrolyte, acid
Etching acid liquid or solvent
Pickling liquor and other corrosive acids
Spent acid
Spent mixed acid
Spent sulfuric acid

Potential consequences: Heat generation; violent reaction.

Group 2-A

Aluminum
Beryllium
Calcium
Lithium
Magnesium
Potassium
Sodium
Zinc powder
Other reactive metals and metal hydrides

Group 2-B

Any waste in Group 1-A or 1-B

Potential consequences: Fire or explosion; generation of flammable hydrogen gas.

Group 3-A

Alcohols
Water

Group 3-B

Any concentrated waste in Groups 1-A or 1-B
Calcium
Lithium
Metal hydrides
Potassium
SO₂Cl₂, SOCl₂, PCl₃, CH₃SiCl₃
Other water-reactive waste

Potential consequences: Fire, explosion, or heat generation; generation of flammable or toxic gases.

Group 4-A

APPENDIX V

Alcohols
Aldehydes
Halogenated hydrocarbons
Nitrated hydrocarbons
Unsaturated hydrocarbons
Other reactive organic compounds and solvents

Group 4-B

Concentrated Group 1-A or 1-B wastes
Group 2-A wastes

Potential consequences: Fire, explosion, or violent reaction.

Group 5-A

Spent cyanide and sulfide solutions

Group 5-B

Group 1-B wastes

Potential consequences: Generation of toxic hydrogen cyanide or hydrogen sulfide gas.

Group 6-A

Chlorates
Chlorine
Chlorites
Chromic acid
Hypochlorites
Nitrates
Nitric acid, fuming
Perchlorates
Permanganates
Peroxides
Other strong oxidizers

Group 6-B

Acetic acid and other organic acids
Concentrated mineral acids
Group 2-A wastes
Group 4-A wastes
Other flammable and combustible wastes

Potential consequences: Fire, explosion, or violent reaction.

Source: ``Law, Regulations, and Guidelines for Handling of

APPENDIX V

Hazardous Waste.' ' California Department of Health, February 1975.

(reserved)

Appendix VII -- Basis for Listing Hazardous Waste

E hazardous waste No.	P	A	Hazardous constituents for which listed
F001			Tetrachloroethylene, methylene chloride, trichloroethylene, 1,1,1-trichloroethane, carbon tetrachloride, chlorinated fluorocarbons.
F002			Tetrachloroethylene, methylene chloride, trichloroethylene, 1,1,1-trichloroethane, 1,1,2-trichloroethane, chlorobenzene, 1,1,2-trichloro-1,2,2-trichlorofluoroethane, ortho-dichlorobenzene, trichlorofluoromethane.
F003			N.A.
F004			Cresols and cresylic acid, nitrobenzene.
F005			Toluene, methyl ethyl ketone, carbon disulfide, isobutanol, pyridine, 2-ethoxyethanol, benzene, 2-nitropropane.
F006			Cadmium, hexavalent chromium, nickel, cyanide (complexed).
F007			Cyanide (salts).
F008			Cyanide (salts).
F009			Cyanide (salts).
F010			Cyanide (salts).
F011			Cyanide (salts).
F012			Cyanide (complexed).
F019			Hexavalent chromium, cyanide (complexed).
F020			Tetra- and pentachlorodibenzo-p-dioxins; tetra and pentachlorodi-benzofurans; tri- and tetrachlorophenols and their chlorophenoxy derivative acids, esters, ethers, amine and other salts.
F021			Penta- and hexachlorodibenzo-p-dioxins; penta- and hexachlorodibenzofurans; pentachlorophenol and its derivatives.

- F022 Tetra-, penta-, and hexachlorodibenzo-p-dioxins; tetra-, penta-, and hexachlorodibenzofurans.
- F023 Tetra-, and pentachlorodibenzo-p-dioxins; tetra- and pentachlorodibenzofurans; tri- and tetrachlorophenols and their chlorophenoxy derivative acids, esters, ethers, amine and other salts.
- F024 Chloromethane, dichloromethane, trichloromethane, carbon tetrachloride, chloroethylene, 1,1-dichloroethane, 1,2-dichloroethane, trans-1,2-dichloroethylene, 1,1-dichloroethylene, 1,1,1-trichloroethane, 1,1,2-trichloroethane, trichloroethylene, 1,1,1,2-tetra-chloroethane, 1,1,2,2-tetrachloroethane, tetrachloroethylene, pentachloroethane, hexachloroethane, allyl chloride (3-chloropropene), dichloropropane, dichloropropene, 2-chloro-1,3-butadiene, hexachloro-1,3-butadiene, hexachlorocyclopentadiene, hexachlorocyclohexane, benzene, chlorobenzene, dichlorobenzenes, 1,2,4-trichlorobenzene, tetrachlorobenzene, pentachlorobenzene, hexachlorobenzene, toluene, naphthalene.
- F025 Chloromethane; Dichloromethane; Trichloromethane;
Carbon tetrachloride; Chloroethylene;
1,1-Dichloroethane; 1,2-Dichloroethane;
trans-1,2-Dichloroethylene; 1,1-Dichloroethylene;
1,1,1-Trichloroethane; 1,1,2-Trichloroethane;
Trichloroethylene; 1,1,1,2-Tetrachloroethane;
1,1,2,2-Tetrachloroethane; Tetrachloroethylene;
Pentachloroethane; Hexachloroethane; Allyl chloride
(3-Chloropropene); Dichloropropane; Dichloropropene;
2-Chloro-1,3-butadiene; Hexachloro-1,3-butadiene;
Hexachlorocyclopentadiene; Benzene; Chlorobenzene;
Dichlorobenzene; 1,2,4-Trichlorobenzene;
Tetrachlorobenzene; Pentachlorobenzene;
Hexachlorobenzene; Toluene; Naphthalene.
- F026 Tetra-, penta-, and hexachlorodibenzo-p-dioxins; tetra-, penta-, and hexachlorodibenzofurans.
- F027 Tetra-, penta-, and hexachlorodibenzo-p-dioxins; tetra-, penta-, and hexachlorodibenzofurans; tri-, tetra-, and pentachlorophenols and their chlorophenoxy derivative acids, esters, ethers, amine and other salts.
- F028 Tetra-, penta-, and hexachlorodibenzo-p-dioxins; tetra-, penta-, and hexachlorodibenzofurans; tri-, tetra-, and pentachlorophenols and their chlorophenoxy derivative acids, esters, ethers, amine and other

salts.

<u>F039</u>	<u>All constituents for which treatment standards are specified for multi-source leachate (wastewaters and nonwastewaters) under 40 CFR 268.43(a), Table CCW.</u>
K001	Pentachlorophenol, phenol, 2-chlorophenol, p-chloro-m-cresol, 2,4-dimethylphenyl, 2,4-dinitrophenol, trichlorophenols, tetrachlorophenols, 2,4-dinitrophenol, cresosote, chrysene, naphthalene, fluoranthene, benzo(b)fluoranthene, benzo(a)pyrene, indeno(1,2,3-cd)pyrene, benz(a)anthracene, dibenz(a)anthracene, acenaphthalene.
K002	Hexavalent chromium, lead
K003	Hexavalent chromium, lead.
K004	Hexavalent chromium.
K005	Hexavalent chromium, lead.
K006	Hexavalent chromium.
K007	Cyanide (complexed), hexavalent chromium.
K008	Hexavalent chromium.
K009	Chloroform, formaldehyde, methylene chloride, methyl chloride, paraldehyde, formic acid.
K010	Chloroform, formaldehyde, methylene chloride, methyl chloride, paraldehyde, formic acid, chloroacetaldehyde.
K011	Acrylonitrile, acetonitrile, hydrocyanic acid.
K013	Hydrocyanic acid, acrylonitrile, acetonitrile.
K014	Acetonitrile, acrylamide.
K015	Benzyl chloride, chlorobenzene, toluene, benzotrichloride.
K016	Hexachlorobenzene, hexachlorobutadiene, carbon tetrachloride, hexachloroethane, perchloroethylene.
K017	Epichlorohydrin, chloroethers [bis(chloromethyl) ether and bis (2-chloroethyl) ethers], trichloropropane, dichloropropanols.

K018 1,2-dichloroethane, trichloroethylene, hexachlorobutadiene, hexachlorobenzene.

K019 Ethylene dichloride, 1,1,1-trichloroethane, 1,1,2-trichloroethane, tetrachloroethanes (1,1,2,2-tetrachloroethane and 1,1,1,2-tetrachloroethane), trichloroethylene, tetrachloroethylene, carbon tetrachloride, chloroform, vinyl chloride, vinylidene chloride.

K020 Ethylene dichloride, 1,1,1-trichloroethane, 1,1,2-trichloroethane, tetrachloroethanes (1,1,2,2-tetrachloroethane and 1,1,1,2-tetrachloroethane), trichloroethylene, tetrachloroethylene, carbon tetrachloride, chloroform, vinyl chloride, vinylidene chloride.

K021 Antimony, carbon tetrachloride, chloroform.

K022 Phenol, tars (polycyclic aromatic hydrocarbons).

K023 Phthalic anhydride, maleic anhydride.

K024 Phthalic anhydride, 1,4-naphthoquinone.

K025 Meta-dinitrobenzene, 2,4-dinitrotoluene.

K026 Paraldehyde, pyridines, 2-picoline.

K027 Toluene diisocyanate, toluene-2, 4-diamine.

K028 1,1,1-trichloroethane, vinyl chloride.

K029 1,2-dichloroethane, 1,1,1-trichloroethane, vinyl chloride, vinylidene chloride, chloroform.

K030 Hexachlorobenzene, hexachlorobutadiene, hexachloroethane, 1,1,1,2-tetrachloroethane, 1,1,2,2-tetrachloroethane, ethylene dichloride.

K031 Arsenic.

K032 Hexachlorocyclopentadiene.

K033 Hexachlorocyclopentadiene.

K034 Hexachlorocyclopentadiene.

K035 Creosote, chrysene, naphthalene, fluoranthene benzo(b) fluoranthene, benzo(a)pyrene, indeno(1,2,3-cd) pyrene, benzo(a)anthracene, dibenzo(a)anthracene, acenaphthalene.

K036	Toluene, phosphorodithioic and phosphorothioic acid esters.
K037	Toluene, phosphorodithioic and phosphorothioic acid esters.
K038	Phorate, formaldehyde, phosphorodithioic and phosphorothioic acid esters.
K039	Phosphorodithioic and phosphorothioic acid esters.
K040	Phorate, formaldehyde, phosphorodithioic and phosphorothioic acid esters.
K041	Toxaphene.
K042	Hexachlorobenzene, ortho-dichlorobenzene.
K043	2,4-dichlorophenol, 2,6-dichlorophenol, 2,4,6-trichlorophenol.
K044	N.A.
K045	N.A.
K046	Lead.
K047	N.A.
K048	Hexavalent chromium, lead.
K049	Hexavalent chromium, lead.
K050	Hexavalent chromium.
K051	Hexavalent chromium, lead.
K052	Lead.
K060	Cyanide, naphthalene, phenolic compounds, arsenic.
K061	Hexavalent chromium, lead, cadmium.
K062	Hexavalent chromium, lead.
K064	Lead, cadmium.
K065	Do.
K066	Do.
K069	Hexavalent chromium, lead, cadmium.

K071 Mercury.

K073 Chloroform, carbon tetrachloride, hexachloroethane, trichloroethane, tetrachloroethylene, dichloroethylene, 1,1,2,2-tetrachloroethane.

K083 Aniline, diphenylamine, nitrobenzene, phenylenediamine.

K084 Arsenic.

K085 Benzene, dichlorobenzenes, trichlorobenzenes, tetrachlorobenzenes, pentachlorobenzene, hexachlorobenzene, benzyl chloride.

K086 Lead, hexavalent chromium.

K087 Phenol, naphthalene.

K088 Cyanide (complexes).

K090 Chromium.

K091 Do.

K093 Phthalic anhydride, maleic anhydride.

K094 Phthalic anhydride.

K095 1,1,2-trichloroethane, 1,1,1,2-tetrachloroethane, 1,1,2,2-tetrachloroethane.

K096 1,2-dichloroethane, 1,1,1-trichloroethane, 1,1,2-trichloroethane.

K097 Chlordane, heptachlor.

K098 Toxaphene.

K099 2,4-dichlorophenol, 2,4,6-trichlorophenol.

K100 Hexavalent chromium, lead, cadmium.

K101 Arsenic.

K102 Arsenic.

K103 Aniline, nitrobenzene, phenylenediamine.

K104 Aniline, benzene, diphenylamine, nitrobenzene, phenylenediamine.

K105	Benzene, monochlorobenzene, dichlorobenzenes, 2,4,6-trichlorophenol.
K106	Mercury.
<u>K107</u>	<u>1,1-Dimethylhydrazine (UDMH).</u>
<u>K108</u>	<u>1,1-Dimethylhydrazine (UDMH).</u>
<u>K109</u>	<u>1,1-Dimethylhydrazine (UDMH).</u>
<u>K110</u>	<u>1,1-Dimethylhydrazine (UDMH).</u>
K111	2,4-Dinitrotoluene.
K112	2,4-Toluenediamine, o-toluidine, p-toluidine, aniline.
K113	2,4-Toluenediamine, o-toluidine, p-toluidine, aniline.
K114	2,4-Toluenediamine, o-toluidine, p-toluidine.
K115	2,4-Toluenediamine.
K116	Carbon tetrachloride, tetrachloroethylene, chloroform, phosgene.
K117	Ethylene dibromide.
K118	Ethylene dibromide.
K123	Ethylene thiourea.
K124	Ethylene thiourea.
K125	Ethylene thiourea.
K126	Ethylene thiourea.
<u>K131</u>	<u>Dimethyl sulfate, methyl bromide.</u>
<u>K132</u>	<u>Methyl bromide.</u>
K136	Ethylene dibromide.

FOOTNOTE: N.A. -- Waste is hazardous because it fails the test for the characteristic of ignitability, corrosivity, or reactivity.

Appendix VIII -- Hazardous Constituents

Common name	Chemical abstracts name	Chemical abstracts No.	Hazardous waste No.
Acetonitrile	Same	75-05-8	U003
Acetophenone	Ethanone, 1-phenyl-	98-86-2	U004
2-Acetylaminefluorone	Acetamide, N-9H-fluoren-2-yl-	53-96-3	U005
Acetyl chloride	Same	75-36-5	U006
1-Acetyl-2-thiourea	Acetamide, N-(aminothioxomethyl)-	591-08-2	P002
Acrolein	2-Propenal	107-02-8	P003
Acrylamide	2-Propenamide	79-06-1	U007
Acrylonitrile	2-Propenenitrile	107-13-1	U009
Aflatoxins	Same	1402-68-2	
Aldicarb	Propanal, 2-methyl-2-(methylthio)-, O-[(methylamino)carbonyl]oxime	116-06-3	P070
Aldrin	1,4,5,8-Dimethanonaphthalene, 1,2,3,4,10,10-hexachloro-1,4,4a,5,8,8a-hexahydro-, (1alpha,4alpha,4abeta,5alpha,8alpha,8abeta)-	309-00-2	P004
Allyl alcohol	2-Propen-1-ol	107-18-6	P005
Allyl chloride	<u>1-Propane, 3-chloro</u>	<u>107-18-6</u>	
Aluminum phosphide	Same	20859-73-8	P006
4-Aminobiphenyl	[1,1'-Biphenyl]-4-amine	92-67-1	
5-(Aminomethyl)-3-isoxazolol	3(2H)-Isoxazolone, 5-(aminomethyl)-	2763-96-4	P007

4-Aminopyridine	4-Pyridinamine	504-24-5 P008
Amitrole	1H-1,2,4-Triazol-3-amine	61-82-5 U011
Ammonium vanadate	Vanadic acid, ammonium salt	7803-55- P119 6
Aniline	Benzenamine	62-53-3 U012
Antimony	Same	7440-36- 0
Antimony compounds, N.O.S. ²		
Aramite	Sulfurous acid, 2-chloroethyl 2-[4-(1,1-dimethylethyl)phenoxy]-1-met hylethyl ester	140-57-8
Arsenic	Same	7440-38- 2
Arsenic compounds, N.O.S. ²		
Arsenic acid	Arsenic acid H_3AsO_4	7778-39- P010 4
Arsenic pentoxide	Arsenic oxide As_2O_5	1303-28- P011 2
Arsenic trioxide	Arsenic oxide As_2O_3	1327-53- P012 3
Auramine	B e n z e n a m i n e , 4,4'-carbonimidoylbis[N,N-dimethyl	492-80-8 U014
Azaserine	L-Serine, diazoacetate (ester)	115-02-6 U015
Barium	Same	7440-39- 3
Barium compounds, N.O.S. ¹		
Barium cyanide	Same	542-62-1 P013
Benz[c]acridine	Same	225-51-4 U016
Benz[a]anthracene	Same	56-55-3 U018
Benzal chloride	Benzene, (dichloromethyl)-	98-87-3 U017

Benzene	Same	71-43-2 U019
Benzene arsonic acid	Arsonic acid, phenyl-	98-05-5
Benzidine	[1,1'-Biphenyl]-4,4'-diamine	92-87-5 U021
Benzo[b]fluoranthene	Benz[e]acephenanthrylene	205-99-2
Benzo[j]fluoranthene	Same	205-82-3
Benzo[a]pyrene	Same	50-32-8 U022
p-Benzoquinone	2,5-Cyclohexadiene-1,4-dione	106-51-4 U197
Benzotrichloride	Benzene, (trichloromethyl)-	98-07-7 U023
Benzyl chloride	Benzene, (chloromethyl)-	100-44-7 P028
Beryllium	Same	7440-41- P015 7
B e r y l l i u m compounds, N.O.S.:		
Bromoacetone	2-Propanone, 1-bromo-	598-31-2 P017
Bromoform	Methane, tribromo-	75-25-2 U225
4-Bromophenyl phenyl ether	Benzene, 1-bromo-4-phenoxy-	101-55-3 U030
Brucine	Strychnidin-10-one, 2,3-dimethoxy-	357-57-3 P018
Butyl benzyl phthalate	1,2-Benzenedicarboxylic acid, butyl phenylmethyl ester	85-68-7
Cacodylic acid	Arsinic acid, dimethyl-	75-60-5 U136
Cadmium	Same	7440-43- 9
Cadmium compounds, N.O.S.:		
Calcium chromate	Chromic acid H_2CrO_4 , calcium salt	13765- U032 19-0
Calcium cyanide	Calcium cyanide $Ca(CN)_2$	592-01-8 P021

Carbon disulfide	Same	75-15-0	P022
Carbon oxyfluoride	Carbonic difluoride	353-50-4	U033
C a r b o n tetrachloride	Methane, tetrachloro-	56-23-5	U211
Chloral	Acetaldehyde, trichloro-	75-87-6	U034
Chlorambucil	B e n z e n e b u t a n o i c a c i d , 4-[bis(2-chloroethyl)amino]-	305-03-3	U035
Chlordane	4 , 7 - M e t h a n o - 1 H - i n d e n e , 1,2,4,5,6,7,8,8-octachloro-2,3,3a,4,7, 7a-hexahydro-	57-74-9	U036
Chlordane (alpha and gamma isomers)			U036
C h l o r i n a t e d benzenes, N.O.S.:			
Chlorinated ethane, N.O.S.:			
C h l o r i n a t e d fluorocarbons, N.O.S.:			
C h l o r i n a t e d naphthalene, N.O.S.:			
Chlorinated phenol, N.O.S.:			
Chlornaphazin	N a p h t h a l e n a m i n e , N,N'-bis(2-chloroethyl)-	494-03-1	U026
Chloroacetaldehyde	Acetaldehyde, chloro-	107-20-0	P023
Chloroalkyl ethers, N.O.S.:			
p-Chloroaniline	Benzenamine, 4-chloro-	106-47-8	P024
Chlorobenzene	Benzene, chloro-	108-90-7	U037
Chlorobenzilate	B e n z e n e a c e t i c a c i d , 4-chloro-alpha-(4-chlorophenyl)-alpha- hydroxy-, ethyl ester	510-15-6	U038
p-Chloro-m-cresol	Phenol, 4-chloro-3-methyl-	59-50-7	U039

2-Chloroethyl vinyl ether	Ethene, (2-chloroethoxy)-	110-75-8 U042
Chloroform	Methane, trichloro-	67-66-3 U044
Chloromethyl methyl ether	Methane, chloromethoxy-	107-30-2 U046
beta-Chloronaphthalene	Naphthalene, 2-chloro-	91-58-7 U047
o-Chlorophenol	Phenol, 2-chloro-	95-57-8 U048
1-(o-Chlorophenyl)thiourea	Thiourea, (2-chlorophenyl)-	5344-82-1 P026
Chloroprene	1,3-Butadiene, 2-chloro-	126-99-8
3-Chloropropionitrile	Propanenitrile, 3-chloro-	542-76-7 P027
Chromium	Same	7440-47-3
Chromium compounds, N.O.S. ¹		
Chrysene	Same	218-01-9 U050
Citrus red No. 2	2 - N a p h t h a l e n o l , 1-[(2,5-dimethoxyphenyl)azo]-	6358-53-8
Coal tar creosote	Same	8007-45-2
Copper cyanide	Copper cyanide CuCN	544-92-3 P029
Creosote	Same	U051
Cresol (Cresylic acid)	Phenol, methyl-	1319-77-3 U052
Crotonaldehyde	2-Butenal	4170-30-3 U053
Cyanides (soluble salts and complexes) N.O.S. ¹		P030
Cyanogen	Ethanedinitrile	460-19-5 P031
Cyanogen bromide	Cyanogen bromide (CN)Br	506-68-3 U246

Cyanogen chloride	Cyanogen chloride (CN)Cl	506-77-4 P033
Cycasin	beta-D-Glucopyranoside, (methyl-ONN-azoxy)methyl	14901-08-7
2-Cyclohexyl-4,6-dinitrophenol	Phenol, 2-cyclohexyl-4,6-dinitro-	131-89-5 P034
Cyclophosphamide	2H-1,3,2-Oxazaphosphorin-2-amine, N,N-bis(2-chloroethyl)tetrahydro-, 2-oxide	50-18-0 U058
2,4-D	Acetic acid, (2,4-dichlorophenoxy)-	94-75-7 U240
2,4-D, salts, esters		U240
Daunomycin	5,12-Naphthacenedione, 8-acetyl-10-[(3-amino-2,3,6-trideoxy-alpha-L-lyxohexopyranosyl)oxy]-7,8,9,10-tetrahydro-6,8,11-trihydroxy-1-methoxy-, (8S-cis)-	20830-81-3 U059
DDD	Benzene, 1,1'-(2,2-dichloroethylidene)bis[4-chloro-	72-54-8 U060
DDE	Benzene, 1,1'-(dichloroethenylidene)bis[4-chloro-	72-55-9
DDT	Benzene, 1,1'-(2,2,2-trichloroethylidene)bis[4-chloro-	50-29-3 U061
Diallate	Carbamothioic acid, bis(1-methylethyl)-, S-(2,3-dichloro-2-propenyl) ester	2303-16-4 U062
Dibenz[a,h]acridine	Same	226-36-8
Dibenz[a,j]acridine	Same	224-42-0
Dibenz[a,h]anthracene	Same	53-70-3 U063
7H-Dibenzo[c,g]carbazole	Same	194-59-2
Dibenzo[a,e]pyrene	Naphtho[1,2,3,4-def]chrysene	192-65-4

Dibenzo[a,h]pyrene	Dibenzo[b,def]chrysene	189-64-0
Dibenzo[a,i]pyrene	Benzo[rst]pentaphene	189-55-9 U064
1,2-Dibromo-3-chloropropane	Propane, 1,2-dibromo-3-chloro-	96-12-8 U065
Dibutyl phthalate	1,2-Benzenedicarboxylic acid, dibutyl ester	84-74-2 U069
o-Dichlorobenzene	Benzene, 1,2-dichloro-	95-50-1 U070
m-Dichlorobenzene	Benzene, 1,3-dichloro-	541-73-1 U071
p-Dichlorobenzene	Benzene, 1,4-dichloro-	106-46-7 U072
Dichlorobenzene, N.O.S. ¹	Benzene, dichloro-	2 5 3 2 1 - 22-6
3,3'-Dichlorobenzidine	[1,1'-Biphenyl]-4,4'-diamine, 3,3'-dichloro-	91-94-1 U073
1,4-Dichloro-2-butene	2-Butene, 1,4-dichloro-	764-41-0 U074
Dichlorodifluoromethane	Methane, dichlorodifluoro-	75-71-8 U075
Dichloroethylene, N.O.S. ¹	Dichloroethylene	2 5 3 2 3 - 30-2
1,1-Dichloroethylene	Ethene, 1,1-dichloro-	75-35-4 U078
1,2-Dichloroethylene	Ethene, 1,2-dichloro-, (E)-	156-60-5 U079
Dichloroethyl ether	Ethane, 1,1'-oxybis[2-chloro-	111-44-4 U025
Dichloroisopropyl ether	Propane, 2,2'-oxybis[2-chloro-	108-60-1 U027
Dichloromethoxyethane	Ethane, 1,1'-[methylenebis(oxy)]bis[2-chloro-	111-91-1 U024
Dichloromethyl ether	Methane, oxybis[chloro-	542-88-1 P016
2,4-Dichlorophenol	Phenol, 2,4-dichloro-	120-83-2 U081
2,6-Dichlorophenol	Phenol, 2,6-dichloro-	87-65-0 U082

Dichlorophenylarsine	Arsonous dichloride, phenyl-	696-28-5 P036
Dichloropropane, N.O.S.	Propane, dichloro-	26638-19-7
Dichloropropanol, N.O.S.	Propanol, dichloro-	26545-73-3
Dichloropropene, N.O.S.	1-Propene, dichloro-	26952-23-8
1,3-Dichloropropene	1-Propene, 1,3-dichloro-	542-75-6 U084
Dieldrin	2,7:3,6-Dimethanonaphth[2,3-b]oxirene, 3,4,5,6,9,9-hexachloro-1a,2,2a,3,6,6a,7,7a-octahydro-, (1aalpha,2beta,2aalpha,3beta,6beta,6aalpha,7beta,7aalpha)-	60-57-1 P037
1,2:3,4-Diepoxybutane	2,2'-Bioxirane	1464-53-5 U085
Diethylarsine	Arsine, diethyl-	692-42-2 P038
1,4-Diethyleneoxide	1,4-Dioxane	123-91-1 U108
Diethylhexyl phthalate	1,2-Benzenedicarboxylic acid, bis(2-ethylhexyl) ester	117-81-7 U028
N,N'-Diethylhydrazine	Hydrazine, 1,2-diethyl-	1615-80-1 U086
O,O-Diethyl S-methyl dithiophosphate	Phosphorodithioic acid, O,O-diethyl S-methyl ester	3288-58-2 U087
Diethyl-p-nitrophenyl phosphate	Phosphoric acid, diethyl 4-nitrophenyl ester	311-45-5 P041
Diethyl phthalate	1,2-Benzenedicarboxylic acid, diethyl ester	84-66-2 U088
O,O-Diethyl O-pyrazinyl phosphorothioate	Phosphorothioic acid, O,O-diethyl O-pyrazinyl ester	297-97-2 P040
Diethylstilbesterol	Phenol, 4,4'-(1,2-diethyl-1,2-ethenediyl)bis-, (E)-	56-53-1 U089
Dihydrosafrole	1,3-Benzodioxole, 5-propyl-	94-58-6 U090

Diisopropylfluorophosphate (DFP)	Phosphorofluoridic acid, bis(1-methylethyl) ester	55-91-4	P043
Dimethoate	Phosphorodithioic acid, O,O-dimethyl S-[2-(methylethylamino)-2-oxoethyl] ester	60-51-5	P044
3,3'-Dimethoxybenzidine	[1,1'-Biphenyl]-4,4'-diamine, 3,3'-dimethoxy-	119-90-4	U091
p-Dimethylaminoazobenzene	Benzene, N,N-dimethyl-4-(phenylazo)-	60-11-7	U093
7,12-Dimethylbenz[a]anthracene	Benz[a]anthracene, 7,12-dimethyl-	57-97-6	U094
3,3'-Dimethylbenzidine	[1,1'-Biphenyl]-4,4'-diamine, 3,3'-dimethyl-	119-93-7	U095
Dimethylcarbamoyl chloride	Carbamic chloride, dimethyl-	79-44-7	U097
1,1-Dimethylhydrazine	Hydrazine, 1,1-dimethyl-	57-14-7	U098
1,2-Dimethylhydrazine	Hydrazine, 1,2-dimethyl-	540-73-8	U099
alpha, alpha-Dimethylphenethylamine	Benzene, alpha, alpha-dimethyl-	122-09-8	P046
2,4-Dimethylphenol	Phenol, 2,4-dimethyl-	105-67-9	U101
Dimethyl phthalate	1,2-Benzenedicarboxylic acid, dimethyl ester	131-11-3	U102
Dimethyl sulfate	Sulfuric acid, dimethyl ester	77-78-1	U103
Dinitrobenzene, N.O.S.	Benzene, dinitro-	25154-54-5	
4,6-Dinitro-o-cresol	Phenol, 2-methyl-4,6-dinitro-	534-52-1	P047
4,6-Dinitro-o-cresol salts			P047
2,4-Dinitrophenol	Phenol, 2,4-dinitro-	51-28-5	P048
2,4-Dinitrotoluene	Benzene, 1-methyl-2,4-dinitro-	121-14-2	U105
2,6-Dinitrotoluene	Benzene, 2-methyl-1,3-dinitro-	606-20-2	U106

Dinoseb	Phenol, 2-(1-methylpropyl)-4,6-dinitro-	88-85-7	PC20
D i - n - o c t y l phthalate	1,2-Benzenedicarboxylic acid, dioctyl ester	117-84-0	U017
Diphenylamine	Benzenamine, N-phenyl-	122-39-4	
1,2-Diphenylhydrazine	Hydrazine, 1,2-diphenyl-	122-66-7	U109
Di-n-propylnitrosamine	1-Propanamine, N-nitroso-N-propyl-	621-64-7	U111
Disulfoton	Phosphorodithioic acid, O,O-diethyl S-[2-(ethylthio)ethyl] ester	298-04-4	PC39
Dithiobiuret	Thioimidodicarbonic diamide [(H ₂ N)C(S)] ₂ NH	541-53-7	PC49
Endosulfan	6,9-Methano-2,4,3-benzodioxathiepin, 6,7,8,9,10,10-hexachloro-1,5,5a,6,9,9a - hexahydro-, 3-oxide	115-29-7	PC50
Endothall	7-Oxabicyclo[2.2.1]heptane-2,3-dicarbo xylic acid	145-73-3	PC88
Endrin	2,7:3,6-Dimethanonaphth[2,3-b]oxirene, 3,4,5,6,9,9-hexachloro-1a,2,2a,3,6,6a, 7,7a-octahydro-, (1aalpha,2beta,2abeta,3alpha,6alpha, 6abeta,7beta,7aalpha)-	72-20-8	PC51
Endrin metabolites			PC51
Epichlorohydrin	Oxirane, (chloromethyl)-	106-89-8	U041
Epinephrine	1,2-Benzenediol, 4-[1-hydroxy-2-(methylamino)ethyl]-, (R)-	51-43-4	PC42
Ethyl carbamate (urethane)	Carbamic acid, ethyl ester	51-79-6	U238
Ethyl cyanide	Propanenitrile	107-12-0	PC101
Ethylenebisdithiocarbamic acid	Carbamodithioic acid, 1,2-ethanediylbis-	111-54-6	U114
Ethylenebisdithiocarbamic acid, salts and esters			U114

Ethylene dibromide	Ethane, 1,2-dibromo-	106-93-4 U067
Ethylene dichloride	Ethane, 1,2-dichloro-	107-06-2 U077
Ethylene glycol monoethyl ether	Ethanol, 2-ethoxy-	110-80-5 U359
Ethyleneimine	Aziridine	151-56-4 P054
Ethylene oxide	Oxirane	75-21-8 U115
Ethylenethiourea	2-Imidazolidinethione	96-45-7 U116
E t h y l i d e n e dichloride	Ethane, 1,1-dichloro-	75-34-3 U076
Ethyl methacrylate	2-Propenoic acid, 2-methyl-, ethyl ester	97-63-2 U118
E t h y l methanesulfonate	Methanesulfonic acid, ethyl ester	62-50-0 U119
Famphur	Phosphorothioic acid, O-[4-[(dimethylamino)sulfonyl]phenyl] O,O-dimethyl ester	52-85-7 P097
Fluoranthene	Same	206-44-0 U120
Fluorine	Same	7782-41- P056 4
Fluoroacetamide	Acetamide, 2-fluoro-	640-19-7 P057
Fluoroacetic acid, sodium salt	Acetic acid, fluoro-, sodium salt	62-74-8 P058
Formaldehyde	Same	50-00-0 U122
Formic acid	Same	64-18-6 U123
Glycidylaldehyde	Oxiranecarboxyaldehyde	765-34-4 U126
Halomethanes, N.O.S. ²		
Heptachlor	4,7-Methano-1H-indene, 1,4,5,6,7,8,8-heptachloro-3a,4,7,7a-tetrahydro-	76-44-8 P059
Heptachlor epoxide	2,5-Methano-2H-indeno[1,2-b]oxirene, 2,3,4,5,6,7,7-heptachloro-1a,1b,5,5a,6,6a-hexahydro-,	1024-57-3

(1aalpha,1bbeta,2alpha,5alpha,
5abeta,6beta,6aalpha)-

Heptachlor epoxide
(alpha, beta, and
gamma isomers)

Hexachlorobenzene	Benzene, hexachloro-	118-74-1	U127
Hexachlorobutadiene	1,3-Butadiene, 1,1,2,3,4,4-hexachloro-	87-68-3	U128
Hexachlorocyclopentadiene	1,3-Cyclopentadiene, 1,2,3,4,5,5-hexachloro-	77-47-4	U130
Hexachlorodibenzo-p-dioxins			
Hexachlorodibenzofurans			
Hexachloroethane	Ethane, hexachloro-	67-72-1	U131
Hexachlorophene	Phenol, 2,2'-methylenebis[3,4,6-trichloro-	70-30-4	U132
Hexachloropropene	1-Propene, 1,1,2,3,3,3-hexachloro-	1888-71-7	U243
Hexaethyl tetraphosphate	Tetraphosphoric acid, hexaethyl ester	757-58-4	P062
Hydrazine	Same	302-01-2	U133
Hydrogen cyanide	Hydrocyanic acid	74-90-8	P063
Hydrogen fluoride	Hydrofluoric acid	7664-39-3	U134
Hydrogen sulfide	Hydrogen sulfide H ₂ S	7783-06-4	U135
Indeno[1,2,3-cd]pyrene	Same	193-39-5	U137
Isobutyl alcohol	1-Propanol, 2-methyl-	78-83-1	U140
Isodrin	1,4,5,8-Dimethanonaphthalene, 1,2,3,4,10,10-hexachloro-1,4,4a,5,8,8a-hexahydro-, (1alpha,4alpha,4abeta,5beta,8beta,8abeta)-	465-73-6	P060

Isosafrole	1,3-Benzodioxole, 5-(1-propenyl)-	120-58-1 U141
Kepone	1,3,4-Metheno-2H-cyclobuta[cd]pentalen - 2 - o n e 1,1a,3,3a,4,5,5,5a,5b,6-decachloroocta hydro-	143-50-0 U142
Lasiocarpine	2-Butenoic acid, 2-methyl-, 7-[[2,3-dihydroxy-2-(1-methoxyethyl)-3- -methyl-1-oxobutoxy]methyl]-2,3,5,7a- tetrahydro-1H-pyrrolizin-1-yl ester, [1S-[1alpha(Z),7(2S*,3R*),7aalpha]]-	303-34-1 4143
Lead	Same	7439-92- 1
Lead compounds, N.O.S.		
Lead acetate	Acetic acid, lead(2+) salt	301-04-2 U144
Lead phosphate	Phosphoric acid, lead(2+) salt (2:3)	7446-27- U145 7
Lead subacetate	Lead, bis(acetato-O)tetrahydroxytri-	1335-32- U146 6
Lindane	Cyclohexane, 1,2,3,4,5,6-hexachloro-, (1alpha,2alpha,3beta,4alpha,5alpha,6be ta)-	58-89-9 U129
Maleic anhydride	2,5-Furandione	108-31-6 U147
Maleic hydrazide	3,6-Pyridazinedione, 1,2-dihydro-	123-33-1 U148
Malononitrile	Propanedinitrile	109-77-3 U149
Melphalan	L - P h e n y l a l a n i n e , 4-[bis(2-chloroethyl)aminol]-	148-82-3 U150
Mercury	Same	7439-97- U151 6
Mercury compounds, N.O.S.		
Mercury fulminate	Fulminic acid, mercury(2+) salt	628-86-4 P065
Methacrylonitrile	2-Propenenitrile, 2-methyl-	126-98-7 U152
Methapyrilene	1 , 2 - E t h a n e d i a m i n e , N,N-dimethyl-N'-2-pyridinyl-N'-(2-thie	91-80-5 U155

	nylmethyl)-		
Methomyl	Ethanimidothioic acid, N-[[[(methylamino)carbonyl]oxy]-, methyl ester	16752- 77-5	P066
Methoxychlor	Benzene, 1,1'-(2,2,2-trichloroethylidene)bis[4- methoxy-	72-43-5	U247
Methyl bromide	Methane, bromo-	74-83-9	U029
Methyl chloride	Methane, chloro-	74-87-3	U045
Methyl chlorocarbonate	Carbonochloridic acid, methyl ester	79-22-1	U155
Methyl chloroform	Ethane, 1,1,1-trichloro-	71-55-6	U226
3-Methylcholanthrene	Benz[a]aceanthrylene, 1,2-dihydro-3-methyl-	56-49-5	U157
4,4'-Methylenebis (2-chloroaniline)	Benzeneamine, 4,4'-methylenebis[2-chloro-	101-14-4	U158
Methylene bromide	Methane, dibromo-	74-95-3	U053
Methylene chloride	Methane, dichloro-	75-09-2	U080
Methyl ethyl ketone (MEK)	2-Butanone	78-93-3	U159
Methyl ethyl ketone peroxide	2-Butanone, peroxide	1338-23- 4	U160
Methyl hydrazine	Hydrazine, methyl-	60-34-4	P063
Methyl iodide	Methane, iodo-	74-88-4	U138
Methyl isocyanate	Methane, isocyanato-	624-83-9	P064
2-Methyl lactonitrile	Propanenitrile, 2-hydroxy-2-methyl-	75-86-5	P069
Methyl methacrylate	2-Propenoic acid, 2-methyl-, methyl ester	80-62-6	U162
Methyl methanesulfonate	Methanesulfonic acid, methyl ester	66-27-3	
Methyl parathion	Phosphorothioic acid, O,O-dimethyl O-(4-nitrophenyl) ester	298-00-0	P071

Methylthiouracil	4 (1 H) - P y r i m i d i n o n e , 2,3-dihydro-6-methyl-2-thioxo-	56-04-2	U164
Mitomycin C	Azirino[2',3':3,4]pyrrolo[1,2-a]indole - 4 , 7 - d i o n e , 6-amino-8-[[(aminocarbonyl)oxy]methyl] -1,1a,2,8,8a,8b-hexahydro-8a-methoxy-5 - m e t h y l - , [1aS-(1aalpha,8beta,8aalpha,8balpha)]-	50-07-7	U010
MNNG	Guanidine, N-methyl-N'-nitro-N-nitroso-	70-25-7	U163
Mustard gas	Ethane, 1,1'-thiobis[2-chloro-	505-60-2	
Naphthalene	Same	91-20-3	U155
1,4-Naphthoquinone	1,4-Naphthalenedione	130-15-4	U166
alpha-Naphthylamine	1-Naphthalenamine	134-32-7	U167
beta-Naphthylamine	2-Naphthalenamine	91-59-8	U168
alpha-Naphthylthiourea	Thiourea, 1-naphthalenyl-	86-88-4	P073
Nickel	Same	7440-02-0	
Nickel compounds, N.O.S.:			
Nickel carbonyl	Nickel carbonyl Ni(CO) ₄ , (T-4)-	13453-39-3	P073
Nickel cyanide	Nickel cyanide Ni(CN) ₂	557-19-7	P074
Nicotine	Pyridine, 3-(1-methyl-2-pyrrolidinyl)-, (S)-	54-11-5	P075
Nicotine salts			P075
Nitric oxide	Nitrogen oxide NO	10102-43-9	P076
p-Nitroaniline	Benzenamine, 4-nitro-	100-01-6	P077
Nitrobenzene	Benzene, nitro-	98-95-3	U169
Nitrogen dioxide	Nitrogen oxide NO ₂	10102-44-0	P078

Nitrogen mustard	E t h a n a m i n e , 2-chloro-N-(2-chloroethyl)-N-methyl-	51-75-2
Nitrogen mustard, hydrochloride salt		
Nitrogen mustard N-oxide	E t h a n a m i n e , 2-chloro-N-(2-chloroethyl)-N-methyl-, N-oxide	126-85-2
Nitrogen mustard, N - o x i d e , hydrochloride salt		
Nitroglycerin	1,2,3-Propanetriol, trinitrate	55-63-0 P081
p-Nitrophenol	Phenol, 4-nitro-	100-02-7 U170
2-Nitropropane	Propane, 2-nitro-	79-46-9 U171
Nitrosamines , N.O.S. ¹		35576 - 91-1D
N-Nitrosodi-n-butyl amine	1-Butanamine, N-butyl-N-nitroso-	924-16-3 U172
N-Nitrosodiethanola mine	Ethanol, 2,2'-(nitrosoimino)bis-	1116-54- U173 7
N-Nitrosodiethylami ne	Ethanamine, N-ethyl-N-nitroso-	55-18-5 U174
N-Nitrosodimethylam ine	Methanamine, N-methyl-N-nitroso-	62-75-9 P082
N-Nitroso-N-ethylur ea	Urea, N-ethyl-N-nitroso-	759-73-9 U176
N-Nitrosomethylethy lamine	Ethanamine, N-methyl-N-nitroso-	10595 - 95-6
N-Nitroso-N-methylu rea	Urea, N-methyl-N-nitroso-	684-93-5 U177
N-Nitroso-N-methylu rethane	Carbamic acid, methylnitroso-, ethyl ester	615-53-2 U178
N-Nitrosomethylviny lamine	Vinylamine, N-methyl-N-nitroso-	4549-40- P084 0
N-Nitrosomorpholine	Morpholine, 4-nitroso-	59-89-2

N-Nitrosonornicotin e	P y r i d i n e , 3-(1-nitroso-2-pyrrolidinyl)-, (S)-	1 6 5 4 3 - 55-8
N-Nitrosopiperidine	Piperidine, 1-nitroso-	100-75-4 U179
N-Nitrosopyrrolidin e	Pyrrolidine, 1-nitroso-	930-55-2 U180
N-Nitrososarcosine	Glycine, N-methyl-N-nitroso-	1 3 2 5 6 - 22-9
5-Nitro-o-toluidine	Benzenamine, 2-methyl-5-nitro-	99-55-8 U181
Octamethylpyrophos- phoramide	Diphosphoramide, octamethyl-	152-16-9 P085
Osmium tetroxide	Osmium oxide OsO ₄ , (T-4)-	2 0 8 1 6 - P087 12-0
Paraldehyde	1,3,5-Trioxane, 2,4,6-trimethyl-	123-63-7 U182
Parathion	Phosphorothioic acid, O,O-diethyl O-(4-nitrophenyl) ester	56-38-2 P089
Pentachlorobenzene	Benzene, pentachloro-	608-93-5 U183
Pentachlorodibenzo- p-dioxins		
Pentachlorodibenzof urans		
Pentachloroethane	Ethane, pentachloro-	76-01-7 U184
Pentachloronitroben zene (PCNB)	Benzene, pentachloronitro-	82-68-8 U185
Pentachlorophenol	Phenol, pentachloro-	87-86-5 S e e F027
Phenacetin	Acetamide, N-(4-ethoxyphenyl)-	62-44-2 U187
Phenol	Same	108-95-2 U188
Phenylenediamine	Benzenediamine	2 5 2 6 5 - 76-3
P h e n y l m e r c u r y acetate	Mercury, (acetato-O)phenyl-	62-38-4 P092
Phenylthiourea	Thiourea, phenyl-	103-85-5 P093

Phosgene	Carbonic dichloride	75-44-5 P095
Phosphine	Same	7803-51- P096 2
Phorate	Phosphorodithioic acid, O,O-diethyl S-[(ethylthio)methyl] ester	298-02-2 P094
Phthalic acid esters, N.O.S. ¹		
Phthalic anhydride	1,3-Isobenzofurandione	85-44-9 U190
2-Picoline	Pyridine, 2-methyl-	109-06-8 U191
Polychlorinated biphenyls, N.O.S. ¹		
Potassium cyanide	Potassium cyanide K(CN)	151-50-8 P098
Potassium silver cyanide	Argentate(1-), bis(cyano-C)-, potassium	506-61-6 P099
Pronamide	B e n z a m i d e , 3,5-dichloro-N-(1,1-dimethyl-2-propyny 1)-	23950 - U192 58-5
1,3-Propane sultone	1,2-Oxathiolane, 2,2-dioxide	1120-71- U193 4
n-Propylamine	1-Propanamine	107-10-8 U194
Propargyl alcohol	2-Propyn-1-ol	107-19-7 P102
P r o p y l e n e dichloride	Propane, 1,2-dichloro-	78-87-5 U083
1,2-Propylenimine	Aziridine, 2-methyl-	75-55-8 P067
Propylthiouracil	4 (1 H) - P y r i m i d i n o n e , 2,3-dihydro-6-propyl-2-thioxo-	51-52-5
Pyridine	Same	110-86-1 U196
Reserpine	Yohimban-16-carboxylic acid, 11,17-dimethoxy-18-[(3,4,5-trimethoxyb enzoyl)oxy]-smethyl ester, (3beta,16beta,17alpha,18beta,20alpha)-	50-55-5 U200
Resorcinol	1,3-Benzenediol	108-46-3 U201
Saccharin	1,2-Benzisothiazol-3(2H)-one,	81-07-2 U202

	1,1-dioxide		
Saccharin salts			U202
Safrole	1,3-Benzodioxole, 5-(2-propenyl)-	94-59-7	U203
Selenium	Same	7782-49-2	
Selenium compounds, N.O.S.-			
Selenium dioxide	Selenious acid	7783-00-8	U204
Selenium sulfide	Selenium sulfide SeS_2	7488-56-4	U205
Selenourea	Same	630-10-4	P103
Silver	Same	7440-22-4	
Silver compounds, N.O.S.-			
Silver cyanide	Silver cyanide $\text{Ag}(\text{CN})$	506-64-9	P104
Silvex (2,4,5-TP)	P r o p a n o i c a c i d , 2-(2,4,5-trichlorophenoxy)-	93-72-1	See F027
Sodium cyanide	Sodium cyanide $\text{Na}(\text{CN})$	143-33-9	P105
Streptozotocin	D - G l u c o s e , 2-deoxy-2-[[(methylnitrosoamino)carbon yl]amino]-	18883-66-4	U206
Strontium sulfide ²	Strontium sulfide SrS	1314-96-1	P107
Strychnine	Strychnidin-10-one	57-24-9	P108
Strychnine salts			P108
TCDD	D i b e n z o [b , e] [1 , 4] d i o x i n , 2,3,7,8-tetrachloro-	1746-01-6	
1,2,4,5-Tetrachloro benzene	Benzene, 1,2,4,5-tetrachloro-	95-94-3	U207
Tetrachlorodibenzo- p-dioxins			

Tetrachlorodibenzofurans		
Tetrachloroethane, N.O.S. ²	Ethane, tetrachloro-, N.O.S.	25322-20-7
1,1,1,2-Tetrachloroethane	Ethane, 1,1,1,2-tetrachloro-	630-20-6 U208
1,1,2,2-Tetrachloroethane	Ethane, 1,1,2,2-tetrachloro-	79-34-5 U209
Tetrachloroethylene	Ethene, tetrachloro-	127-18-4 U210
2,3,4,6-Tetrachlorophenol	Phenol, 2,3,4,6-tetrachloro-	58-90-2 See F027
Tetraethyldithiopyrophosphate	Thiodiphosphoric acid, tetraethyl ester	3689-24-5 P109
Tetraethyl lead	Plumbane, tetraethyl-	78-00-2 P110
Tetraethyl pyrophosphate	Diphosphoric acid, tetraethyl ester	107-49-3 P111
Tetranitromethane	Methane, tetranitro-	509-14-8 P112
Thallium	Same	7440-28-0
Thallium compounds, N.O.S. ²		
Thallic oxide	Thallium oxide Tl_2O_3	1314-32-5 P113
Thallium(I) acetate	Acetic acid, thallium(1+) salt	563-68-8 U214
Thallium(I) carbonate	Carbonic acid, dithallium(1+) salt	6533-73-9 U215
Thallium(I) chloride	Thallium chloride $TlCl$	7791-12-0 U216
Thallium(I) nitrate	Nitric acid, thallium(1+) salt	10102-45-1 U217
Thallium selenite	Selenious acid, dithallium(1+) salt	12039-52-0 P114
Thallium(I) sulfate	Sulfuric acid, dithallium(1+) salt	7446-18-6 P115

Thioacetamide	Ethanethioamide	62-55-5 U218
Thiofanox	2 - B u t a n o n e , 3,3-dimethyl-1-(methylthio)-, 0-[(methylamino)carbonyl] oxime	39196 - P045 18-4
Thiomethanol	Methanethiol	74-93-1 U153
Thiophenol	Benzenethiol	108-98-5 P014
Thiosemicarbazide	Hydrazinecarbothioamide	79-19-6 P116
Thiourea	Same	62-56-6 U219
Thiram	Thioperoxydicarbonic diamide [(H ₂ N)C(S)] ₂ S ₂ , tetramethyl-	137-26-8 U244
Toluene	Benzene, methyl-	108-88-3 U220
Toluenediamine	Benzenediamine, ar-methyl-	25376 - U221 45-8
Toluene-2,4-diamine	1,3-Benzenediamine, 4-methyl-	95-80-7
Toluene-2,6-diamine	1,3-Benzenediamine, 2-methyl-	823-40-5
Toluene-3,4-diamine	1,2-Benzenediamine, 4-methyl-	496-72-0
T o l u e n e diisocyanate	Benzene, 1,3-diisocyanatomethyl-	26471 - U223 62-5
o-Toluidine	Benzenamine, 2-methyl-	95-53-4 U328
o - T o l u i d i n e hydrochloride	Benzenamine, 2-methyl-, hydrochloride	636-21-5 U222
p-Toluidine	Benzenamine, 4-methyl-	106-49-0 U353
Toxaphene	Same	8001-35- P123 2
1,2,4-Trichlorobenz ene	Benzene, 1,2,4-trichloro-	120-82-1
1,1,2-Trichloroetha ne	Ethane, 1,1,2-trichloro-	79-00-5 U227
Trichloroethylene	Ethene, trichloro-	79-01-6 U228
Trichloromethanethi ol	Methanethiol, trichloro-	75-70-7 P118

Trichloromonofluoro methane	Methane, trichlorofluoro-	75-69-4	U121
2,4,5-Trichlorophenol	Phenol, 2,4,5-trichloro-	95-95-4	See F027
2,4,6-Trichlorophenol	Phenol, 2,4,6-trichloro-	88-06-2	See F027
2,4,5-T	Acetic acid, (2,4,5-trichlorophenoxy)-	93-76-5	See F027
Trichloropropane, N.O.S.		25735-29-9	
1,2,3-Trichloropropane	Propane, 1,2,3-trichloro-	96-18-4	
O,O,O-Triethyl phosphorothioate	Phosphorothioic acid, O,O,O-triethyl ester	126-68-1	
1,3,5-Trinitrobenzene	Benzene, 1,3,5-trinitro-	99-35-4	U234
Tris(1-aziridinyl)phosphine sulfide	A z i r i d i n e , 1,1',1''-phosphinothioylidynetris-	52-24-4	
Tris(2,3-dibromopropyl) phosphate	1-Propanol, 2,3-dibromo-, phosphate (3:1)	126-72-7	U235
Trypan blue	2,7-Naphthalenedisulfonic acid, 3,3'-[(3,3'-dimethyl[1,1'-biphenyl]-4,4'-diyl)bis(azo)]-bis[5-amino-4-hydroxy-, tetrasodium salt.	72-57-1	U236
Uracil mustard	2,4-(1H,3H)-Pyrimidinedione, 5-[bis(2-chloroethyl)amino]-	66-75-1	U237
Vanadium pentoxide	Vanadium oxide V ₂ O ₅	1314-62-1	P120
Vinyl chloride	Ethene, chloro-	75-01-4	U043
Warfarin	2H-1-Benzopyran-2-one, 4-hydroxy-3-(3-oxo-1-phenylbutyl)-, when present at concentrations less than 0.3%	81-81-2	U248
Warfarin	2H-1-Benzopyran-2-one, 4-hydroxy-3-(3-oxo-1-phenylbutyl)-, when present at concentrations greater	81-81-2	P001

than 0.3%

Warfarin salts,
when present at
concentrations less
than 0.3%

U248

Warfarin salts,
when present at
concentrations
greater than 0.3%

P001

Zinc cyanide	Zinc cyanide $\text{Zn}(\text{CN})_2$	557-21-1 P121
Zinc phosphide	Zinc phosphide Zn_3P_2 , when present at concentrations greater than 10%	1314-84- P122 7
Zinc phosphide	Zinc phosphide Zn_3P_2 , when present at concentrations of 10% or less	1314-84- U249 7

FOOTNOTE: ¹The abbreviation N.O.S. (not otherwise specified) signifies those members of the general class not specifically listed by name in this appendix.

FOOTNOTE: ²At 53 FR 43884, Oct. 31, 1988, Appendix VIII was amended by removing the listing: ``Stontium sulfide * * * Same * * * 1314-96-1.''. The amendatory instruction in that document was incorrect and the Environmental Protection Agency will publish a correction document in the Federal Register at a later date.

APPENDIX IX--GROUNDWATER MONITORING LIST¹

Ground-Water Monitoring List¹

Common name ²	CAS RN ³	Chemical abstracts index name ⁴	service	Sug- geste d meth- ods ⁵	PQL (µg/ L) ⁵
Acenaphthene	83-32-9	Acenaphthylene, 1,2-dihydro-	8100 8270	200 10	
Acenaphthylene	208-96-8	Acenaphthylene	8100 8270	200 10	
Acetone	67-64-1	2-Propanone	8240	100	
Acetophenone	98-86-2	Ethanone, 1-phenyl-	8270	10	
Acetonitrile; Methyl cyanide	75-05-8	Acetonitrile	8015	100	
2-Acetylaminofluoren e; 2-AAF	53-96-3	Acetamide, N-9H-fluoren-2-yl-	8270	10	
Acrolein	107-02-8	2-Propenal	8030 8240	5 5	
Acrylonitrile	107-13-1	2-Propenenitrile	8030 8240	5 5	
Aldrin	309-00-2	1,4:5,8-Dimethanonaphthalene, 1,2,3,4,10,10-hexachloro- 1,4,4a,5,8,8a-hexahydro- (1alpha,4alpha,4abeta,5alpha, 8alpha,8abeta)-	8080 8270	0.05 10	
Allyl chloride	107-05-1	1-Propene, 3-chloro-	8010 8240	5 100	
4-Aminobiphenyl	92-67-1	[1,1'-Biphenyl]-4-amine	8270	10	
Aniline	62-53-3	Benzenamine	8270	10	
Anthracene	120-12-7	Anthracene	8100 8270	200 10	
Antimony	(Total)	Antimony	6010 7040	300 2,00 0	
Aramite	140-57-8	Sulfurous acid, 2-chloroethyl 2-[4-(1,1-dimethylethyl)phenoxy]-1-methylethyl ester	7041 8270	30 10	
Arsenic	(Total)	Arsenic	6010 7060 7061	500 10 20	
Barium	(Total)	Barium	6010 7080	20 1,00 0	

Benzene	71-43-2	Benzene	8020	2
			8240	5
Benzo[a]anthracene;	56-55-3	Benz[a]anthracene	8100	200
Benzanthracene			8270	10
Benzo[b]fluoranthene	205-99-2	Benz[e]acephenanthrylene	8100	200
			8270	10
Benzo[k]fluoranthene	207-08-9	Benzo[k]fluoranthene	8100	200
			8270	10
Benzo[ghi]perylene	191-24-2	Benzo[ghi]perylene	8100	200
			8270	10
Benzo[a]pyrene	50-32-8	Benzo[a]pyrene	8100	200
			8270	10
Benzyl alcohol	100-51-6	Benzenemethanol	8270	20
Beryllium	(Total)	Beryllium	6010	3
			7090	50
			7091	2
alpha-BHC	319-84-6	C y c l o h e x a n e , 1,2,3,4,5,6-hexachloro-, (1alph a,2alpha, 3beta,4alpha,5beta,6beta)-	8080	0.05
			8250	10
beta-BHC	319-85-7	C y c l o h e x a n e , 1,2,3,4,5,6-hexachloro-, (1alph a,2beta,3alpha,4beta,alpha,,6b eta)-	8080	0.05
			8250	40
delta-BHC	319-86-8	C y c l o h e x a n e , 1,2,3,4,5,6-hexachloro-, (1alph a,2alpha, 3alpha,4beta,5alpha,6beta)-	8080	0.1
			8250	30
gamma-BHC; Lindane	58-89-9	C y c l o h e x a n e , 1,2,3,4,5,6-hexachloro-, (1alph a,2alpha,3beta,4alpha,5alpha,6 beta)-	8080	0.05
			8250	10
Bis(2-chloroethoxy)m	111-91-1	Ethane, 1,1'-[methylenebis	8270	10
ethane		(oxy)]bis[2-chloro-		
Bis(2-chloroethyl)et	111-44-4	Ethane, 1,1'-oxybis[2-chloro-	8270	10
her				
Bis(2-chloro-1-methy	108-60-1	Propane, 2,2'-oxybis[1-chloro-	8010	100
lethyl) ether;			8270	10
2,2'-Dichlorodiisopr				
opyl ether				
Bis(2-ethylhexyl)	117-81-7	1,2-Benzenedicarboxylic acid,	8060	20
phthalate		bis(2-ethylhexyl)ester	8270	10
Bromodichloromethane	75-27-4	Methane, bromodichloro-	8010	1
			8240	5
B r o m o f o r m ;	75-25-2	Methane, tribromo-	8010	2
Tribromomethane			8240	5
4-Bromophenyl phenyl	101-55-3	Benzene, 1-bromo-4-phenoxy-	8270	10
ether				

Butyl benzyl phthalate; Benzyl butyl phthalate	85-68-7	1,2-Benzenedicarboxylic acid, butyl phenylmethyl ester	8060	5
Cadmium	(Total)	Cadmium	8270	10
			6010	40
			7130	50
			7131	1
Carbon disulfide	75-15-0	Carbon disulfide	8240	5
Carbon tetrachloride	56-23-5	Methane, tetrachloro-	8010	1
			8240	5
Chlordane	57-74-9	4,7-Methano-1H-indene, 1,2,4,5,6,7,8,8-octachloro-2,3,3a,4,7,7a-hexahydro-	8080	0.1
			8250	10
p-Chloroaniline	106-47-8	Benzenamine, 4-chloro-	8270	20
Chlorobenzene	108-90-7	Benzene, chloro-	8010	2
			8020	2
			8240	5
Chlorobenzilate	510-15-6	Benzeneacetic acid, 4-chloro-alpha-(4-chlorophenyl)-alpha-hydroxy-, ethyl ester	8270	10
p-Chloro-m-cresol	59-50-7	Phenol, 4-chloro-3-methyl-	8040	5
			8270	20
Chloroethane; Ethyl chloride	75-00-3	Ethane, chloro-	8010	5
Chloroform	67-66-3	Methane, trichloro-	8240	10
			8010	0.5
			8240	5
2-Chloronaphthalene	91-58-7	Naphthalene, 2-chloro-	8120	10
			8270	10
2-Chlorophenol	95-57-8	Phenol, 2-chloro-	8040	5
			8270	10
4-Chlorophenyl phenyl ether	7005-72-3	Benzene, 1-chloro-4-phenoxy-	8270	10
Chloroprene	126-99-8	1,3-Butadiene, 2-chloro-	8010	50
			8240	5
Chromium	(Total)	Chromium	6010	70
			7190	500
			7191	10
Chrysene	218-01-9	Chrysene	8100	200
			8270	10
Cobalt	(Total)	Cobalt	6010	70
			7200	500
			7201	10
Copper	(Total)	Copper	6010	60
			7210	200
m-Cresol	108-39-4	Phenol, 3-methyl-	8270	10
o-Cresol	95-48-7	Phenol, 2-methyl-	8270	10
p-Cresol	106-44-5	Phenol, 4-methyl-	8270	10
Cyanide	57-12-5	Cyanide	9010	40
2,4-Dichlorophenoxyacetic acid	94-75-7	Acetic acid, (2,4-dichlorophenoxy)-	8150	10
4,4'-DDD	72-54-8	Benzene	8080	0.1

		1,1'-(2,2-dichloroethylidene)b	8270	10
		is[4-chloro-		
4,4'-DDE	72-55-9	B e n z e n e ,	8080	0.05
		1,1'-(dichloroethenylidene)bis	8270	10
		[4-chloro-		
4,4'-DDT	50-29-3	B e n z e n e ,	8080	0.1
		1,1'-(2,2,2-trichloroethyliden	8270	10
		e)bis[4-chloro-		
Diallate	2303-16-4	Carbamothioic acid,	8270	10
		bis(1-methylethyl)-, S-		
		(2,3-dichloro-2-propenyl) ester		
Dibenz[a,h]anthracen	53-70-3	Dibenz[a,h]anthracene	8100	200
e				
			8270	10
Dibenzofuran	132-64-9	Dibenzofuran	8270	10
Dibromochloromethane	124-48-1	Methane, dibromochloro-	8010	1
			8240	5
Chlorodibromomethane				
1,2-Dibromo-3-chloro	96-12-8	Propane, 1,2-dibromo-3-chloro-	8010	100
propane; DBCP			8240	5
			8270	10
1,2-Dibromoethane;	106-93-4	Ethane, 1,2-dibromo-	8010	10
Ethylene dibromide			8240	5
Di-n-butyl phthalate	84-74-2	1,2-Benzenedicarboxylic acid,	8060	5
		dibutyl ester	8270	10
o-Dichlorobenzene	95-50-1	Benzene, 1,2-dichloro-	8010	2
			8020	5
			8120	10
			8270	10
m-Dichlorobenzene	541-73-1	Benzene, 1,3-dichloro-	8010	5
			8020	5
			8120	10
			8270	10
p-Dichlorobenzene	106-46-7	Benzene, 1,4-dichloro-	8010	2
			8020	5
			8120	15
			8270	10
3,3'-Dichlorobenzidi	91-94-1	[1,1'-Biphenyl]-4,4'-diamine,	8270	20
ne		3,3'-dichloro-		
trans-1,4-Dichloro-2	110-57-6	2-Butene, 1,4-dichloro-, (E)-	8240	5
-butene				
Dichlorodifluorometh	75-71-8	Methane, dichlorodifluoro-	8010	10
ane			8240	5
1,1-Dichloroethane	75-34-3	Ethane, 1,1-dichloro-	8010	1
			8240	5
1,2-Dichloroethane;	107-06-2	Ethane, 1,2-dichloro-	8010	0.5
Ethylene dichloride			8240	5
1,1-Dichloroethylene	75-35-4	Ethene, 1,1-dichloro-	8010	1
; Vinylidene			8240	5
chloride				
trans-1,2-Dichloroet	156-60-5	Ethene, 1,2-dichloro-, (E)-	8010	1
hylene			8240	5

2,4-Dichlorophenol	120-83-2	Phenol, 2,4-dichloro-	8040	5
			8270	10
2,6-Dichlorophenol	87-65-0	Phenol, 2,6-dichloro-	8270	10
1,2-Dichloropropane	78-87-5	Propane, 1,2-dichloro-	8010	0.5
			8240	5
cis-1,3-Dichloropropene	10061-01-5	1-Propene, 1,3-dichloro-, (Z)-	8010	20
			8240	5
trans-1,3-Dichloropropene	10061-02-6	1-Propene, 1,3-dichloro-, (E)-	8010	5
			8240	5
Dieldrin	60-57-1	2,7:3,6-Dimethanonaphth[2,3-b]oxirene, 3,4,5,6,9,9-hexachloro-1a,2,2a,3,6,6a,7,7a-octahydro-	8080	0.05
		(1aalpha,2beta,2aalpha,3beta,6beta,6aalpha,7beta,7aalpha)-1,2-Benzenedicarboxylic acid, diethyl ester	8270	10
Diethyl phthalate	84-66-2		8060	5
			8270	10
O, O - Diethyl O-2-pyrazinyl phosphorothioate; Thionazin	297-97-2	Phosphorothioic acid, O,O-diethyl O-pyrazinyl ester	8270	10
Dimethoate	60-51-5	Phosphorodithioic acid, O, O - d i m e t h y l S-[2-(methylamino)-2-oxoethyl] ester	8270	10
p-(Dimethylamino)azobenzene	60-11-7	B e n z e n a m i n e , N,N-dimethyl-4-(phenylazo)-	8270	10
7,12-Dimethylbenz[a]anthracene	57-97-6	B e n z [a] a n t h r a c e n e , 7,12-dimethyl-	8270	10
3,3'-Dimethylbenzidine	119-93-7	[1,1'-Biphenyl]-4,4'-diamine, 3,3'-dimethyl-	8270	10
alpha l p h a , alpha-Dimethylphenethylamine	122-09-8	B e n z e n e e t h a n a m i n e , alpha,alpha-dimethyl-	8270	10
2,4-Dimethylphenol	105-67-9	Phenol, 2,4-dimethyl-	8040	5
			8270	10
Dimethyl phthalate	131-11-3	1,2-Benzenedicarboxylic acid, dimethyl ester	8060	5
			8270	10
m-Dinitrobenzene	99-65-0	Benzene, 1,3-dinitro-	8270	10
4,6-Dinitro-o-cresol	534-52-1	Phenol, 2-methyl-4,6-dinitro-	8040	150
			8270	50
2,4-Dinitrophenol	51-28-5	Phenol, 2,4-dinitro-	8040	150
			8270	50
2,4-Dinitrotoluene	121-14-2	Benzene, 1-methyl-2,4-dinitro-	8090	0.2
			8270	10
2,6-Dinitrotoluene	606-20-2	Benzene, 2-methyl-1,3-dinitro-	8090	0.1
			8270	10
Dinoseb; DNBP; 2-sec-Butyl-4,6-dinitrophenol	88-85-7	P h e n o l , 2-(1-methylpropyl)-4,6-dinitro-	8150	1
			8270	10
Di-n-octyl phthalate	117-84-0	1,2-Benzenedicarboxylic acid,	8060	30

		dioctyl ester	8270	10
1,4-Dioxane	123-91-1	1,4-Dioxane	8015	150
Diphenylamine	122-39-4	Benzenamine, N-phenyl-	8270	10
Disulfoton	298-04-4	Phosphorodithioic acid, O , O - d i e t h y l	8140	2
		S-[2-(ethylthio)ethyl]ester	8270	10
Endosulfan I	959-98-8	6,9-Methano-2,4,3-benzodioxath i e p i n ,	8080	0.1
		6,7,8,9,10,10-hexachloro-1,5,5 a,6,9,9a-hexahydro-, 3-oxide, (3alpha,5abeta,6alpha,9alpha,9 abeta)-	8250	10
Endosulfan II	33213-65-9	6,9-Methano-2,4,3-benzodioxath i e p i n ,	8080	0.05
		6,7,8,9,10,10-hexachloro- 1,5,5a,6,9,9a-hexahydro-, 3 - o x i d e , (3alpha,5aalpha,6beta,9beta,9a alpha)-		
Endosulfan sulfate	1031-07-8	6,9-Methano-2,4,3-benzodioxath i e p i n ,	8080	0.5
		6,7,8,9,10,10-hexachloro- 1,5,5a,6,9,9a-hexahydro-, 3,3-dioxide	8270	10
Endrin	72-20-8	2,7:3,6-Dimethanonaphth[2,3-b] o x i r e n e ,	8080	0.1
		3,4,5,6,9,9-hexachloro-1a,2,2a ,3,6,6a,7,7a-octahydro-, (1 a a l p h a , 2beta,2abeta,3alpha,6alpha, 6abeta,7beta,7aalpha)-	8250	10
Endrin aldehyde	7421-93-4	1,2,4-Methenocyclopenta[cd]pen talene-5-carboxaldehyde, 2,2a,3,3,4,7-hexachlorodecahyd r o - , (1alpha,2beta,2abeta,4beta,4ab eta,5beta,6beta,,6bbeta,7R*)-	8080	0.2
			8270	10
Ethylbenzene	100-41-4	Benzene, ethyl-	8020	2
			8240	5
Ethyl methacrylate	97-63-2	2-Propenoic acid, 2-methyl-, ethyl ester	8015	10
			8240	5
			8270	10
E t h y l	1 62-50-0	Methanesulfonic acid, ethyl ester	8270	10
methanesulfonate				
Famphur	52-85-7	Phosphorothioic acid, O-[4-[(dimethylamino)sulfonyl] phenyl]-O,O-dimethyl ester	8270	10
Fluoranthene	206-44-0	Fluoranthene	8100	200
			8270	10
Fluorene	86-73-7	9H-Fluorene	8100	200
			8270	10
Heptachlor	76-44-8	4 , 7 - M e t h a n o - 1 H - i n d e n e ,	8080	0.05

Heptachlor epoxide	1024-57-3	1,4,5,6,7,8,8-heptachloro-3a,4,7,7a-tetrahydro-2,5-Methano-2H-indeno[1,2-b]oxirane, 2,3,4,5,6,7,7-heptachloro-1a,1b,5,5a,6,6a,-hexahydro-, (1aalpha,1bbeta,2alpha,5alpha,5abeta,6beta,6aalpha)	8270	10
Hexachlorobenzene	118-74-1	Benzene, hexachloro-	8080	1
Hexachlorobutadiene	87-68-3	1,3-Butadiene, 1,1,2,3,4,4-hexachloro-	8270	10
Hexachlorocyclopentadiene	77-47-4	1,3-Cyclopentadiene, 1,2,3,4,5,5-hexachloro-	8120	0.5
Hexachloroethane	67-72-1	Ethane, hexachloro-	8270	10
Hexachlorophene	70-30-4	Phenol, 2,2'-methylenebis[3,4,6-trichloro-	8120	5
Hexachloropropene	1888-71-7	1-Propene, 1,1,2,3,3,3-hexachloro-	8270	10
2-Hexanone	591-78-6	2-Hexanone	8240	50
Indeno(1,2,3-cd)pyrene	193-39-5	Indeno[1,2,3-cd]pyrene	8100	200
Isobutyl alcohol	78-83-1	1-Propanol, 2-methyl-	8270	10
Isodrin	465-73-6	1,4,5,8-Dimethanonaphthalene, 1,2,3,4,10,10-hexachloro-1,4,4a,5,8,8a-hexahydro-(1alpha,4alpha,4abeta,5beta,8beta,8abeta)-	8015	50
Isophorone	78-59-1	2-Cyclohexen-1-one, 3,5,5-trimethyl-	8270	10
Isosafrole	120-58-1	1,3-Benzodioxole, 5-(1-propenyl)-	8270	10
Kepone	143-50-0	1,3,4-Metheno-2H-cyclobuta-[cd]pentalen-2-one, 1,1a,3,3a,4,5,5,5a,5b,6-decachlorooctahydro-	8270	10
Lead	(Total)	Lead	6010	40
			7420	1,000
			7421	10
Mercury	(Total)	Mercury	7470	2
Methacrylonitrile	126-98-7	2-Propenenitrile, 2-methyl-	8015	5
			8240	5
Methapyrilene	91-80-5	1,2-Ethanediamine, N,N-dimethyl-N'-2-pyridinyl-N'-(2-thienylmethyl)-	8270	10
Methoxychlor	72-43-5	Benzene, 1,1'-(2,2,2-trichloroethylidene)bis[4-methoxy-	8080	2
			8270	10
Methyl bromide;	74-83-9	Methane, bromo-	8010	20

Bromomethane			8240	10
Methyl chloride; 74-87-3		Methane, chloro-	8010	1
Chloromethane			8240	10
3-Methylcholanthrene 56-49-5		Benz[<i>j</i>]aceanthrylene, 1,2-dihydro-3-methyl-	8270	10
Methylene bromide; 74-95-3		Methane, dibromo-	8010	15
Dibromomethane			8240	5
Methylene chloride; 75-09-2		Methane, dichloro-	8010	5
Dichloromethane			8240	5
Methyl ethyl ketone; 78-93-3		2-Butanone	8015	10
MEK			8240	100
Methyl iodide; 74-88-4		Methane, iodo-	8010	40
Iodomethane			8240	5
Methyl methacrylate 80-62-6		2-Propenoic acid, 2-methyl-, methyl ester	8015	2
			8240	5
M e t h y l 66-27-3		Methanesulfonic acid, methyl ester	8270	10
methanesulfonate				
2-Methylnaphthalene 91-57-6		Naphthalene, 2-methyl-	8270	10
Methyl parathion; 298-00-0		Phosphorothioic acid, O,O-dimethyl O-(4-nitrophenyl) ester	8140	0.5
Parathion methyl			8270	10
4-Methyl-2-pentanone 108-10-1		2-Pentanone, 4-methyl-	8015	5
; Methyl isobutyl ketone			8240	50
Naphthalene 91-20-3		Naphthalene	8100	200
			8270	10
1,4-Naphthoquinone 130-15-4		1,4-Naphthalenedione	8270	10
1-Naphthylamine 134-32-7		1-Naphthalenamine	8270	10
2-Naphthylamine 91-59-8		2-Naphthalenamine	8270	10
Nickel (Total)		Nickel	6010	50
			7520	400
o-Nitroaniline 88-74-4		Benzenamine, 2-nitro-	8270	50
m-Nitroaniline 99-09-2		Benzenamine, 3-nitro-	8270	50
p-Nitroaniline 100-01-6		Benzenamine, 4-nitro-	8270	50
Nitrobenzene 98-95-3		Benzene, nitro-	8090	40
			8270	10
o-Nitrophenol 88-75-5		Phenol, 2-nitro-	8040	5
			8270	10
p-Nitrophenol 100-02-7		Phenol, 4-nitro-	8040	10
			8270	50
4-Nitroquinoline 56-57-5		Quinoline, 4-nitro-, 1-oxide	8270	10
1-oxide				
N-Nitrosodi-n-butylamine 924-16-3		1 - B u t a n a m i n e , N-butyl-N-nitroso-	8270	10
N-Nitrosodiethylamine 55-18-5		Ethanamine, N-ethyl-N-nitroso-	8270	10
N-Nitrosodimethylamine 62-75-9		M e t h a n a m i n e , N-methyl-N-nitroso-	8270	10
N-Nitrosodiphenylamine 86-30-6		B e n z e n a m i n e , N-nitroso-N-phenyl-	8270	10
N-Nitrosodipropylamine 621-64-7		1 - P r o p a n a m i n e , N-nitroso-N-propyl-	8270	10
n e ;				

Di-n-propylnitrosamine				
N-Nitrosomethylethylamine	10595-95-6	Ethanamine, N-methyl-N-nitroso-	8270	10
N-Nitrosomorpholine	59-89-2	Morpholine, 4-nitroso-	8270	10
N-Nitrosopiperidine	100-75-4	Piperidine, 1-nitroso-	8270	10
N-Nitrosopyrrolidine	930-55-2	Pyrrolidine, 1-nitroso-	8270	10
5-Nitro-o-toluidine	99-55-8	Benzenamine, 2-methyl-5-nitro-	8270	10
Parathion	56-38-2	Phosphorothioic acid, O,O-diethyl-O-(4-nitrophenyl) ester	8270	10
Polychlorinated biphenyls; PCBs	See Note 7	1,1'-Biphenyl, chloro derivatives	8080	50
Polychlorinated dibenzo-p-dioxins; PCDDs	See Note 8	Dibenzo[b,e][1,4]dioxin, chloro derivatives	8250	100
Polychlorinated dibenzofurans; PCDFs	See Note 9	Dibenzofuran, chloro derivatives	8280	0.01
Pentachlorobenzene	608-93-5	Benzene, pentachloro-	8270	10
Pentachloroethane	76-01-7	Ethane, pentachloro-	8240	5
			8270	10
Pentachloronitrobenzene	82-68-8	Benzene, pentachloronitro-	8270	10
Pentachlorophenol	87-86-5	Phenol, pentachloro-	8040	5
			8270	50
Phenacetin	62-44-2	Acetamide, N-(4-ethoxyphenyl)	8270	10
Phenanthrene	85-01-8	Phenanthrene	8100	200
			8270	10
Phenol	108-95-2	Phenol	8040	1
			8270	10
p-Phenylenediamine	106-50-3	1,4-Benzenediamine	8270	10
Phorate	298-02-2	Phosphorodithioic acid, O,O-diethyl S-[(ethylthio)methyl] ester	8140	2
			8270	10
2-Picoline	109-06-8	Pyridine, 2-methyl-	8240	5
			8270	10
Pronamide	23950-58-5	Ben z a m i d e , 3,5-dichloro-N-(1,1-dimethyl-2-propynyl)-	8270	10
Propionitrile; Ethyl cyanide	107-12-0	Propanenitrile	8015	60
			8240	5
Pyrene	129-00-0	Pyrene	8100	200
			8270	10
Pyridine	110-86-1	Pyridine	8240	5
			8270	10
Safrole	94-59-7	1,3-Benzodioxole, 5-(2-propenyl)-	8270	10
Selenium	(Total)	Selenium	6010	750
			7740	20
			7741	20
Silver	(Total)	Silver	6010	70
			7760	100

Silvex; 2,4,5-TP	93-72-1	Propanoic acid, 2-(2,4,5-trichlorophenoxy)-	8150	2
Styrene	100-42-5	Benzene, ethenyl-	8020	1
Sulfide	18496-25-8	Sulfide	8240	5
			9030	10,000
2,4,5-T; 2,4,5-Trichlorophenoxyacetic acid	93-76-5	Acetic acid, (2,4,5-trichlorophenoxy)-	8150	2
2,3,7,8-TCDD; 2,3,7,8-Tetrachlorodibenzo-p-di-oxin	1746-01-6	Dibenzo[b,e][1,4]dioxin, 2,3,7,8-tetrachloro-	8280	0.005
1,2,4,5-Tetrachlorobenzene	95-94-3	Benzene, 1,2,4,5-tetrachloro-	8270	10
1,1,1,2-Tetrachloroethane	630-20-6	Ethane, 1,1,1,2-tetrachloro-	8010	5
			8240	5
1,1,2,2-Tetrachloroethane	79-34-5	Ethane, 1,1,2,2-tetrachloro-	8010	0.5
			8240	5
Tetrachloroethylene; Perchloroethylene; Tetrachloroethene	127-18-4	Ethene, tetrachloro-	8010	0.5
			8240	5
2,3,4,6-Tetrachlorophenol	58-90-2	Phenol, 2,3,4,6-tetrachloro-	8270	10
Tetraethyl dithiopyrophosphate; Sulfotepp	3689-24-5	Thiodiphosphoric acid ((HO) ₂ P(S)] ₂ O), tetraethyl ester	8270	10
Thallium	(Total)	Thallium	6010	400
			7840	1,000
			7841	10
Tin	(Total)	Tin	7870	8,000
				0
Toluene	108-88-3	Benzene, methyl-	8020	2
			8240	5
o-Toluidine	95-53-4	Benzenamine, 2-methyl-	8270	10
Toxaphene	8001-35-2	Toxaphene	8080	2
			8250	10
1,2,4-Trichlorobenzene	120-82-1	Benzene, 1,2,4-trichloro-	8270	10
1,1,1-Trichloroethane; Methylchloroform	71-55-6	Ethane, 1,1,1-trichloro-	8240	5
1,1,2-Trichloroethane	79-00-5	Ethane, 1,1,2-trichloro-	8010	0.2
			8240	5
Trichloroethylene; Trichloroethene	79-01-6	Ethene, trichloro-	8010	1
			8240	5
Trichlorofluoromethane	75-69-4	Methane, trichlorofluoro-	8010	10
			8240	5
2,4,5-Trichlorophenol	95-95-4	Phenol, 2,4,5-trichloro-	8270	10

2,4,6-Trichloropheno l	88-06-2	Phenol, 2,4,6-trichloro-	8040	5
1,2,3-Trichloropropa ne	96-18-4	Propane, 1,2,3-trichloro-	8270	10
O, O, O - Triethyl phosphorothioate	126-68-1	Phosphorothioic acid, O,O,O-triethyl ester	8010	10
sym-Trinitrobenzene	99-35-4	Benzene, 1,3,5-trinitro-	8240	5
Vanadium	(Total)	Vanadium	8270	10
			6010	80
			7910	2,00
				0
			7911	40
Vinyl acetate	108-05-4	Acetic acid, ethenyl ester	8240	5
Vinyl chloride	75-01-4	Ethene, chloro-	8010	2
			8240	10
Xylene (total)	1330-20-7	Benzene, dimethyl-	8020	5
			8240	5
Zinc	(Total)	Zinc	6010	20
			7950	50

FOOTNOTE: ¹The regulatory requirements pertain only to the list of substances; the right hand columns (Methods and PQL) are given for informational purposes only. See also footnotes 5 and 6.

FOOTNOTE: ²Common names are those widely used in government regulations, scientific publications, and commerce; synonyms exist for many chemicals.

FOOTNOTE: ³Chemical Abstracts Service registry number. Where "Total" is entered, all species in the ground water that contain this element are included.

FOOTNOTE: ⁴CAS index names are those used in the 9th Cumulative Index.

FOOTNOTE: ⁵Suggested Methods refer to analytical procedure numbers used in EPA Report SW-846 "Test Methods for Evaluating Solid Waste", third edition, November 1986. Analytical details can be found in SW-846 and in documentation on file at the agency. CAUTION: The methods listed are representative SW-846 procedures and may not always be the most suitable method(s) for monitoring an analyte under the regulations.

FOOTNOTE: ⁶Practical Quantitation Limits (PQLs) are the lowest concentrations of analytes in ground waters that can be reliably determined within specified limits of precision and accuracy by the indicated methods under routine laboratory operating conditions. The PQLs listed are generally stated to one significant figure. CAUTION: The PQL values in many cases are based only on a general estimate for the method and not on a determination for individual compounds; PQLs are not a part of the regulation.

FOOTNOTE: Polychlorinated biphenyls (CAS RN 1336-36-3); this category contains congener chemicals, including constituents of Aroclor-1016 (CAS RN 12674-11-2), Aroclor-1221 (CAS RN 11104-28-2), Aroclor-1232 (CAS RN 11141-16-5), Aroclor-1242 (CAS RN 53469-21-9), Aroclor-1248 (CAS RN 12672-29-6), Aroclor-1254 (CAS RN 11097-69-1), and Aroclor-1260 (CAS RN 11096-82-5). The PQL shown is an average value for PCB congeners.

FOOTNOTE: ³This category contains congener chemicals, including tetrachlorodibenzo-p-dioxins (see also 2,3,7,8-TCDD), pentachlorodibenzo-p-dioxins, and hexachlorodibenzo-p-dioxins. The PQL shown is an average value for PCDD congeners.

FOOTNOTE: ³This category contains congener chemicals, including tetrachlorodibenzofurans, pentachlorodibenzofurans, and hexachlorodibenzofurans. The PQL shown is an average value for PCDF congeners.

APPENDIX X

Record Keeping Instructions

The record keeping provisions of Section 8.5.4 of these regulations specify that an owner or operator must keep a written operating record at his facility. This Appendix provides additional instructions for keeping portions of the operating record. (See Section 8.5.4.b of these regulations for additional record keeping requirements).

The following information must be recorded, as it becomes available, and maintained in the operating record until closure of the facility in the following manner:

1. Records of each hazardous waste received, treated, stored, or disposed of at the facility which include the following:

(a) A description by its common name and the EPA Hazardous Waste Number(s) from Section 3 of these regulations which apply to the waste. The waste description also must include the waste's physical form, i.e., liquid, sludge, solid, or contained gas. If the waste is not listed in Section 3.4 of these regulations, the description must also include the process that produced it (for example, solid filter cake from production of _____, EPA Hazardous Waste Number W051).

Each hazardous waste listed in Section 3.4 of these regulations and each hazardous waste characteristic defined in Section 3.8 of these regulations has a four-digit EPA Hazardous Waste Number assigned to it. This number must be used for record keeping and reporting purposes. Where a hazardous waste contains more than one listed hazardous waste, or more than one hazardous waste characteristic applies to the waste, the waste description must include all applicable EPA Hazardous Waste Numbers.

(b) The estimated or manifest-reported weight, or volume and density, where applicable, in one of the units of measurement specified in Table D of these regulations.

(c) The method(s) (by handling code(s) as specified in Table E of these regulations) and date(s) of treatment, storage, or disposal.

TABLE D

Units of Measure

Unit of Measure	Symbol	Density
Pounds	P	
Short tons (2,000 lbs)	T	
Gallons (U.S.)	G	P/G
Cubic yards	Y	T/Y
Kilograms	K	
Tonnes (1,000 Kg)	M	
Liters	L	K/L
Cubic meters	C	M/C

Single digit symbols are used here for data processing purposes.

TABLE E

Handling Codes for Treatment, Storage, and Disposal Methods

Enter the handling code(s) listed below that most closely represents the technique(s) used at the facility to treat, store, or dispose of each quantity of hazardous waste received.

1. Storage

- S01 Container (barrel, drum, etc.)
- S02 Tank
- S03 Waste Pile
- S04 Surface Impoundment
- S05 Other (specify)

2. Treatment

(a) Thermal Treatment

- T06 Liquid injection incinerator
- T07 Rotary kiln incinerator
- T08 Fluidized bed incinerator
- T09 Multiple hearth incinerator
- T10 Infrared furnace incinerator
- T11 Molten salt destructor
- T12 Pyrolysis
- T13 Wet Air oxidation
- T14 Calcination
- T15 Microwave discharge
- T16 Cement kiln
- T17 Lime kiln
- T18 Other (specify)

(b) Chemical Treatment

- T19 Absorption mound
- T20 Absorption field
- T21 Chemical fixation
- T22 Chemical oxidation
- T23 Chemical precipitation
- T24 Chemical reduction
- T25 Chlorination
- T26 Chlorinolysis
- T27 Cyanide destruction
- T28 Degradation
- T29 Detoxification
- T30 Ion exchange

TABLE E

Handling Codes for Treatment, Storage, and Disposal Methods

T31 Neutralization
T32 Ozonation
T33 Photolysis
T34 Other (specify)

(c) Physical Treatment

- Separation of Components -

T35 Centrifugation
T36 Clarification
T37 Coagulation
T38 Decanting
T39 Encapsulation
T40 Filtration
T41 Flocculation
T42 Flotation
T43 Foaming
T44 Sedimentation
T45 Thickening
T46 Ultrafiltration
T47 Other (specify)

- Removal of Specific Components -

T48 Absorption-molecular sieve
T49 Activated carbon
T50 Blending
T51 Catalysis
T52 Crystallization
T53 Dialysis
T54 Distillation
T55 Electrodialysis
T56 Electrolysis
T57 Evaporation
T58 High gradient magnetic separation
T59 Leaching
T60 Liquid ion exchange
T61 Liquid-liquid extraction
T62 Reverse osmosis
T63 Solvent recovery
T64 Stripping
T65 Sand filter
T66 Other (specify)

(d) Biological Treatment

TABLE E

Handling Codes for Treatment, Storage, and Disposal Methods

T67	Activated sludge
T68	Aerobic lagoon
T69	Aerobic tank
T70	Anaerobic lagoon
T71	Composting
T72	Septic tank
T73	Spray irrigation
T74	Thickening filter
T75	Tricking filter
T76	Waste stabilization pond
T77	Other (specify)
T78	(Reserved)
T79	(Reserved)

3. Disposal

~~D80~~ D79	Underground injection
~~D81~~ D80	Landfill
~~D82~~ D81	Land treatment
~~D83~~ D82	Ocean disposal
~~D84~~ D83	Surface impoundment (to be closed as a landfill)
~~D85~~ D84	Other (specify)

APPENDIX XI

Mann-Whitney Test

The Mann-Whitney test is a non-parametric statistical method which is described in the following tests:

Armstrong, S.J., 1973, Elementary Statistics and Decision Making, Charles E. Merrill Publishing Company, Columbus, Ohio (see pages 251 through 252).

Snedecor, G.W. and Cochran, W.G., 1967, Statistical Methods, 6th Edition, The Iowa State University Press, Ames, Iowa (see pages 130 through 131).

APPENDIX XII

(Reserved)

APPENDIX XIII

(Reserved)

APPENDIX XIV

Uniform hazardous Waste Manifest Form

Generators

Item 1. Generator's U.S. EPA ID Number - Manifest Document Number.

Enter the generator's EPA twelve digit identification number and the unique five digit number assigned to this Manifest (e.g., 00001) by the generator.

Item 2. Page 1 of --

Enter the total number of pages used to complete this Manifest, i.e., the first page (EPA Form 8700-22) plus the number of Continuation Sheets (EPA Form 8700-22A), if any.

Item 3. Generator's Name and Mailing Address.

Enter the name and mailing address of the generator. The address should be the location that will manage the returned manifest forms.

Item 4. Generator's Phone Number.

Enter a phone number where an authorized agent of the generator may be reached in the event of an emergency.

Item 5. Transporter 1 Company Name.

Enter the company name of the first transporter who will transport the waste.

Item 6. U.S. EPA ID Number.

Enter the U.S. EPA twelve digit identification number of the first transporter identified in Item 5.

Item 7. Transporter 2 Company Name.

If applicable, enter the company name of the second transporter who will transport the waste. If more than two transporters are used to transport the waste, use a Continuation Sheet(s) (EPA Form 8700-22A) and list the transporters in the order they will be transporting the waste.

Item 8. U.S. EPA ID Number.

If applicable, enter the U.S. EPA twelve digit identification number of the second transporter identified in item 7.

Note: If more than two transporters are used, enter each additional transporter's company name and U.S. EPA twelve digit identification number in items 24-27 on the Continuation Sheet (EPA Form 8700-22A). Each Continuation Sheet has space to record two additional transporters. Every transporter used between the generator and the designated facility must be listed.

UNIFORM HAZARDOUS WASTE MANIFEST

1. Generator's US EPA ID No.

Manifest
Document No.

2. Page 1
of

Information in the shaded areas
is not required by Federal
law

3. Generator's Name and Mailing Address

A. State Manifest Document Number

B. State Generator's ID

4. Generator's Phone ()

5. Transporter 1 Company Name

6

US EPA ID Number

C. State Transporter's ID

D. Transporter's Phone

7. Transporter 2 Company Name

8

US EPA ID Number

E. State Transporter's ID

F. Transporter's Phone

9. Designated Facility Name and Site Address

10

US EPA ID Number

G. State Facility's ID

H. Facility's Phone

11. US DOT Description (including Proper Shipping Name, Hazard Class, and ID Number)

12. Containers

No.

Type

13. Total
Quantity

14. Unit
Wt/Vol

1. Waste No.

A.

B.

C.

D.

1. Additional Descriptions for Materials Listed Above

2. Handling Codes for Wastes Listed Above

15. Special Handling Instructions and Additional Information

6. GENERATOR'S CERTIFICATION: I hereby declare that the contents of this assignment are fully and accurately described above by proper shipping name and are classified, packed, marked, and labeled, and are in all respects in proper condition for transport by highway according to applicable international and national government regulations.

If I am a large quantity generator, I certify that I have a program in place to reduce the volume and toxicity of waste generated to the degree I have determined to be economically practicable and that I have selected the practicable method of treatment, storage, or disposal currently available to me which minimizes the present and future threat to human health and the environment; OR, if I am a small quantity generator, I have made a good faith effort to minimize my waste generation and select the best waste management method that is available to me and that I can afford.

Printed/Typed Name

Signature

Month Day Year

17. Transporter 1 Acknowledgement of Receipt of Materials

Printed/Typed Name

Signature

Month Day Year

18. Transporter 2 Acknowledgement of Receipt of Materials

Printed/Typed Name

Signature

Month Day Year

19. Discrepancy Indication Space

20. Facility Owner or Operator: Certification of receipt of hazardous materials covered by this manifest except as noted in item 19.

Printed/Typed Name

Signature

Month Day Year

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Uniform hazardous Waste Manifest Form

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Item 9. Designated Facility Name and Site Address.

Enter the company name and site address of the facility designated to receive the waste listed on this Manifest. The address must be the site address, which may differ from the company mailing address.

Item 10. U.S. EPA ID Number.

Enter the U.S. EPA twelve digit identification number of the designated facility identified in Item 9.

Item 11. U.S. DOT Description (Including Proper Shipping Name, Hazard Class, and ID Number (UN/NA)).

Enter the U.S. DOT Proper Shipping Name, Hazard Class, and ID Number (UN/NA) for each waste as identified in 49 C.F.R. Part 171 through 177.

Note: If additional space is needed for waste descriptions, enter these additional descriptions in Item 28 on the Continuation Sheet (EPA Form 8700-22A).

Item 12. Containers (No. and Type)

Enter the number of containers for each waste and the appropriate abbreviation from Table I (below) for the type of container.

Table I -- Types of Containers

DM = Metal drums, barrels, kegs
DW = Wooden drums, barrels, kegs
DF = Fiberboard or plastic drums, barrels, kegs
TP = Tanks portable
TT = Cargo tanks (tank trucks)
TC = Tank Cars
DT = Dump Truck
CY = Cylinders
CM = Metal boxes, cartons, cases (including roll-offs)
CW = Wooden boxes, cartons, cases
CF = Fiber or plastic boxes, cartons, cases
BA = Burlap, cloth, paper, or plastic bags

Item 13. Total Quantity.

Enter the total quantity of waste described on each line.

Item 14. Unit (Wt./Vol.)

Enter the appropriate abbreviation from Table II (below) for the unit of measure.

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Table II -- Units of Measure

G = Gallons (liquids only)
P = Pounds
T = Tons (2000 lbs)
Y = Cubic yards
L = Liters (liquids only)
K = Kilograms
M = Metric tons (1000 kg)
N = Cubic meters

Item 15. Special Handling Instructions and Additional Information.

Generators may use this space to indicate special transportation, treatment, storage, or disposal information or Bill of Lading information. States may not require additional, new, or different information in this space. For international shipments, generators must enter in this space the point of departure (City and State) for those shipments destined for treatment, storage, or disposal outside the jurisdiction of the United States.

Item 16. Generator's Certification.

The generator must read, sign (by hand), and date the certification statement. If a mode other than highway is used, the word "highway" should be lined out and the appropriate mode (rail, water, or air) inserted in the space below. If another mode in addition to the highway mode is used, enter the appropriate additional mode (e.g., and rail) in the space below.

Primary exporters shipping hazardous wastes to a facility located outside of the United States must add to the end of the first sentence of the certification the following words "and conforms to the terms of the EPA Acknowledgement of Consent to the shipment."

In signing the waste minimization certification statement, those generators who have not been exempted by statute or regulation from the duty to make a waste minimization certificate under Section 3002(b) of RCRA are also certifying that they have complied with the waste minimization requirements.

Generators may preprint the words, "On behalf of" in the signature block or may hand write this statement in the signature block prior to signing the generator certifications.

* * * * *

Transporters

Item 17. Transporter 1 Acknowledgement of Receipt of Materials.

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Enter the name of the person accepting the waste on behalf of the first transporter. That person must acknowledge acceptance of the waste described on the Manifest by signing and entering the date of receipt.

Item 18. Transporter 2 Acknowledgement of Receipt of Materials.

Enter, if applicable, the name of the person accepting the waste on behalf of the second transporter. That person must acknowledge acceptance of the waste described on the Manifest by signing and entering the date of receipt.

Note: International Shipments -- Transporter Responsibilities.

Exports -- Transporters must sign and enter the date the waste left the United States in Item 15 of Form 8700-22.

Imports -- Shipments of hazardous waste regulated by RCRA and transported into the United States from another country must upon entry be accompanied by the U.S. EPA Uniform Hazardous Waste Manifest. Transporters who transport hazardous waste into the United States from another country are responsible for completing the Manifest (40 C.F.R. 263.10(c)(1)).

Owners and Operators of Treatment, Storage, or Disposal Facilities.

Item 19. Discrepancy Indication Space.

The authorized representative of the designated (or alternate) facility's owner or operator must note in this space any significant discrepancy between the waste described on the Manifest and the waste actually received at the facility.

Owners and operators of facilities located in unauthorized States (i.e., the U.S. EPA administers the hazardous waste management program) who cannot resolve significant discrepancies within 15 days of receiving the waste must submit to their Regional Administrator (see list below) a letter with a copy of the Manifest at issue describing the discrepancy and attempts to reconcile it (40 C.F.R. Part 264.72 and 265.72).

Owners and operators of facilities located in authorized States (i.e., those States that have received authorization from the U.S. EPA to administer the hazardous waste program) should contact their State agency for information on State Discrepancy Report requirements.

EPA Regional Administrators

Regional Administrator, U.S. EPA Region I, J.F. Kennedy Fed. Bldg.,
Boston, MA 02203

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Regional Administrator, U.S. EPA Region II, 26 Federal Plaza, New York, NY, 10278

Regional Administrator, U.S. EPA Region III, 6th and Walnut Sts., Philadelphia, PA 19106

Regional Administrator, U.S. EPA Region IV, 345 Courtland St., NE., Atlanta GA 30365

Regional Administrator, U.S. EPA Region V, 230 S. Dearborn St., Chicago, IL 60604

Regional Administrator, U.S. EPA Region VI, 1201 Elm Street, Dallas, TX 75270

Regional Administrator, U.S. EPA Region VII, 324 East 11th Street, Kansas City, MO 64106

Regional Administrator, U.S. EPA Region VIII, 1860 Lincoln Street, Denver, CO 80295

Regional Administrator, U.S. EPA Region IX, 215 Freemont Street, San Francisco, CA 94105

Regional Administrator, U.S. EPA Region X, 1200 Sixth Avenue, Seattle, WA 98101.

Item 20. Facility Owner or Operator: Certification of Receipt of Hazardous Materials Covered by this Manifest Except as Noted in Item 19.

Print or type the name of the person accepting the waste on behalf of the owner or operator of the facility. That person must acknowledge acceptance of the waste described on the Manifest by signing and entering the date of receipt.

Items A-K are not required by Federal regulations for intra- or interstate transportation. However, States may require generators and owners or operators of treatment, storage, or disposal facilities to complete some or all of items A-K as part of State manifest reporting requirements. Generators and owners and operators of treatment, storage, or disposal facilities are advised to contact State officials for guidance on completing the shaded areas of the Manifest.

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Instructions -- Continuation Sheet, U.S. EPA Form 8700-22A

Read all instructions before completing this form.

This form has been designed for use on a 12-pitch (elite) typewriter; a firm point pen may also be used -- press down hard.

This form must be used as a continuation sheet to U.S. EPA Form 8700-22 if:

- More than two transporters are to be used to transport the waste;
- More space is required for the U.S. DOT description and related information in Item 11 of U.S. EPA Form 8700-22.

Federal regulations require generators and transporters of hazardous waste and owners or operators of hazardous waste treatment, storage, or disposal facilities to use the uniform hazardous waste manifest (EPA Form 8700-22) and, if necessary, this continuation sheet (EPA Form 8700-22A) for both inter- and intrastate transportation.

Generators.

Item 21. Generator's U.S. EPA ID Number -- Manifest Document Number.

Enter the generator's U.S. EPA twelve digit identification number and the unique five digit number assigned to this Manifest (e.g., 00001) as it appears in Item 1 on the first page of the Manifest.

Item 22. Page _____

Enter the page number of this Continuation Sheet.

Item 23. Generator's Name.

Enter the generator's name as it appears in Item 3 on the first page of the Manifest.

Item 24. Transporter --- Company Name.

If additional transporters are used to transport the waste described on this Manifest, enter the company name of each additional transporter in order in which they will transport the waste. Enter after the word "Transporter" the order of the transporter. For example, Transporter 3 Company Name. Each Continuation Sheet will record the names of two additional transporters.

Item 25. U.S. EPA ID Number.

Enter the U.S. EPA twelve digit identification number of the

UNIFORM HAZARDOUS WASTE MANIFEST <i>(Continuation Sheet)</i>		21. Generator's US EPA ID No.	Manifest Document No.	22. Page	Information in the shaded areas is not required by Federal law	
23. Generator's Name				L. State Manifest Document Number		
				M. State Generator's ID		
24. Transporter _____ Company Name		25. US EPA ID Number		N. State Transporter's ID		
				O. Transporter's Phone		
26. Transporter _____ Company Name		27. US EPA ID Number		P. State Transporter's ID		
				Q. Transporter's Phone		
28. US DOT Description (Including Proper Shipping Name, Hazard Class, and ID Number)				29. Containers No.	30. Total Quantity	31. Unit Wt./Vol.
a.						R Waste No.
b.						
c.						
d.						
e.						
f.						
g.						
h.						
i.						
S. Additional Descriptions for Materials Listed Above				T. Handling Codes for Wastes Listed Above		
32. Special Handling Instructions and Additional Information						
33. Transporter _____ Acknowledgement of Receipt of Materials				Date		
Printed/Typed Name		Signature		Month	Day	Year
34. Transporter _____ Acknowledgement of Receipt of Materials				Date		
Printed/Typed Name		Signature		Month	Day	Year
35. Discrepancy Indication Space						

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transporter described in item 24.

Item 26. Transporter -- Company Name

If additional transporters are used to transport the waste described on this Manifest, enter the company name of each additional transporter in the order in which they will transport the waste. Enter after the word "Transporter" the order of the transporter. For example, Transporter 4 Company Name. Each Continuation Sheet will record the names of two additional transporters.

Item 27. U.S. EPA ID Number.

Enter the U.S. EPA twelve digit identification number of the transporter described in Item 26.

Item 28. U.S. DOT Description Including Proper Shipping Name, Hazardous Class, and ID Number (UN/NA).

Refer to Item 11.

Item 29. Containers (No. and Type)

Refer to Item 12.

Item 30. Total Quantity.

Refer to Item 13.

Item 31. Unit (Wt./Vol.)

Refer to Item 14.

Item 32. Special Handling Instructions.

Generators may use this space to indicate special transportation, treatment, storage, or disposal information or Bill of Lading information. States are not authorized to require additional, new, or different information in this space.

* * * * *

Transporters.

Item 33. Transporter -- Acknowledgement of Receipt of Materials.

Enter the same number of the Transporter as identified in Item 24. Enter also the name of the person accepting the waste on behalf of the Transporter (Company Name) identified in Item 24. That person must acknowledge acceptance of the waste described on the Manifest by signing and entering the date of receipt.

Item 34. Transporter -- Acknowledgement of Receipt of Materials.

Enter the same number as identified in Item 26. Enter also the

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Uniform hazardous Waste Manifest Form

name of the person accepting the waste on behalf of the Transporter (Company Name) identified in Item 26. That person must acknowledge acceptance of the waste described on the Manifest by signing and entering the date of receipt.

* * * * *

Owners and Operators of Treatment, Storage, or Disposal Facilities.

Item 35. Discrepancy Indication Space.

Refer to Item 19.

Items L-R are not required by Federal regulations for intra- or interstate transportation. However, States may require generators and owners or operators of treatment, storage, or disposal facilities to complete some or all of items L-R as part of State manifest reporting requirements. Generators and owners and operators of treatment, storage, or disposal facilities are advised to contact State officials for guidance on completing the shaded areas of the manifest.

Appendix XV -- Classification of Permit Modification

Modifications	Class
A. General Permit Provisions	
1. Administrative and informational changes	1
2. Correction of typographical errors	1
3. Equipment replacement or upgrading with functionally equivalent components (e.g., pipes, valves, pumps, conveyors, controls)	1
4. Changes in the frequency of or procedures for monitoring, reporting, sampling, or maintenance activities by the permittee:	
a. To provide for more frequent monitoring, reporting, sampling, or maintenance.	1
b. Other changes	2
5. Schedule of compliance:	
a. Changes in interim compliance dates, with prior approval of the Director.	1
b. Extension of final compliance date.	3
6. Changes in expiration date of permit to allow earlier permit termination, with prior approval of the Director.	1
7. Changes in ownership or operational control of a facility, provided the procedures of Section 11.20.1.b of these regulations are followed.	1
B. General Facility Standards	
1. Changes to waste sampling or analysis methods:	
a. To conform with agency guidance or regulations.	1
b. <u>To incorporate changes associated with F039 (multi-source leachate) sampling or analysis methods</u>	1
c. Other changes	2
2. Changes to analytical quality assurance/control plan:	
a. To conform with agency guidance or regulations.	1
b. Other changes	2
3. Changes in procedures for maintaining the operating record.	1

4. Changes in frequency or content of inspection schedules. 2
5. Changes in the training plan:
 - a. That affect the type or decrease the amount of training given to employees. 2
 - b. Other changes 1
6. Contingency plan:
 - a. Changes in emergency procedures (i.e., spill or release response procedures). 2
 - b. Replacement with functionally equivalent equipment, upgrade, or relocate emergency equipment listed. 1
 - c. Removal of equipment from emergency equipment list. 2
 - d. Changes in name, address, or phone number of coordinators or other persons or agencies identified in the plan. 1

Note: When a permit modification (such as introduction of a new unit) requires a change in facility plans or other general facility standards, that change shall be reviewed under the same procedures as the permit modification.

C. Ground-Water Protection

1. Changes to wells:
 - a. Changes in the number, location, depth, or design of upgradient or downgradient wells of permitted ground-water monitoring system. 2
 - b. Replacement of an existing well that has been damaged or rendered inoperable, without change to location, design, or depth of the well. 1
2. Changes in ground-water sampling or analysis procedures or monitoring schedule, with prior approval of the Director. 1
3. Changes in statistical procedure for determining whether a statistically significant change in ground-water quality between upgradient and downgradient wells has occurred, with prior approval of the Director. 1
4. Changes in point of compliance. 2
5. Changes in indicator parameters, hazardous constituents, or concentration limits (including ACLs):
 - a. As specified in the groundwater protection standard. 3

- b. (Reserved)
- 6. (Reserved)
- 7. Compliance monitoring program:

- a. Addition of compliance monitoring program as required by Sections 8.13.8.h.4 and 8.13.5 of these regulations. 3
- b. Changes to a compliance monitoring program as required by Section 8.13.8.a.6 of these regulations, unless otherwise specified in this appendix 2

8. Corrective action program:

- a. Addition of a corrective action program as required by Section 8.13.9 of these regulations. 3
- b. Changes to a corrective action program as required by Section 8.13.9.h of these regulations, unless otherwise specified in this Appendix 2

D. Closure

1. Changes to the closure plan:

- a. Changes in estimate of maximum extent of operations or maximum inventory of waste on-site at any time during the active life of the facility, with prior approval of the Director 1
- b. Changes in the closure schedule for any unit, changes in the final closure schedule for the facility, or extension of the closure period, with prior approval of the Director 1
- c. Changes in the expected year of final closure, where other permit conditions are not changed, with prior approval of the Director 1
- d. Changes in procedures for decontamination of facility equipment or structures, with prior approval of the Director 1
- e. Changes in approved closure plan resulting from unexpected events occurring during partial or final closure, unless otherwise specified in this appendix 2
- f. Extension of the closure period to allow a landfill, surface impoundment or land treatment unit to receive non-hazardous wastes after final receipt of hazardous wastes under Section 8.6.4.e or 8.6.4.f of these regulations 2

2. Creation of a new landfill unit as part of closure 3

3. Addition of the following new units to be used

temporarily for closure activities:

- a. Surface impoundments 3
- b. Incinerators 3
- c. Waste piles that do not comply with Section 8.10.1.c of these regulations. 3
- d. Waste piles that comply with Section 8.10.1.c of these regulations. 2
- e. Tanks or containers (other than specified below) 2
- f. Tanks used for neutralization, dewatering, phase separation, or component separation, with prior approval of the Director 1

E. Post-Closure

- 1. Changes in name, address, or phone number of contact in post-closure plan 1
- 2. Extension of post-closure care period 2
- 3. Reduction in the post-closure care period 3
- 4. Changes to the expected year of final closure, where other permit conditions are not changed 1
- 5. Changes in post-closure plan necessitated by events occurring during the active life of the facility, including partial and final closure 2

F. Containers

1. Modification or addition of container units:

- a. Resulting in greater than 25% increase in the facility's container storage capacity, except as provided in F(1)(c) and F(4)(a) below 3
- b. Resulting in up to 25% increase in the facility's container storage capacity, except as provided in F(1)(c) and F(4)(a) below 2
- c. Or treatment processes necessary to treat wastes that are restricted from land disposal to meet some or all of the applicable treatment standards or to treat wastes to satisfy (in whole or in part) the standard of "use of practically available technology that yields the greatest environmental benefit" contained in 40 C.F.R. § 268.8(a)(2)(ii), with prior approval of the Director. This modification may also involve addition of new waste codes or narrative descriptions of wastes. It is not applicable to dioxin-containing wastes (F020, F021, F022, F023, F026, F027, and F028) 1

2:

- a. Modification of a container unit without 2

- increasing the capacity of the unit
- b. Addition of a roof to a container unit 1
without alteration of the containment system
3. Storage of different wastes in containers,
except as provided in (F)(4) below:

- a. That require additional or different 3
management practices from those authorized in
the permit
- b. That do not require additional or different 2
management practices from those authorized in
the permit

Note: See Section 11.20.7 of these regulations for
modification procedures to be used for the management of
newly listed or identified wastes.

4. Storage of treatment of different wastes in
containers:

- a. That require addition of units or change in 1
treatment process or management standards,
provided that the wastes are restricted from
land disposal and are to be treated to meet
some or all of the applicable treatment
standards, or that are to be treated to
satisfy (in whole or in part) the standard of
use of practically available technology that
yields the greatest environmental benefit''
contained in 40 C.F.R. § 268.8(a)(2)(ii). This
modification is not applicable to
dioxin-containing wastes (F020, F021, F022,
F023, F026, F027, and F028)
- b. That do not require the addition of units 1
or a change in the treatment process or
management standards, and provided that the
units have previously received wastes of the
same type (e.g., incinerator scrubber water).
This modification is not applicable to
dioxin-containing wastes (F020, F021, F022,
F023, F026, F027, and F028)

G. Tanks

1:

- a. Modification or addition of tank units 3
resulting in greater than 25% increase in the
facility's tank capacity, except as provided
in G(1)(c), G(1)(d), and G(1)(e) below
- b. Modification or addition of tank units 2
resulting in up to 25% increase in the
facility's tank capacity, except as provided
in G(1)(d) and G(1)(e) below

- c. Addition of a new tank that will operate for more than 90 days using any of the following physical or chemical treatment technologies: neutralization, dewatering, phase separation, or component separation 2
- d. After prior approval of the Director, addition of a new tank that will operate for up to 90 days using any of the following physical or chemical treatment technologies: neutralization, dewatering, phase separation, or component separation -1
- e. Modification or addition of tank units or treatment processes necessary to treat wastes that are restricted from land disposal to meet some or all of the applicable treatment standards or to treat wastes to satisfy (in whole or in part) the standard of "use of practically available technology that yields the greatest environmental benefit" contained in 40 C.F.R. § 268.8(a)(2)(ii), with prior approval of the Director. This modification may also involve addition of new waste codes. It is not applicable to dioxin-containing wastes (F020, F021, F022, F023, F026, F027, and F028) -1
2. Modification of a tank unit or secondary containment system without increasing the capacity of the unit 2
3. Replacement of a tank with a tank that meets the same design standards and has a capacity within +/- 10% of the replaced tank provided 1
- The capacity difference is no more than 1500 gallons,
- The facility's permitted tank capacity is not increased, and
- The replacement tank meets the same conditions in the permit.
4. Modification of a tank management practice. 2
5. Management of different wastes in tanks:
- a. That require additional or different management practices, tank design, different fire protection specifications, or significantly different tank treatment process from that authorized in the permit, except as provided in (G)(5)(c) below 3
- b. That do not require additional or different management practices, tank design, different fire protection specifications, or 2

significantly different tank treatment process than authorized in the permit, except as provided in (G)(5)(d)

c. That require addition of units or change in treatment processes or management standards, provided that the wastes are restricted from land disposal and are to be treated to meet some or all of the applicable treatment standards or that are to be treated to satisfy (in whole or in part) the standard of "use of practically available technology that yields the greatest environmental benefit" contained in 40 C.F.R. § 268.8(a)(2)(ii). The modification is not applicable to dioxin-containing wastes (F020, F021, F022, F023, F026, F027, and F028)

d. That do not require the addition of units or a change in the treatment process or management standards, and provided that the units have previously received wastes of the same type (e.g., incinerator scrubber water). This modification is not applicable to dioxin-containing wastes (F020, F021, F022, F023, F026, F027, and F028)

Note: See Section 11.20.7 of these regulations for modification procedures to be used for the management of newly listed or identified wastes.

H. Surface Impoundments

1. Modification or addition of surface impoundment units that result in increasing the facility's surface impoundment storage or treatment capacity 3
2. Replacement of a surface impoundment unit 3
3. Modification of a surface impoundment unit without increasing the facility's surface impoundment storage or treatment capacity and without modifying the unit's liner, leak detection system, or leachate collection system 2
4. Modification of a surface impoundment management practice 2
5. Treatment, storage, or disposal of different wastes in surface impoundments:

a. That require additional or different management practices or different design of the liner or leak detection system than authorized in the permit 3

b. That do not require additional or different management practices or different design of the liner or leak detection system than authorized in the permit 2

c. That are wastes restricted from land disposal that meet the applicable treatment standards or that are treated to satisfy the standard of "use of practically available technology that yields the greatest environmental benefit" contained in 40 C.F.R. § 268.8(a)(2)(ii), and provided that the unit meets the minimum technological requirements stated in 40 C.F.R. § 268.5(h)(2). This modification is not applicable to dioxin-containing wastes (F020, F021, F022, F023, F026, F027, and F028) 1

d. That are residues from wastewater treatment or incineration, provided that disposal occurs in a unit that meets the minimum technological requirements stated in 40 C.F.R. § 268.5(h)(2), and provided further that the surface impoundment has previously received wastes of the same type (for example, incinerator scrubber water). This modification is not applicable to dioxin-containing wastes (F020, F021, F022, F023, F026, F027, and F028) 1

Note: See Section 11.20.7 of these regulations for modification procedures to be used for the management of newly listed or identified wastes

I. Enclosed Waste Piles. For all waste piles except those complying with Section 8.10.1.c of these regulations, modifications are treated the same as for a landfill. The following modifications are applicable only to waste piles complying with Section 8.10.1.c of these regulations.

1. Modification or addition of waste pile units:

a. Resulting in greater than 25% increase in the facility's waste pile storage or treatment capacity 3

b. Resulting in up to 25% increase in the facility's waste pile storage or treatment capacity 2

2. Modification of waste pile unit without increasing the capacity of the unit 2

3. Replacement of a waste pile unit with another waste pile unit of the same design and capacity and meeting all waste pile conditions in the permit 1

4. Modification of a waste pile management practice 2

5. Storage or treatment of different wastes in waste piles:

a. That require additional or different management practices or different design of 3

the unit

- b. That do not require additional or different management practices or different design of the unit 2

Note: See Section 11.20.7 of these regulations for modification procedures to be used for the management of newly listed or identified wastes.

J. Landfills and Unenclosed Waste Piles

1. Modification or addition of landfill units that result in increasing the facility's disposal capacity 3
2. Replacement of a landfill 3
3. Addition or modification of a liner, leachate collection system, leachate detection system, run-off control, or final cover system 3
4. Modification of a landfill unit without changing a liner, leachate collection system, leachate detection system, run-off control, or final cover system 2
5. Modification of a landfill management practice 2
6. Landfill different wastes:
 - a. That require additional or different management practices, different design of the liner, leachate collection system, or leachate detection system 3
 - b. That do not require additional or different management practices, different design of the liner, leachate collection system, or leachate detection system 2
 - c. That are wastes restricted from land disposal that meet the applicable treatment standards or that are treated to satisfy the standard of use of practically available technology that yields the greatest environmental benefit'' contained in 40 C.F.R. § 268.8(a)(2)(ii), and provided that the landfill unit meets the minimum technological requirements stated in 40 C.F.R. § 268.5(h)(2). This modification is not applicable to dioxin-containing wastes (F020, F021, F022, F023, F026, F027, and F028) 1
 - d. That are residues from wastewater treatment or incineration, provided that disposal occurs in a landfill unit that meets the minimum technological requirements stated in 40 C.F.R. § 268.5(h)(2), and provided further that the landfill has previously received wastes of the same type (for example, incinerator ash). This modification is not applicable to 1

dioxin-containing wastes (F020, F021, F022, F023, F026, F027, and F028)

Note: See Section 11.20.7 of these regulations for modification procedures to be used for the management of newly listed or identified wastes.

K. Land Treatment

1. Lateral expansion of or other modification of a land treatment unit to increase areal extent: 3
2. Modification of run-on control system 2
3. Modify run-off control system 3
4. Other modifications of land treatment unit component specifications or standards required in permit 2
5. Management of different wastes in land treatment units:
 - a. That require a change in permit operating conditions or unit design specifications 3
 - b. That do not require a change in permit operating conditions or unit design specifications 2

Note: See Section 11.20.7 of these regulations for modification procedures to be used for the management of newly listed or identified wastes

6. Modification of a land treatment unit management practice to:
 - a. Increase rate or change method of waste application 3
 - b. Decrease rate of waste application 1
7. Modification of a land treatment unit management practice to change measures of pH or moisture content, or to enhance microbial or chemical reactions 2
8. Modification of a land treatment unit management practice to grow food chain crops, to add to or replace existing permitted crops with different food chain crops, or to modify operating plans for distribution of animal feeds resulting from such crops 3
9. Modification of operating practice due to detection of releases from the land treatment unit pursuant to Section 8.12.9.g.2 of these regulations 3
10. Changes in the unsaturated zone monitoring system, resulting in a change to the location, depth, number of sampling points, or replace unsaturated zone monitoring devices or components of devices with devices or components that have specifications different from permit requirements 3

11. Changes in the unsaturated zone monitoring system that do not result in a change to the location, depth, number of sampling points, or that replace unsaturated zone monitoring devices or components of devices with devices or components having specifications different from permit requirements 2
 12. Changes in background values for hazardous constituents in soil and soil-pore liquid 2
 13. Changes in sampling, analysis, or statistical procedure 2
 14. Changes in land treatment demonstration program prior to or during the demonstration 2
 15. Changes in any condition specified in the permit for a land treatment unit to reflect results of the land treatment demonstration, provided performance standards are met, and the Director's prior approval has been received 1
 16. Changes to allow a second land treatment demonstration to be conducted when the results of the first demonstration have not shown the conditions under which the wastes can be treated completely, provided the conditions for the second demonstration are substantially the same as the conditions for the first demonstration and have received the prior approval of the Director 1
 17. Changes to allow a second land treatment demonstration to be conducted when the results of the first demonstration have not shown the conditions under which the wastes can be treated completely, where the conditions for the second demonstration are not substantially the same as the conditions for the first demonstration 3
 18. Changes in vegetative cover requirements for closure 2
- L. Incinerators
1. Changes to increase by more than 25% any of the following limits authorized in the permit: A thermal feed rate limit, a waste feed rate limit, or an organic chlorine feed rate limit. The Director will require a new trial burn to substantiate compliance with the regulatory performance standards unless this demonstration can be made through other means 3
 2. Changes to increase by up to 25% any of the following limits authorized in the permit: A thermal feed rate limit, a waste feed limit, or an organic chlorine feed rate limit. The Director will require a new trial burn to substantiate compliance with the regulatory performance standards unless this demonstration can be made through other means 2

3. Modification of an incinerator unit by changing the internal size or geometry of the primary or secondary combustion units, by adding a primary or secondary combustion unit, by substantially changing the design of any component used to remove HCl or particulate from the combustion gases, or by changing other features of the incinerator that could affect its capability to meet the regulatory performance standards. The Director will require a new trial burn to substantiate compliance with the regulatory performance standards unless this demonstration can be made through other means 3

4. Modification of an incinerator unit in a manner that would not likely affect the capability of the unit to meet the regulatory performance standards but which would change the operating conditions or monitoring requirements specified in the permit. The Director may require a new trial burn to demonstrate compliance with the regulatory performance standards 2

5. Operating requirements:

a. Modification of the limits specified in the permit for minimum combustion gas temperature, minimum combustion gas residence time, or oxygen concentration in the secondary combustion chamber. The Director will require a new trial burn to substantiate compliance with the regulatory performance standards unless this demonstration can be made through other means 3

b. Modification of any stack gas emission limits specified in the permit, or modification of any conditions in the permit concerning emergency shutdown or automatic waste feed cutoff procedures or controls 3

c. Modification of any other operating condition or any inspection or recordkeeping requirement specified in the permit 2

6. Incineration of different wastes:

a. If the waste contains a POHC that is more difficult to incinerate than authorized by the permit or if incineration of the waste requires compliance with different regulatory performance standards than specified in the permit. The Director will require a new trial burn to substantiate compliance with the regulatory performance standards unless this demonstration can be made through other means 3

b. If the waste does not contain a POHC that is more difficult to incinerate than 2

authorized by the permit and if incineration of the waste does not require compliance with different regulatory performance standards than specified in the permit

Note: See Section 11.20.7 of these regulations for modification procedures to be used for the management of newly listed or identified wastes.

7. Shakedown and trial burn:

- a. Modification of the trial burn plan or any of the permit conditions applicable during the shakedown period for determining operational readiness after construction, the trial burn period, or the period immediately following the trial burn 2
 - b. Authorization of up to an additional 720 hours of waste incineration during the shakedown period for determining operational readiness after construction, with the prior approval of the Director 1
 - c. Changes in the operating requirements set in the permit for conducting a trial burn, provided the change is minor and has received the prior approval of the Director 1
 - d. Changes in the ranges of the operating requirements set in the permit to reflect the results of the trial burn, provided the change is minor and has received the prior approval of the Director 1
8. Substitution of an alternate type of fuel that is not specified in the permit 1

FOOTNOTE: Class 1 modifications requiring prior Agency approval.



WEST VIRGINIA LEGISLATURE
LEGISLATIVE RULE-MAKING REVIEW COMMITTEE
Room M-152, State Capitol
Charleston, West Virginia 25305
(304) 340-3286

FILED

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OFFICE OF WEST VIRGINIA
SECRETARY OF STATE

Senator Joe Manchin III, Co-Chair
Delegate Brian A. Gallagher, Co-Chair

Debra A. Graham, Counsel
Marie Nickerson, Admr. Assistant

NOTICE OF ACTION TAKEN BY LEGISLATIVE RULE-MAKING REVIEW COMMITTEE

February 8, 1993

TO: Ken Hechler, Secretary of State, State Register

TO: David C. Callaghan, Director
Division of Environmental Protection
#10 McJunkin Road
Nitro, West Virginia 25143-2506

FROM: Legislative Rule-Making Review Committee

PROPOSED RULE: Hazardous Waste Management Regulations

The Legislative Rule-Making Review Committee recommends that the West Virginia Legislature:

1. Authorize the agency to promulgate the Legislative Rule
 - (a) as originally filed
 - (b) as modified by the agency X
2. Authorize the agency to promulgate part of the Legislative rule; a statement of reasons for such recommendation is attached. _____
3. Authorize the agency to promulgate the Legislative rule with certain amendments; amendments and a statement of reasons for such recommendation is attached. _____
4. Authorize the agency to promulgate the Legislative rule as modified with certain amendments; amendments and a statement of reasons for such recommendation is attached. _____
5. Recommends that the rule be withdrawn; a statement of reasons for such recommendation is attached. _____

Pursuant to Code 29A-3-11(c), this notice has been filed in the State Register and with the agency proposing the rule.

cc: Martha Barber