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WEST VIRGINIA ADMINISTRATIVE REGULATIONS

DEPARTMENT OF NATURAL RESOURCES

1986

SERIES 15

HAZARDOUS WASTE MANAGEMENT REGULATIONS

WEST VIRGINIA ADMINISTRATIVE REGULATIONS
DEPARTMENT OF NATURAL RESOURCES
CHAPTER 20-5E
1985
SERIES XV

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*Title 47
Legislative Rules
Department of Natural Resources
Series 35
Hazardous Waste Management Regulations*

Section 1. General

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. These regulations are promulgated under the authority of the West Virginia Code Chapter 20, Article 5E, Sections 4, 5, 6, and 7.

1.3 Effective Date. These regulations will become effective on April 15, 1986.

1.4 Filing Date. These regulations were filed in the Office of the Secretary of State on April 15, 1986.

1.5 Certification. These regulations are certified authentic by the Director of the Department of Natural Resources.

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SECRETARY OF STATE

Section 2. Definitions

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

- 2.1 "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;
- 2.2 "Administrator" means the administrator of the United States Environmental Protection Agency or his designee;
- 2.3 "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 of the Division of Water Resources or the Director of the Department of Natural Resources;
- 2.4 "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;
- 2.5 "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;
- 2.6 "Application, Part B" means that part of the application which a permit applicant must complete to be considered for a permit;
- 2.7 "Authorized representative" means the person responsible for the overall operation of a facility or an operational unit (i.e. - part of a facility), e.g. - the plant manager, superintendent or person of equivalent responsibility
- 2.8 "Boiler" means an enclosed device using controlled flame combustion and having the following characteristics:
- (a) The unit must have physical provisions for recovering and exporting thermal energy in the form of steam, heated fluids, or heated gases; and
 - (b) the unit's combustion chamber and primary energy recovery section(s) must be of integral design. To be of integral design, the combustion chamber and 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; and

(c) 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

(d) 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 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.);

- 2.9 "Calendar Year" means January 1 through December 31;
- 2.10 "Cell" means a discrete volume of a hazardous waste landfill which uses a liner to provide isolation of wastes from adjacent cells or wastes;
- 2.11 "Certification" means a statement of professional opinion based upon knowledge and belief;
- 2.12 "Chief" means the chief of the division of water resources of the Department of Natural Resources;
- 2.13 "Closed facility" means a facility which has been properly closed in accordance with the facility closure plan and all applicable regulations and requirements;
- 2.14 "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;
- 2.15 "Closure" means the act of securing a hazardous waste management facility pursuant to the requirements of these regulations;
- 2.16 "Confined aquifer" means an aquifer, overlain by a confining layer of significantly lower hydraulic conductivity, containing ground water that is under sufficient pressure to rise above the level at which it is encountered by a well;
- 2.17 "Container" means any portable device in which a material is stored, transported, treated, disposed of or otherwise handled;

"Contingency plan" means a document setting out an organized, planned and coordinated course of 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 environment;

"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 Department of Transportation hazardous waste material;

"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.;

"Designated facility (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 CFR Parts 271 and 124, 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 3.1.5 or Section 9.6 of these regulations, and that has been designated on the manifest to receive a specific hazardous waste shipment;

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

"Director" means the director of the Department of Natural Resources;

"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;

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

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

"Division" means the Division of Water Resources of the Department of Natural Resources;

"Domestic sewage" means untreated sanitary wastes that pass through a sewer system;

"DOT" means the United States Department of Transportation;

"Draft permit" means a document prepared under Section 11.21 indicating the Chief's tentative decision to issue, deny, modify, revoke and reissue, revoke, or reissue a permit;

"Elementary neutralization unit" means a device which (i) 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 only for this reason; and, (ii) meets the definition of a tank, container, or transport vehicle in this section;

"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;

"EPA" means the United States Environmental Protection Agency;

"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;

"EPA identification number" means the number assigned by EPA to each hazardous waste generator, hazardous waste transporter or hazardous waste facility;

"Equivalent method" means any testing or analytical method approved by the EPA Administrator under 40 CFR Section 260.20, and 260.21;

"Existing hazardous waste management facility or existing facility" means a facility which was in operation or for which construction commenced on or before July 10, 1981. Under this authority a facility has commenced construction if: (a) the owner or operator has obtained all necessary Federal, State and local approvals or permits to begin physical construction; and either (i) a continuous physical, on-site construction program has begun, or (ii) the owner or operator has entered into contractual obligations (which cannot be cancelled or modified without substantial loss) for construction of the facility to be completed within a reasonable time;

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

"Facility". See "hazardous waste management facility;"

"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;

"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;

"Final cover" means cover material that is applied upon closure of a landfill and is permanently exposed at the surface;

"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;

"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;

"Foreign source" means a source outside the geographical boundaries of the continental United States;

"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;

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

"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;

"Groundwater" means water below the land surface in a zone of saturation;

"Hazardous constituent" or "constituent" are constituents identified in Appendix VIII of Section 3 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 1 of Section 3.3.5 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;

"Hazardous Waste" means a hazardous waste as defined in Section 3.1.2 except as 3.1b provides otherwise;

"Hazardous waste activity" means the handling of hazardous waste as in the generation, transportation, treatment, storage, or disposal of any

hazardous waste;

"Hazardous waste generation" means the act or process of producing hazardous waste materials;

"Hazardous waste management" means the systematic control of the collection, source separation, storage, transportation, processing, treatment, recovery and disposal of hazardous wastes;

"Hazardous waste management facility (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;

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

"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.

"Incompatible waste" means a hazardous waste which is unsuitable for: (a) placement in a particular device or facility because it may cause corrosion or decay of containment materials; or (b) 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;

"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;

"In operation" means facilities that are treating, storing or disposing of hazardous waste;

"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:

- (1) Cement kilns;
- (2) Lime kilns;
- (3) Aggregate kilns;

- (4) Phosphate kilns;
- (5) Coke ovens;
- (6) Blast furnaces;
- (7) Smelting, melting and refining furnaces (including pyrometallurgical devices such as cupolas, reverberator furnaces, sintering machine, roasters, and foundry furnaces);
- (8) Titanium dioxide chloride process oxidation reactors;
- (9) Methane reforming furnaces;
- (10) Pulpig liquor recovery furnaces;
- (11) Combustion devices used in the recovery of sulfur values from spent sulfuric acid;
- (12) Such other devices as the Administrator may, after notice and comment, add to this list on the basis of one or more of the following factors:
 - (i) The design and use of the device primarily to accomplish recovery of material products;
 - (ii) The use of the device to burn or reduce raw materials to make a material product;
 - (iii) The use of the device to burn or reduce secondary materials as effective substitutes for raw materials, in processes using raw materials as principal feedstocks;
 - (iv) The use of the device to burn or reduce secondary materials as ingredients in an industrial process to make a material product;
 - (v) The use of the device in common industrial practice to produce a material product; and
 - (vi) Other factors, as appropriate.

"Injection well" means a well or bore hole into which fluids are injected;

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

"Interim status" means the status obtained by any person who owns or

operates a facility in existence, or existing on July 10, 1981, and required to have a permit under these regulations. Such facilities will be treated as having been issued a permit until such time as final administrative disposition is made with respect to an applicant for such permit provided that such facility is operating and continues to operate in compliance with interim status requirements of Section 3005 of the Federal Solid Waste Disposal Act, 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;

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

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

"Landfill cell" See "cell".

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

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

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

"Major facility" means a disposal or treatment facility which disposes or treats an amount of hazardous waste exceeding or equal to 1,000 tons during a calendar year, and any storage facility having a storage capacity for 1,000 tons of hazardous waste or more;

"Manifest" means the shipping document originated and signed by the generator, which contains the information required by Section 6.2.

"Manifest document number" means the serial number assigned to the manifest by the generator for recordkeeping and reporting purposes;

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

"Monitoring" means all procedures used to inspect and quantify the chemical or physical characteristics of the air, State waters or soils;

"Movement" means transportation of hazardous waste to a facility in an individual transportation vehicle;

"New hazardous waste management facility" or "New facility" means a facility which began operation, or for which construction commenced after July 10, 1981. (See also, "existing hazardous waste management facility");

"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;

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

"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. Non-contiguous 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;

"Operator" means the person responsible for the overall operation of a hazardous waste management facility;

"Owner" means the person who owns a hazardous waste management facility or part of a hazardous waste management facility;

"Packaging" means the assembly of one or more containers and any other components necessary to assure compliance with the minimum packaging requirements under 49 CFR 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;

"Partial closure" means the closure of a discrete part of a facility in accordance with the applicable closure requirements of these regulations;

"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;

"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 EPA Administrator pursuant to applicable Federal regulations, or a facility

having "interim status";

"Permitted hazardous waste management facility (or permitted 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";

"Person" means an individual, trust, firm, joint stock company, public, private or government corporation, partnership, association, State or Federal agency, the United States government, this State or any other State, municipality, county commission or any other political subdivision of a State or any interstate body;

"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;

"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;

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

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

"Publicly owned treatment works (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 Section 502(4) of the CWA). This definition includes sewers, pipes, or other conveyances only if they convey wastewater to a POTW providing treatment;

"RCRA" means the Subtitle C, the Resource Conservation and Recovery Act, as amended of the Federal Solid Waste Disposal Act, as amended.

"Representative sample" means a sample of a universe or whole which can be expected to exhibit the average properties of the universe or whole;

"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;

"Revocation," when the term is used in Section 11 in the context of a permit action, means an action which renders a permit permanently null and void;

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

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

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

"SDWA" means the Safe Drinking Water Act (Public Law 95-523, as amended by Public Law 95-1900);

"SIC" means standard industrial classification;

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

"State act" means the Hazardous Waste Management Act, W. Va. Code §20-5E-1, et seq.

"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, water-courses and wetlands;

"Storage" means the holding of hazardous waste for a temporary period, at the end of which the hazardous waste is treated, disposed of, or stored elsewhere;

"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, 8.10.5 and 8.11.3; "storm" for the purposes specified in the design requirements of Sections 8.9.2, 8.10.2, and 8.11.2 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;

"Surface impoundment or impoundment" means a facility or part of a

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

"Suspension," when used in Section 11 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;

"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;

"Termination," when the term is used in Section 11 in the context of a permit action, means the same as the term "revocation";

"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;

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

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

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

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

"Treatment" means any method, technique, or process including neutralization, designed to change the physical, chemical, or biological character or composition of any hazardous waste so as to neutralize such waste or so as to render such waste non-hazardous, 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 non-hazardous;

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

"Triple rinsed" means containers which have been flushed three (3) times, each time using a volume of dilutant diluent at least equal to ten percent (10%) of the container's capacity;

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

"Unsaturated zone" or "zone of aeration" means the zone between topographic surface and the water table;

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

"Vessel" means every description of water craft used or capable of being used as a means of transportation on the water;

"Waste" means waste as defined in section 3.1.1;

"Wastewater treatment unit" means a device which: (i) is part of a wastewater treatment facility which is subject to regulation under the CWA; (ii) receives and treats or stores an influent wastewater which is a hazardous waste as defined in this section, or generates and accumulates, or treats or stores a wastewater treatment sludge that is defined as a hazardous waste; and (iii) meets the definition of a tank as defined in this section;

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

"Water table" means the upper surface of the zone of saturation in groundwaters in which the hydrostatic pressure is equal to atmospheric pressure;

"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;

Section 3. Identification and Listing of Hazardous Waste

3.1 Purpose and Scope

3.1.a This section identifies those wastes which are subject to regulation as hazardous wastes.

3.1.b The definition of waste contained in this section 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 non-hazardous scrap, paper, textiles or rubber) that are not otherwise hazardous wastes and that are recycled.

3.1.b.1 This section 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 which is not defined as a waste in this section, or is not a hazardous waste identified or listed in this section, is still a waste and a hazardous waste for purposes of these sections if:

3.1.b.2 In the case of Sections 20-5E-12 and 20-5E-13 of the State Act, the Director has reason to believe the material may be a waste within the meaning of Section 20-5E-3(12) of the State Act and a hazardous waste within the meaning of Section 20-5E-3(6) of the State Act; or

3.1.b.3 In the case of Section 20-5E-17, the statutory elements are established.

3.1.c For the purposes of Sections 3.1.1 and 3.1.5:

3.1.c.1 A "spent material" is any material that has been used and as a result of contamination can no longer serve the purpose for which it was produced without processing;

3.1.c.2 "Sludge" has the same meaning used in Section 2 of these regulations;

3.1.c.3 A "by-product" is a material that is not one of the primary products of a production process and is not solely or separately produced by the production process. Examples are process residues such as slag 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;

3.1.c.4 A material is "reclaimed" if it is processed to recover a usable product or if it is regenerated. Examples are recovery of lead values from spent batteries and regeneration of spent solvents;

3.1.c.5 A material is "used or reused" if it is either;

3.1.c.5.A. Employed as an ingredient (including use as an

intermediate) in an industrial process to make a product, (for example, distillation bottoms from one process used as feedstock 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-containing secondary materials); or

3.1.c.5.B. Employed in a particular function or application as an effective substitute for a commercial product (for example, spent pickle liquor used as phosphorus precipitant and sludgeconditioner in wastewater treatment);

3.1.c.6 "Scrap metal" is bits and pieces of metal parts (e.g.,) bars, turnings, rods, sheets, wire or metal pieces that may be combined together with bolts or soldering (e.g., radiators, scrap automobiles, railroad box cars), which when worn or superfluous can be recycled;

3.1.c.7 A material is "recycled" if it is used, reused or reclaimed;

3.1.c.8 A material is "accumulated speculatively" if it is accumulated before being recycled. A material is not accumulated speculatively, however, if the person accumulating it can show that the material is potentially recyclable and has a feasible means of being recycled; and that - during the calendar year (commencing on January 1) - the amount of material that is recycled, or transferred to a different site for recycling, equals at least 75 percent by weight or volume of the amount of that material accumulated at the beginning of the period. In calculating the percentage of turnover, the 75 percent requirement is to be applied to each material of the same type (e.g., slags from a single smelting process) that is recycled in the same way (i.e., from which the same material is recovered or that is used in the same way). Materials accumulating in units that would be exempt from regulation under Section 3.1.3(c) are not to be included in making the calculation. (Materials that are already defined as wastes also are not to be included in making the calculation.) Materials are no longer in this category once they are removed from accumulation for recycling, however.

3.1.1 Definitions of Waste

3.1.1.a.1 A waste is any discarded material that is not excluded by Section 3.1.3.a or that is not excluded by variance granted under Section 16.3.

3.1.1.a.2 A discarded material is any material which is:

3.1.1.a.2.i Abandoned, as explained in paragraph b of this subsection; or

3.1.1.a.2.ii. Recycled, as explained in paragraph c of this subsection;

or

3.1.1.a.2.iii Considered inherently waste-like, as explained in paragraph d of this section.

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

3.1.1.b.1 Disposed of; or

3.1.1.b.2 Burned or incinerated; or

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

3.1.1.c Materials are waste if they are recycled - or accumulated, stored or treated before recycling - as specified in paragraphs c.1 through c.4 of this section.

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

3.1.1.c.1.i Materials noted with a "*" in column 1 of Table 1 are wastes when they are:

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

3.1.1.c.1.i.B. Contained in products that are applied to the land (in which case the product itself remains a waste).

3.1.1.c.1.i.C. However, commercial chemical products listed in Section 3.4.4 are not wastes if they are applied to the land and that is their ordinary manner of use.

3.1.1.c.2 Burning for energy recovery.

3.1.1.c.2.i Materials noted with a "*" in column 2 of Table 1 are wastes when they are:

3.1.1.c.2.i.A. Burned to recovery energy;

3.1.1.c.2.i.B. Used to produce a fuel or are otherwise contained in fuels (in which case the fuel itself remains a waste).

3.1.1.c.2.ii. However, commercial chemical products listed in Section 3.4.4 are not wastes if they are themselves fuels.

3.1.1.c.3 Reclaimed. Materials noted with a "*" in column 3 of Table 1 are wastes when reclaimed.

3.1.1.c.4 Accumulated speculatively. Materials noted with a "*" in

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column 4 of Table 1 are wastes when accumulated speculatively.

Table 1

	Use constituting disposal (1)	Energy recovery/ fuel (2)	Reclamation (3)	Speculative accumulation (4)
Spent materials	*	*	*	*
Sludges (listed in Sections (3.4.2 and 3.4.3)	*	*	*	*
Sludges exhibiting a characteristic of hazardous waste	*	*		*
By-products (listed in Section (3.4.2 and 3.4.3)	*	*	*	*
By-products exhibiting a characteristic of hazardous waste	*	*		*
Commercial chemical products listed in Section (3.4.4)	*	*		
Scrap metal	*	*	*	*

NOTE: The terms "spent materials", "sludges", "by-products" and "scrap metal" are defined in Section 3.1.c.

3.1.1.d Inherently waste-like materials. The following materials are wastes when they are recycled in any manner:

3.1.1.d.1 (Reserved)

3.1.1.d.2 The Director will use the following criteria to add wastes to that list:

3.1.1.d.2.i.A. The materials are ordinarily disposed, burned or incinerated; or

3.1.1.d.2.i.B. The materials contain toxic constituents listed in Appendix VIII of this Section and these constituents are not ordinarily

found in raw materials or products for which the materials substitute (or are found in raw materials or products in smaller concentrations) and are not used or reused during the recycling process; and

3.1.1.d.2.ii The material may pose a substantial hazard to human health and the environment when recycled.

3.1.1.e Materials that are not waste when recycled.

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

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

3.1.1.e.1.ii Used or reused as effective substitutes for commercial products;

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

3.1.1.e.2 The following materials are wastes, even if the recycling involves use, reuse or return to the original process (described in paragraphs e.1.i through iii of this subsection):

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

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

3.1.1.e.2.iii Materials accumulated speculatively; or

3.1.1.e.2.iv (Reserved)

3.1.1.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 actually are recycling materials must show that they have the necessary equipment to do so.

3.1.2 Definition of Hazardous Waste

3.1.2.a A waste as defined in Section 3.1.1 is a hazardous waste if:

3.1.2.a.1 It is not excluded from regulation as a hazardous waste under Section 3.1.3(b); and

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

3.1.2.a.2.i It is listed in Section 3.4 and has not been excluded from the list in Section 3.4 pursuant to Section 16.

3.1.2.a.2.ii It is a mixture of waste and one or more hazardous wastes listed in Section 3.4 and has not been excluded under Section 16; or

3.1.2.a.2.iii It exhibits any of the characteristics of hazardous waste identified in Section 3.3.

3.1.2.b A waste which is not excluded from regulation under paragraph (a)(1) of this section becomes a hazardous waste when any of the following events occur:

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

3.1.2.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 is first added to the waste;

3.1.2.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.

3.1.2.c Unless and until it meets the criteria of paragraph (d):

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

3.1.2.c.2.i Except as otherwise provided in paragraph 3.1.2.c.2.ii of this section, 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 run-off) 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.)

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

of hazardous waste: (A) Waste pickle liquor sludge generated by lime stabilization of spent pickle liquor from the iron and steel industry (SIC Codes 331 and 332); (B) wastes from burning any of the materials exempted from regulation by Section 3.1.5.a.3.

3.1.2.d Any waste described in paragraph (c) is not a hazardous waste if it meets the following criteria:

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

3.1.2.d.2 In the case of a waste which is a listed waste under Section 3.4, contains a waste listed under Section 3.4 or is derived from a waste listed in Section 3.4, it also has been excluded from paragraph (c) under Section 16.

3.1.3 Exclusions

3.1.3.a Materials which are not wastes.

The following materials are not wastes for the purposes of this section:

3.1.3.a.1.i Domestic sewage; and

3.1.3.a.1.ii Any mixture of domestic sewage and other wastes that passes through a sewer system to a publicly-owned treatment works for treatment. "Domestic sewage" means untreated sanitary wastes that pass through a sewer system.

3.1.3.a.2 Industrial wastewater discharges that are point source discharges subject to regulation under Section 402 of the Clean Water Act, as amended. (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.)

3.1.3.a.3 Irrigation return flows.

3.1.3.a.4 Source, special nuclear, or by-product material as defined by the Atomic Energy Act of 1954, as amended, 42 U.S.C. 2011, et seq.

3.1.3.a.5 Materials subjected to in-situ mining techniques which are not removed from the ground as part of the extraction process.

3.1.3.a.6 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 3.1.c.8 of these regulations.

3.1.3.a.7 Spent sulfuric acid used to produce virgin sulfuric acid, unless it is accumulated speculatively as defined in Section 3.1.c.8 of these regulations.

3.1.3.b Wastes which are not hazardous wastes. The following wastes are not hazardous wastes:

3.1.3.b.1 Household waste, including household waste that has been collected, transported, stored, treated, disposed, recovered (e.g., refuse-derived fuel) or reused. "Household waste" means any 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).

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

3.1.3.b.2.i The growing and harvesting of agricultural crops.

3.1.3.b.2.ii The raising of animals, including animal manures.

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

3.1.3.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.

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

3.1.3.b.6.i Wastes which fail the test for the characteristic of EP toxicity because chromium is present or are listed in 3.4 due to the presence of chromium which do not fail the test for the 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:

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

3.1.3.b.6.i.B. 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

3.1.3.b.6.i.C. The waste is typically and frequently managed in non-oxidizing environments.

3.1.3.b.6.ii Specific wastes which meet the standard in paragraphs (b) (6) (i), (A), (B), and (C), (so long as they do not fail the test for the characteristic of EP toxicity, and do not fail the test for any other characteristic) are:

3.1.3.b.6.ii.A. 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.

3.1.3.b.6.ii.B. 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.

3.1.3.b.6.ii.C. Buffing dust generated by the following subcategories of the leather tanning and finishing industry; hair pulp/chrome tan/retan/wet finish; hair save/chrome tan/retan/wet finish/ retan/wet finish/ no beamhouse; through-the-blue.

3.1.3.b.6.ii.D. Sewer screenings 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.

3.1.3.b.6.ii.E. 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.

3.1.3.b.6.ii.F. 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.

3.1.3.b.6.ii.G. Waste scrap leather from the leather tanning industry, the shoe manufacturing industry, and other leather product manufacturing industries.

3.1.3.b.6.ii.H. Wastewater treatment sludges from the production of TiO2 pigment using chromium-bearing ores by the chloride process.

3.1.3.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.

3.1.3.b.8 Cement kiln dust waste.

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

3.1.3.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, 40 CFR Part 265, or Section 11 of these regulations 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.

3.1.3.d Samples.

3.1.3.d.1 Except as provided in paragraph (d)(2) of this section, 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:

3.1.3.d.1.i The sample is being transported to a laboratory for the purpose of testing; or

3.1.3.d.1.ii The sample is being transported back to the sample collector after testing; or

3.1.3.d.1.iii The sample is being stored by the sample collector before transport to a laboratory for testing; or

3.1.3.d.1.iv The sample is being stored in a laboratory before testing; or

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

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

3.1.3.d.2 In order to qualify for the exemption in paragraph (d)(1)(i) and (ii) of this section, a sample collector shipping samples to a

laboratory and a laboratory returning samples to a sample collector must:

3.1.3.d.2.i Comply with U.S. Department of Transportation (DOT), U.S. Postal Service (USPS), or any other applicable shipping requirements; or

3.1.3.d.2.ii Comply with the following requirements if the sample collector determines that DOT, USPS, or other shipping requirements do not apply to the shipment of the sample:

3.1.3.d.2.ii.A. Assure that the following information accompanies the sample:

3.1.3.d.2.ii.A.1 The sample collector's name, mailing address, and telephone number;

3.1.3.d.2.ii.A.2 The laboratory's name, mailing address, and telephone number;

3.1.3.d.2.ii.A.3 The quantity of the sample;

3.1.3.d.2.ii.A.4 The date of shipment; and

3.1.3.d.2.ii.A.5 A description of the sample.

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

3.1.3.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 paragraph (d)(1) of this section.

3.1.4 Special Requirements for Hazardous Waste Generated by Small Quantity Generators

3.1.4.a A generator is a small quantity generator in a calendar month if he generates less than 1000 kilograms of hazardous waste in that month.

3.1.4.b Except for those wastes identified in paragraphs (e) and (f) of this section, a small quantity generator's hazardous wastes are not subject to regulation under Sections 6, 8, and 11 of these regulations and 40 CFR Part 265, provided the generator complies with the requirements of paragraph (g) and, if applicable (j) of this section.

3.1.4.c Hazardous waste that is recycled and that is excluded from regulation under Sections 3.1.5(a)(2)(iii) and (v), (a)(3), or 9.4 is not included in the quantity determinations of this section and is not subject to any requirements of this section. Hazardous waste that is

subject to the requirements of Sections 3.1.5(b) and (c) and 9.3, 9.4, and 9.6 is included in the quantity determination of this section and is subject to the requirements of this section.

3.1.4d In determining the quantity of hazardous waste he generates, a generator need not include:

3.1.4.d.1 His hazardous waste when it is removed from on-site storage; or

3.1.4.d.2 Hazardous waste produced by on-site treatment of his hazardous waste.

3.1.4e If a small quantity generator generates acutely hazardous waste in a calendar month in quantities greater than set forth below, all quantities of that acutely hazardous waste are fully subject to these regulations:

3.1.4.e.1 A total of one kilogram of commercial chemical products and manufacturing chemical intermediates having the generic names listed in 3.4.4(e), and off-specification commercial chemical products and manufacturing chemical intermediates which, if they met specifications, would have the generic names listed in 3.4.4(e);

3.1.4.e.2 A total of 100 kilograms of 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 products or manufacturing chemical intermediates having the generic names listed in 3.4.4(e), or any residue or contaminated soil, water or other debris resulting from the cleanup of a spill, into or on any land or water, of any off-specification commercial chemical products or manufacturing chemical intermediates which, if they met specifications, would have the generic names listed in 3.4.4(e).

3.1.4f A small quantity generator may accumulate hazardous waste on-site. If he accumulates at any time more than a total of 1000 kilograms of his hazardous waste, or his acutely hazardous wastes in quantities greater than those set forth in paragraphs (e)(1) or (e)(2) of this section all of those accumulated wastes for which the accumulation limit was exceeded are fully subject to these regulations. The time period of Section 6.3.5 for accumulation of wastes on-site begins for a small quantity generator when the accumulated wastes exceed the applicable exclusion level.

3.1.4g In order for hazardous waste generated by a small quantity generator to be excluded from full regulation under this section, the generator must:

3.1.4.g.1 Comply with Sections 4 and 6.1.1 of these regulations;

3.1.4.g.2 If he stores his hazardous waste on-site, store it in compliance with the requirements of paragraph (f) of this section;

3.1.4.g.3 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; and (Comment: This recordkeeping requirement is only applicable to manufacturing facilities. Non-manufacturing facilities such as schools, service stations, etc. are not required to comply with this subsection.)

3.1.4.g.4 Either treat or dispose of his hazardous waste in an on-site facility, or ensure delivery to an off-site storage, treatment or disposal facility, either of which is:

3.1.4.g.4.i Permitted under 40 CFR Part 270 of the federal code;

3.1.4.g.4.ii In interim status under 40 CFR Parts 270 and 265 and 20-5E-10 of the West Virginia Code;

3.1.4.g.4.iii Permitted by this State under Section 11.00 of these regulations;

3.1.4.g.4.iv Permitted by this State to manage industrial wastes under the Water Pollution Control Act; (Comment: After March 31, 1986 a small quantity generator will not be allowed to send its hazardous waste to this type of facility.)

3.1.4.g.4.v Authorized to manage hazardous waste by a state with a hazardous waste program approved under 40 CFR Part 271;

3.1.4.g.4.vi A facility which:

3.1.4.g.4.vi.A. Beneficially uses or re-uses, or legitimately recycles or reclaims his waste; or

3.1.4.g.4.vi.B. Treats his waste prior to beneficial use or re-use, or legitimate recycling or reclamation.

3.1.4.h Hazardous waste subject to the reduced requirements of this section may be mixed with non-hazardous waste and remain subject to these reduced requirements even though the resultant mixture exceeds the quantity limitations identified in this section, unless the mixture meets any of the characteristics of hazardous wastes identified in Section 3.3.

3.1.4.i If a small quantity generator mixes a waste with a hazardous waste that exceeds a quantity exclusion level of this section, the mixture is subject to full regulation.

3.1.4.j A small quantity generator that generates more than 100, but less than 1000 kilograms of hazardous waste or who generates acutely hazardous waste in an amount greater than specified in Section 3.1.4.e in any calendar month shall be subject to the following requirements, in addition to those requirements enumerated in paragraphs (a) through (i) of this section:

3.1.4.j.1 The manifest requirements of Section 6.2, except that such small quantity generators are only required to complete the following items on the generator segment of the Uniform Hazardous Waste Manifest prior to shipping hazardous waste off-site for treatment, storage, disposal or recycling:

3.1.4.j.1.i Generator name, address, and signature (items 3 and 16 on the Uniform Hazardous Waste Manifest form.)

3.1.4.j.1.ii The name and address of the facility designated to receive the hazardous waste (item 9 on the Uniform Hazardous Waste Manifest form).

3.1.4.j.1.iii The DOT description of the waste, including the proper shipping name, hazard classification, and the "UN" or "NA" identification number (item 11 on the Uniform Hazardous Waste Manifest form).

3.1.4.j.1.iv The number and type of containers of hazardous wastes (item 12 on the Uniform Hazardous Waste Manifest form). (COMMENT: Each container must be properly marked, labeled, and meet all DOT specifications), and

3.1.4.j.1.v The total quantity of hazardous waste to be transported off-site (items 13 and 14 on the Uniform Hazardous Waste Manifest form);

3.1.4.j.2 The pre-transport DOT packaging, labeling, marking and placarding requirements described in Section 6.3 of these regulations:

3.1.4.j.3 The recordkeeping requirements of Section 6.4.1.a., (c), and (d) and 6.4.4; and

3.1.4.j.4 The special conditions of Section 6.5.

3.1.5 Requirements for Recyclable Materials

3.1.5.a.1 Hazardous wastes that are recycled are subject to the requirements for generators, transporters, and storage facilities of paragraphs (b) and (c) of this section, except for the materials listed in paragraphs (a)(2) and (a)(3) of this section. Hazardous wastes that are recycled will be known as "recyclable materials."

3.1.5.a.2 The following recyclable materials are not subject to the requirements of this section but are regulated under Sections 9.3 through 9.7 and all applicable provisions of Section 11 of these regulations:

3.1.5.a.2.i Recyclable materials used in a manner constituting disposal (Section 9.3):

3.1.5.a.2.ii Hazardous wastes burned for energy recovery in boilers and industrial furnaces.

3.1.5.a.2.iii (Reserved);

3.1.5.a.2.iv Recycled materials from which precious metals are reclaimed (Section 9.6);

3.1.5.a.2.v Spent lead-acid batteries that are reclaimed (Section 9.7).

3.1.5.a.3 The following recyclable materials are not subject to regulation under §§4 through 8 and are not subject to the notification requirements of W.Va. Code §20-5E-10.

3.1.5.a.3.i Reclaimed industrial ethyl alcohol;

3.1.5.a.3.ii Used batteries (or used battery cells) returned to a battery manufacturer for regeneration;

3.1.5.a.3.iii 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; or

3.1.5.a.3.iv Scrap metal.

3.1.5.b 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 paragraph 3.1.5.a of this section.

3.1.5.c.1 Owners or operators of facilities that store recyclable materials are regulated under all applicable provisions of Sections 4, 8.1 through 8.10, 8.13, and 11 of these regulations, except as provided in paragraph 3.1.5.a of this section (the recycling process itself is exempt from regulations).

3.1.5.c.2 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 paragraph 3.1.5.a of this section:

3.1.5.c.2.i Notification requirements of Section 4;

3.1.5.c.2.ii Sections 8.5.2 and 8.5.3 (concerning use of the manifest and manifest discrepancies).

3.1.5.d Additional Regulation of Certain Hazardous Waste Recycling Activities on a case-by-case basis.

3.1.5.d.1 The director may decide on a case-by-case basis that persons accumulating or storing the recyclable materials described in 3.1.5.a.2.iv should be regulated under 3.1.5.b and 3.1.5.c. 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:

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

3.1.5.d.1.b The method of accumulation or storage;

3.1.5.d.1.c The length of time the materials have been accumulated or stored before being reclaimed;

3.1.5.d.1.d Whether any contaminants are being released into the environment, or are likely to be so released; and

3.1.5.d.1.e Other relevant factors.

The procedures for this decision are set forth in 3.1.5.d.2.

3.1.5.d.2 Procedures for case-by-case regulation of hazardous waste recycling activities.

3.1.5.d.2.i The director will use the following procedures when determining whether to regulate hazardous waste recycling activities described in Section 3.1.5.a.2.iv under the provisions of 3.1.5.b and 3.1.5.c, rather than under the provisions of 9.6.

3.1.5.d.2.i.A 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 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 is required. The order becomes effective 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 to deny the appeal. Final agency action occurs when a final order is issued and agency review procedures are exhausted.

3.1.5.d.2.i.B 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 revisions of Section 11 of these regulations. The owner or operator of the facility must apply for a permit within no less than 60 days and no more than six months of notice, as specified in the notice. If the owner or operator of the facility wishes to challenge the 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 11.25 of the regulations and in any subsequent hearing.

3.1.6 Residue of Hazardous Waste in Empty Containers

3.1.6.a.1 Any hazardous waste remaining in either (i) an empty container or (ii) an inner liner removed from an empty container, as defined in paragraph (b) of this section is not subject to these regulations.

3.1.6.a.2 Any hazardous waste in either (i) a container that is not empty or (ii) an inner liner removed from a container that is not empty, as defined in paragraph (b) of this section, is subject to these regulations.

3.1.6.b.1 A container or an inner liner removed from a container that has held any hazardous waste, except a waste that is a compressed gas or that is identified in 3.4.4(c) of this section is empty if:

3.1.6.b.1.i All wastes have been removed that can be removed using the practices commonly employed to remove materials from that type of container, e.g., purging, pumping, and aspirating, and

3.1.6.b.1.ii No more than 2.5 centimeters (one inch) of residue remain on the bottom of the container or inner liner, or

3.1.6.b.1.iii.A 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 110 gallons in size, or

3.1.6.b.1.iii.B No more than 0.3 percent by weight of the total capacity of the container remains in the container or inner liner if the container is greater than 110

gallons in size;

3.1.6.b.2 A container that has held a hazardous waste that is a compressed gas is empty when the pressure in the container approaches atmospheric.

3.1.6.b.3 A container or an inner liner removed from a container that has held a hazardous waste identified in 3.4.4(c) of this section is empty if:

3.1.6.5.3.A.i The container or inner liner has been triple rinsed using a solvent capable of removing the commercial chemical product or manufacturing chemical intermediate;

3.1.6.b.3.A.ii The container or inner liner has been cleaned by another method that has been shown in the scientific literature, or by tests conducted by the generator, to achieve equivalent removal; or

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

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

3.2.1.b.ii 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 3.3.

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 50 milligrams per kilogram, an inhalation LC 50 toxicity (rat) of less than 2 milligrams per liter, or a dermal LD 50 toxicity (rabbit) of less than 200 milligrams per kilogram or is otherwise capable of causing or significantly contributing to an increase in serious irreversible, or incapacitating reversible, 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, unless, 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.i The nature of the toxicity presented by the constituent.

3.2.2.a.3.ii The concentration of the constituent in the waste.

3.2.2.a.3.iii The potential of the constituent or any toxic degradation product of the constituent to migrate from the waste into the environment under the types of improper management considered in paragraph (a)(3)(vii) of this section.

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

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

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

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

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

3.2.2.a.3.ix 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.x 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.xi Such other factors as may be appropriate.

Substances will be listed on Appendix VIII, only if they have been shown in scientific studies to have toxic, carcinogenic, mutagenic or teratogenic effects on humans or other life forms. (Wastes listed in accordance with these criteria will be designated Toxic wastes.)

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 20-5E-3(6) of the State Act.

3.2.2.c The Director will use the criteria for listing, specified in this section, to establish the exclusion limits referred to in 3.1.4c.

3.3 Characteristics of Hazardous Waste

3.3.1 General

3.3.1.a A waste as defined in 3.1.1 which is not excluded from regulation as a hazardous waste under 3.1.3(b) is a hazardous waste if it exhibits any of the characteristics identified in this section.

3.3.1.b A hazardous waste which is identified by a characteristic in this section, but is not listed as a hazardous waste in 3.4 is assigned the EPA Hazardous Waste Number set forth in the respective characteristic in this section. This number shall be used in complying with the notification requirements of 4 of these regulations and certain recordkeeping and reporting requirements under these regulations.

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

3.3.2 Characteristic of Ignitability

3.3.2a 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 a liquid, other than an aqueous solution containing less than 24 percent alcohol by volume, and has a flashpoint less than 60 degrees C (140 degrees F), as determined by a Pensky-Martens Closed

Cup Tester, using the test method specified in ASTM Standard D-93-79, or D-93-80, or a Setaflash Closed Cup Tester, using the test method specified in ASTM standard D-3278-78, or as determined by an equivalent method. (See Section 2 and 40 CFR Section 260.11 for test method information)

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 49 CFR Section 173.300 and as determined by the test method described in that regulation or an equivalent test method (see Section 2).

3.3.2.a.4 It is an oxidizer as defined in 40 CFR Section 173.51.

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 Hazardous Waste Number of D001.

3.3.3 Characteristic of Corrositivity

3.3.3.a A waste exhibits the characteristic of corrositivity 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 the "Test Methods for the Evaluation of Solid Waste, Physical/chemical Methods," or an equivalent test method approved by the Administrator under the procedures set forth in 40 CFR Sections 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 C (130 F) as determined by the test method specified in NACE (National Association of Corrosion Engineers) Standard TM-01-69 as standardized in "Test Methods for the Evaluation of Solid Waste, Physical/Chemical Methods," or an equivalent test method (see Section 2).

3.3.3.b A waste that exhibits the characteristics of corrositivity, but is not listed as a hazardous waste by the Administrator, or Director has the 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;

3.3.4.a.8 It is a forbidden explosive as defined in 49 CFR Section 173.51, or a Class A explosive as defined in 49 CFR Section 173.53 or a Class B explosive as defined in 49 CFR Section 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 Hazardous Waste Number of D003.

3.3.5 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 or equivalent methods approved by the Administrator under the procedures set forth in 40 CFR Sections 260.20 and 260.21, the extract from a representative sample of the waste contains any of the contaminants listed in Table I at a concentration equal to or greater than the respective value given in that table. Where the waste contains less than 0.5 percent filterable solids, the waste itself, after filtering, is considered to be the extract for the purposes of this section.

3.3.5.b A waste that exhibits the 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 I which corresponds to the toxic contaminant causing it to be hazardous.

TABLE I. - MAXIMUM CONCENTRATION OF
CONTAMINANTS FOR CHARACTERISTIC OF EP
TOXICITY

EPA Hazardous Waste Number	Contaminant	Maximum Concentration (Milligrams per liter)
D004	Arsenic	5.0
D005	Barium	100.0
D006	Cadmium	1.0
D007	Chromium (total)	5.0
D008	Lead	5.0
D009	Mercury	0.2
D010	Selenium	1.0
D011	Silver	5.0
D012	Endrim (1,2,3,4,10,10-hexachloro-1 7-epoxy-1,4,4a,5,6,7,8,8a-octa- hydro-1 4-endo, endo-5, 8-dimethano naphthalene)	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 (C ₁₀ H ₁₀ Cl ₈ , Technical chlorinated champhene, 67-69 percent chlorine).	0.5
D016	2,4-D, (2,4-Dichlorophenoxyacetic acid).	10.0
D017	2,4,5-TP Silvex (2,4,5-Trichloro- phenoxypropionic acid).	1.0

3.4 Lists of Hazardous Wastes

3.4.1 General

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

3.4.1.b The Director will indicate his basis for listing the classes or types of wastes listed in this section by employing one or more of the following hazard codes:

Ignitable Waste	(I)
Corrosive Waste	(C)
Reactive Waste	(R)
EP Toxic Waste	(E)
Acute Hazardous Waste	(H)
Toxic Waste	(T)

Appendix VII identifies the constituent which caused the Director to list the waste as an EP Toxic Waste (E) or Toxic Waste (T) in Sections 3.4.2 and 3.4.3.

3.4.1.c Each hazardous waste listed in this section 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 recordkeeping and reporting requirements under Section 6, Section 8 and Section 11 of these regulations.

3.4.1.d The following hazardous wastes listed in Section 3.4.2 or 3.4.3 are subject to the exclusion limits for acutely hazardous wastes established in Section 3.1.4: (Reserved)

3.4.2 Hazardous Waste from Non-specific sources.

<u>Hazardous Waste No.</u>	<u>Hazardous Waste</u>	<u>Hazard Code</u>
F001	The following spent halogenated solvents used in degreasing: tetrachloroethylene, trichloroethylene, methylene chloride, 1,1,1-trichloroethane, carbon tetrachloride, and chlorinated fluorocarbons; and sludges from the recovery of these solvents in degreasing operations.	(T)
F002	The following spent halogenated solvents: tetra-chloroethylene, methylene chloride, trichloroethylene, 1,1,1-trichloroethane, chlorobenzene, 1,1,2-trichloro-1,2,2-trifluoroethane, orthodichlorobenzene, and trichlorofluoromethane; and the still bottoms from the recovery of these solvents.	(T)
F003	The following spent non-halogenated solvents: xylene, acetone, ethyl acetate, ethyl benzene, ethyl ether, methyl isobutyl ketone, n-butyl alcohol, cyclohexanone, and methanol; and the still bottoms from the recovery of these solvents.	(I)
F004	The following spent non-halogenated solvents:	

cresols and cresylic acid, and nitrobenzene; and the still bottoms from the recovery of these solvents. (T)

- F005 The following spent non-halogenated solvents: toluene, methyl ethyl ketone, carbon disulfide, isobutanol, and pyridine; and the still bottoms from the recovery of these solvents. (I,T)
- F006 Wastewater treatment sludges from electroplating operations except from 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. (T)
- F007 Spent cyanide plating bath solutions from electroplating operations (R,T)
- F008 Plating bath sludges residues from the bottom of plating baths from electroplating operations where cyanides are used in the process (R,T)
- F009 Spent stripping and cleaning bath solutions from electroplating operations where cyanides are used in the process (R,T)
- F010 Quenching bath sludge residues from oil baths from metal heat treating operations where cyanides are used in the process (R,T)
- F011 Spent cyanide solutions from salt bath pot cleaning from metal heat treating operations (R,T)
- F012 Quenching wastewater treatment sludges from metal heat treating operations where cyanides are used in the process (T)
- F019 Wastewater treatment sludges from the chemical conversion coating of aluminum. (T)
- F020 (Reserved)
- F021 (Reserved)
- F022 (Reserved)
- F023 (Reserved)

F024 Wastes, including but not limited to, distillation residues, heavy ends, tars, and reactor cleanout wastes from the production of chlorinated aliphatic hydrocarbons, having a carbon content from one to five, utilizing free radical catalyzed processes. (This listing does not include light ends, spent filters and filter aids, spent dessicants, wastewater, wastewater treatment sludges, spent catalysts and waste listed in 3.4.3.) (T)

F026 (Reserved)

F027 (Reserved)

F028 (Reserved)

3.4.3 Hazardous Waste from Specific Sources.

<u>Hazardous Waste No.</u>	<u>Hazardous Waste</u>	<u>Hazard Code</u>
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Wood Preservation:

K001	.Bottom sediment sludge from the treatment of wastewaters from wood preserving processes that use creosote and/or pentachlorophenol	(T)
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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 pro-	

	duction of phthalic anhydride from ortho-xylene	(T)
K094	.Distillation bottoms from the production of phthalic anhydride from ortho-xylene	(T)
K025	.Distillation bottoms from production of nitrobenzene by the nitration of benzene	(T)
K026	.Stripping still tails from the production of methyl ethyl pyridines	(T)
K027	.Centrifuge and distillation residues from toluene diisocyanate production	(R,T)
K028	.Spent catalyst from the hydrochlorinator reactor in the production of 1,1,1-trichloroethane	(T)
K029	.Waste from the product stream 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 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)
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 purification
step of the diaphragm cell process using graphite
anodes in chlorine production (T)

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 chlordanes (T)

K033 Wastewater and scrub water from the chlorination
of cyclopentadiene in the production of chlordanes (T)

K034 Filter solids from the filtration of hexa-
chlorocyclopentadiene in the production of
chlordanes (T)

K097 Vacuum stripper discharge from the chlordanes
chlorinator in the production of chlordanes (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 diethyl-
phosphorodithioic acid in the production of
phorate (T)

K040 Wastewater treatment sludge from the production
of phorate (T)

K041 Wastewater treatment sludge from the production
of toxaphene (T)

K098 Untreated process wastewater from the production
of toxaphene (T)

K042 Heavy ends or distillation residues from the
distillation of tetrachlorobenzene in the production
of 2,4,5-T (T)

K043 2,6-Dichlorophenol waste from the production of
2,4-D (T)

K099 Untreated wastewater from the production of
2,4-D (T)

Explosives:

K044 Wastewater treatment sludges from the manufacturing
and processing of explosives (R)

K045 Spent carbon from the treatment of wastewater
containing explosives (R)

K046 Wastewater treatment sludges from the manufac-
turing, 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 Steele:

K061 Emission control dust/sludge from the primary
production of steel in electric furnaces (T)

K062 Spent pickle liquor from steel finishing
operations (C,T)

Secondary lead:

K069 Emission control dust/sludge from secondary lead
smelting (T)

K100 Waste leaching solution from acid leaching of
emission control dust/sludge from secondary lead
smelting (T)

Veterinary Pharmaceuticals:

K084 Wastewater treatment sludges generated during the
production of veterinary pharmaceuticals from arsenic
or organo-arsenic compounds (T)

K101 Distillation tar residues from the distillation
of aniline-based compounds in the production of
veterinary pharmaceuticals from arsenic or organo-
arsenic compounds (T)

K102 Residue from the use of activated carbon for
decolorization in the production of veterinary
pharmaceuticals from arsenic or organo-arsenic
compounds (T)

Ink Formulation:

K086 Solvent washes and sludges, caustic washes and
sludges, or water washes and sludges from cleaning
tubs and equipment used in the formulation of ink
from pigments, driers, soaps, and stabilizers con-
taining chromium and lead (T)

Coking:

K060 Ammonia still lime sludge from coking
operations (T)

K087 Decanter tank car sludge from coking
operations (T)

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

The following materials or items are hazardous wastes if and when they
are discarded or intended to be discarded: as described in Section
3.1.1.a.2 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 land in lieu of their intended use, or when they are

contained in products that are applied to land in lieu of their intended use.

3.4.4.a Any commercial chemical product, or manufacturing chemical intermediate having the generic name listed in paragraphs (e) or (f) of this section.

3.4.4.b Any off-specification commercial chemical product or manufacturing chemical intermediate which, if it met specifications, would have the generic name listed in paragraphs (e) or (f) of this section.

3.4.4.c Any residue remaining in a container or an inner liner removed from a container that has held any commercial chemical product or manufacturing chemical intermediate having the generic name listed in paragraph (e) of this section, unless the container is empty as defined in 3.01.06(b)(3) of this chapter. 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 Any residue or contaminated soil, water or other debris resulting from the cleanup of a spill into or on any land or water of any commercial chemical product or manufacturing chemical intermediate having the generic name listed in paragraph (e) or (f) of this section, or any residue or contaminated soil, water or other debris resulting from the cleanup of a spill, into or on any land or water, of any off-specification chemical product and manufacturing chemical intermediate which, if it met specifications, would have the generic name listed in paragraph (e) or (f) of this section.

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 paragraphs (e) or (f). Where a manufacturing process waste is deemed to be a hazardous waste because it contains a substance listed in paragraphs (e) or (f), such waste will be listed in either 3.4.2 or 3.4.3 or will be identified as a hazardous waste by the characteristics

set forth in 3.3 of these regulations.

3.4.4.e The commercial chemical products, manufacturing chemical intermediates or off-specification commercial chemical products or manufacturing chemical intermediates referred to in paragraphs (a) through (d) of this section, are identified as acute hazardous wastes (H) and are subject to be the small quantity exclusion defined in 3.1.4(a).

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

These wastes and their corresponding Hazardous Waste Numbers are:

Hazardous Waste No.	Substance
P023	Acetaldehyde, chloro-
P002	Acetamide, N-(aminothioxomethyl)-
P057	Acetamide, 2-fluoro-
P058	Acetic acid, fluoro-, sodium salt
P066	Acetimidic acid, N-((methylcarbamoyl)oxy) thio-, methyl ester
P001	3-(alpha-acetonylbenzyl)-4-hydroxycoumarin and salts, when present at concentrations greater than 0.3%
P002	1-Acetyl-2-thiourea
P003	Acrolein
P070	Aldicarb
P004	Aldrin
P005	Allyl alcohol
P006	Aluminum phosphide
P007	5-(Aminomethyl)-3-isoxazoloI
P008	4-Aminopyridine
P009	Ammonium picrate (R)
P119	Ammonium vanadate
P010	Arsenic acid
P012	Arsenic (iii) oxide
P011	Arsenic (V) oxide
P011	Arsenic pentoxide
P012	Arsenic trioxide
P038	Arsine, diethyl-
P054	Aziridine
P013	Barium cyanide
P024	Benzenamine, 4-chloro-
P077	Benzenamine, 4-nitro-
P028	Benzene, (chloromethyl)-

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P042	1,2-Benzenediol, 4-(1-hydroxy-2-(methyl-amino)ethyl)-
P014	Benzenethiol
P028	Benzyl chloride
P015	Beryllium dust
P016	Bis (chloromethyl) ether
P017	Bromoacetone
P018	Brucine
P021	Calcium cyanide
P123	Camphene, octachloro-
P103	Carbamimidoseleonic acid
P022	Carbon bisulfide
P022	Carbon disulfide
P095	Carbonyl chloride
P033	Chlorine cyanide
P023	Chloroacetaldehyde
P024	p-Chloroaniline
P026	1-(o-Chlorophenyl) thiourea
P027	3-Chloropropionitrile
P029	Copper cyanides
P030	Cyanides (soluble cyanide salts), not elsewhere specified
P031	Cyanogen
P033	Cyanogen chloride
P036	Dischloropenylarsine
P037	Dieldrin
P038	Diethylarsine
P039	O,O-Diethyl S-(2-(ethylthio)ethyl) phosphorodithioate
P041	Diethyl-p-nitrophenyl phosphate
P040	O-)Diethyl O-pyrazinyl phosphorothioate
P043	Diisopropyl fluorophosphate
P044	Diemthoate
P045	3,3-Dimethyl-1-(methylthio)-2-butanone, O-((methylamino)carbonyl))oxime
P071	O,O-Dimethyl O-p-nitrophenyl phosphorothioate
P082	Dimethylnitrosamine
P046	alpha, alpha-Dimethylpenethylamine
P047	4,6-Dinitro-o-cresol and salts
P034	4,6-dinitro-o-cyclohexylphenol
P048	2,4-dinitrophenol
P020	Dinoseb
P085	Diphosphoramidate, octamethyl-
P039	Disulfoton
P049	2,4-Dithiobiuret
P109	Dithiopyrophosphoric acid, tetraethyl ester
P050	Endosulfan
P088	Endothall

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P051	Endrin
P042	Epinephrine
P046	Ethanamine, 1,1-dimethyl-1-phenyl
P084	Ethenamine, N-methyl-N-nitroso-
P101	Ethyl cyanide
P054	Ethylenimine
P097	Famphur
P056	Fluorine
P057	Fluoroacetamide
P058	Fluoroacetic acid, sodium salt
P065	Fulminic acid, mercury (ii) salt (R,T)
P059	Heptachlor
P051	1,2,3,4,10,10-Hexachloro-6,7-epoxy- 1,4,4a,5,6,7,8,8a-octahydro-endo, endo- 1,4:5,8-dimethanonaphthalene
P037	1,2,3,4,10,10-Hexachloro-6,7-epoxy-1,4, 4a,5,6,7,8,8a-octahydro-endo-exo-1,4:5,8- dimethanonaphthalene
P060	1,2,3,4,10,10-Hexachloro-1,4,4a,5,8,8a- hexahydro-1,4:5,8-endo, endo-dimethanon- aphthalene
P004	1,2,3,4,10,10-Hexachloro-1,4,4a,5,8,8a- hexahydro-1,4:5,8-endo,exo-dimethanon- aphthalene
P060	Hexachlorohexahydro-exo,exo-dimethanon- a;thalene
P062	Hexaethyl tetraphosphate
P116	Hydrazinecarbothioamide
P068	Hydrazine, methyl-
P063	Hydrocyanic acid
P063	Hydrogen cyanide
P096	Hydrogen phosphide
P064	Isocyanic acid, methyl ester
P007	3(2H)-Isoxazolone, 5-(aminomethyl)-
P092	Mercury, (acetato-O)phenyl
P065	Mercury fulminate (R,T)
P016	Methane, oxybis(chloro-
P112	Methane, tetranitro- (R)
P118	Methanethiol, trichloro-
P059	4,7-Methano-1H-indene, 1,4,5,6,7,8,8-hep- tachloro-3a,4,7,7a-tetrahydro-
P066	Methomyl
P067	2-Methylaziridine
P068	Methyl hydrazine
P064	Methyl isocyanate
P069	2-Methylactonitrile
P071	Methyl parathion
P072	alpha-Naphthylthiourea
P073	Nickel carbonyl
P074	Nickel(ii) cyanide

P075	Nicotine and salts
P076	Nitric oxide
P077	p-Nitroaniline
P078	Nitrogen dioxide
P076	Nitrogen(ii) oxide
P078	Nitrogen(IV) oxide
P081	Nitroglycerine (R)
P082	N-Nitrosodimethylamine
P084	N-nitrosomethylvinylamine
P050	5-Norbornene-2,3-dimethanol, 1,4,5,6,7,7-hexachloro, cyclic sulfite
P085	Octamethylphosphoramidate
P087	Osmium oxide
P087	Osmium tetroxide
P088	7-Oxabicyclo(2.2.1)heptane-2,3-dicarboxylic acid
P089	Parathion
P034	Phenol, 2-cyclohexyl-4,6-dinitro-
P048	Phenol, 2,4-dinitro-
P047	Phenol, 2,4-dinitro-6-methyl-
P020	Phenol, 2,4-dinitro-6-(1-methylpropyl)-
P009	Phenol, 2,4,6-dinitro-, ammonium salt (R)
P036	Phenyl dichloroarsine
P092	Phenylmercuric acetate
P093	N-Phenylthiourea
P094	Phorate
P095	Phosgene
P096	Phosphine
P041	Phosphoric acid, diethyl p-nitrophenyl ester
P044	Phosphorodithioic acid, O,O-dimethyl S-(2-(methylamino)-2-oxoethyl)ester
P043	Phosphorofluoric acid, bis(1-methylethyl)-ester
P094	Phosphorothioic acid, O,O-diethyl S-(ethylthio)methyl ester
P089	Phosphorothioic acid, O,O-diethyl O-(p-nitrophenyl)ester
P040	Phosphorothioic acid, O,O-diethyl O-pyrazinyl ester
P097	Phosphorothioic acid, O,O-dimethyl O-(p-((dimethylamino)-sulfonyl) phenyl)ester
P110	Plumbane, tetraethyl-
P098	Potassium cyanide
P099	Potassium silver cyanide
P070	Propanal, 2-methyl-2-(methylthio)-, O-((methylamino)carbonyl)oxime
P101	Propanenitrile
P027	Propanenitrile, 3-chloro-
P069	Propanenitrile, 2-hydroxy-2-methyl-

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P081	1,2,3-Propanetriol, trinitrate-(R)
P017	1-Propanone, 1-bromo-
P102	Propargyl alcohol
P003	2-Propenal
P005	2-Propyn-1-ol
P067	1,2-Propylenimine
P102	2-Propyn-1-ol
P008	4-Pyridinamine
P075	Pyridine, (S)-3-(1-methyl-2-pyrroli- diny1)-, and salts
P111	Pyrophosphoric acid, tetraethyl ester
P103	Selenourea
P104	Silver cyanide
P105	Sodium azide
P106	Sodium cyanide
P107	Strontium sulfide
P108	Strychnidin-10-one, and salts
P018	Strychnidin-10-one, 2,3-dimethoxy-
P108	Strychnine and salts
P115	Sulfuric acid, thallium(i) salt
P109	Tetraethyldithiopyrophosphate
P110	Tetraethyl lead
P111	Tetraethylpyrophosphate
P112	Tetranitromethane (R)
P062	Tetraphosphoric acid, hexaethyl ester
P113	Thallic oxide
P113	Thallium (iii) oxide
P114	Thallium (i) selenite
P115	Thallium (i) sulfate
P045	Thiofanox
P049	Thioimidodicarbonic diamide
P014	Thiophenol
P116	Thiosemicarbazide
P026	Thiourea, (2-chlorophenyl)-
P072	Thiourea, 1-naphthalenyl-
P093	Thiourea, phenyl-
P123	Toxaphene
P118	Trichloromethanethiol
P119	Vanadic acid, ammonium salt
P120	Vanadium penetoxide
P120	Vanadium(V) oxide
P001	Warfarin (when present at concentrations greater than 0.3%)
P121	Zinc cyanide
P122	Zinc phosphide (R,T)
P122	Zinc phosphide when present at concentrations greater than 10%

3.4.4.f The commercial chemical products, manufacturing chemical

intermediates, or off-specification commercial chemical products referred to in paragraphs (a) through (d) of this section, are identified as toxic wastes (T) unless otherwise designated and are subject to the small quantity exclusion defined in Section 3.1.4 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.)

These wastes and their corresponding EPA Hazardous Waste Numbers are:

Hazardous Waste No.	Substance
U001	Acetaldehyde (i)
U034	Acetaldehyde, trichloro-
U187	Acetamide, N-(4-ethoxyphenyl)-
U005	Acetamide, N-9-H-fluoren-2-yl-
U112	Acetic acid, ethyl ester (i)
U144	Acetic acid, lead salt
U214	Acetic acid, thallium(i) salt
U002	Acetone (i)
U003	Acetonitrile (I,T)
U248	3-(alpha-acetonylbenzyl)-4 hydroxycoumarin and salts, when present at concentrations of 0.3% or less
U004	Acetophenone
U005	2-Acetylaminofluorene
U006	Acetyl chloride (C,R,T)
U007	Acrylamide
U008	Acrylic acid (i)
U009	Acrylonitrile
U150	Alanine, 3-(p-bis(2-chloroethyl)amino) phenyl-, L-
U011	Amitrole
U012	Aniline (I,T)
U014	Auramine
U015	Azaserine
U010	Azirino(2',3':3,4)pyrrolo(1,2-a)indole- 4,7-dione, 6-amino-8-(((aminocarbonyl) oxy)methyl)-1,1a,2,8,8a,8b-hexahydro- 8a-methoxy-5-methyl-,
U157	Benz(i)aceanthrylene, 1,2-dihydro-3- methyl-
U016	Benz(o)acridine
U016	3,4-Benzacridine
U017	Benzal chloride

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U018	Benz(a)anthracene
U018	1,2-Benzanthracene, 7,12-dimethyl-
U094	1,2-Benzanthracene, 7,12-dimethyl-
U012	Benzenamine (I,T)
U014	Benzenamine, 4,4'-carbonimidoylbis(N,N-dimethyl-
U049	Benzenamine, 4-chloro-2-methyl
U093	Benzenamine, N,N'-dimethyl-4-phenylazo-
U158	Benzenamine, 4,4'-methylenebis(2-chloro-
U222	Benzenamine, 2-methyl-, hydrochloride
U181	Benzenamine, 2-methyl-5-nitro
U019	Benzene (I,T)
U038	Benzeneacetic acid, 4-chloro-alpha-(4-chlorophenyl)-alpha-hydroxy, ethyl ester
U030	Benzene, 1-bromo-4-phenoxy-
U037	Benzene, chloro-
U190	1,2-Benzenedicarboxylic acid anhydride
U028	1,2-Benzenedicarboxylic acid, (bis(2-ethyl-hexyl)) ester
U069	1,2-Benzenedicarboxylic acid, dibutyl ester
U088	1,2-Benzenedicarboxylic acid, diethyl ester
U102	1,2-Benzenedicarboxylic acid, dimethyl ester
U107	1,2-Benzenedicarboxylic acid, di-n-octyl ester
U070	Benzene, 1,2-dichloro-
U071	Benzene, 1,3-dichloro-
U072	Benzene, 1,4-dichloro-
U017	Benzene, (dichloromethyl)-
U223	Benzene, 1,3-disocyanatomethyl- (R,T)
U239	Benzene, dimethyl-(I,T)
U201	1,3-Benzenediol
U127	Benzene, hexachloro-
U056	Benzene, hexahydro- (I)
U188	Benzene, hydroxy-
U220	Benzene, methyl-
U105	Benzene, 1-methyl-1,2,4, dinitro-
U106	Benzene, 1-methyl-2,6-dinitro-
U203	Benzene, 1,2-methylenedioxy-4-allyl-
U141	Benzene, 1,2-methylenedioxy-4-propenyl-
U090	Benzene, 1,2-methylenedioxy-4-propyl-
U055	Benzene, (1-methylethyl)- (I)
U169	Benzene, nitro- (I,T)
U183	Benzene, pentachloro-
U185	Benzene, pentachloro-nitro-
U020	Benzenesulfonic acid chloride (C,R)
U020	Benzenesulfonyl chloride (C,R)
U207	Benzene, 1,2,4,5-tetrachloro-
U023	Benzene, (trichloromethyl)-(C,R,T)
U234	Benzene, 1,3,5-trinitro- (R,T)

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U021	Benzidine
U202	1,2-Benzisothiazolin-3-one, 1,1-dioxide
U120	Benzo(j,k)fluorene
U022	Benzo(a)pyrene
U022	3,4-Benzo-pyrene
U197	p-Benzoquinone
U023	Benzotrichloride (C,R,T)
U050	1,2-Benzphenanthrene
U085	2,2'-Bioxirane (I,T)
U021	(1,1'-Biphenyl)-4,4'-diamine
U073	(1,1'-Biphenyl)-4,4'-diamine, 3,3'-dichloro-
U091	(1,1'-Biphenyl)-4,4'-diamine, 3,3'-dimethoxy-
U095	(1,1'-Biphenyl)-4,4'-diamine, 3,3'-dimethyl-
U024	Bis(2-chloroethoxy) methane
U027	Bis(2-chloroisopropyl) ether
U244	Bis(dimethylthiocarbamoyl) disulfide
U028	Bis(2-ethylexyl) phthalate
U246	Bromine cyanide
U225	Bromoform
U030	4-Bromophenyl phenyl ether
U128	1,3-Butadiene, 1,1,2,3,4,4-hexachloro-
U172	1-Butanamine, N-butyl-N-nitroso-
U035	Butanoic acid, 4-(Bis(2-chloroethyl)amino)benzene-
U031	1-Butanol (I)
U159	2-Butanone (I,T)
U160	2-Butanone peroxide (R,T)
U053	2-Butenal
U074	2-Butene, 1,4-dichloro- (I,T)
U031	n-Butyl alcohol (I)
U136	Cacodylic acid
U032	Calcium chromate
U238	Carbamic acid, ethyl ester
U178	Carbamic acid, methylnitroso-, ethyl ester
U176	Carbamide, N-ethyl-N-nitroso-
U177	Carbamide, N-methyl-N-nitroso-
U219	Carbamide, thio-
U097	Carbamoyl chloride, dimethyl-
U215	Carbonic acid, dithallium (I) salt
U156	Carbonochloride acid, methyl ester (I,T)
U033	Carbon oxyfluoride (R,T)
U211	Carbon tetrachloride
U033	Carbon oxyfluoride (R,T)
U034	Chloral
U035	Chlorambucil
U036	chlordan, technical
U026	Chlornaphazine

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U037	Chlorobenzene
U039	4-Chloro-m-cresol
U041	1-Chloro-2,3-epoxypropane
U042	2-Chloroethyl vinyl ether
U044	Chloroform
U046	Chloromethyl methyl ether
U047	beta-Chloronaphthalene
U048	o-Chlorophenol
U049	4-Chloro-o-toluidine, hydrochloride
U032	Chromic acid, calcium salt
U050	Chrysene
U051	Creosote
U052	Cresols
U052	Cresylic acid
U053	Crotonaldehyde
U055	Cumene (I)
U246	Cyanogen bromide
U197	1,4-Cyclohexadienedione
U056	Cyclohexane(I)
U057	Cyclohexanone (I)
U130	1,30Cyclopentadiene, 1,2,3,4,5,5-hexa- chloro-
U058	Cyclophosphamide
U240	2,44-D, salts and esters
U059	Daunomycin
U060	DDD
U061	DDT
U142	Decachlorooctahydro-1,3,4-metheno-2H- cyclobutal(c,d)-pentalen-2-one
U062	Diallate
U133	Diamine (R,T)
U221	Diaminotoluene
U063	Dibenz(a,h)anthracene
U063	1,2:5,6-Dibenzanthracene
U064	1,2,7,8-Dibenzopyrene
U064	Dibenz(a,i)pyrene
U066	1,2-Dibromo-3-chloropropane
U069	Dibutyl phthalate
U062	S-(2,3-Dichloroallyl) diisopropylthiocarbamate
U070	o-Dichlorobenzene
U071	m-Dichlorobenzene
U072	p-Dichlorobenzene
U073	3,3'-Dichlorobenzidine
U074	1,4-Dichloro-2-butene (I,T)
U075	Dichlorodifluoromethane
U192	3,5-Dichloro-N-(1,1-dimethyl-1-propynyl) benzamide
U060	dichloro diphenyl dichloroethane
U061	Dichloro diphenyl trichloroethane

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U078	1,1-Dichloroethylene
U079	1,2-Dichloroethylene
U025	Dichloroethyl ether
U081	2,4-Dichlorophenol
U082	2,6-Dichlorophenol
U240	2,4-Dichlorophenoxyacetic acid, salts and esters
U083	1,2-Dichloropropane
U084	1,3-Dichloropropane
U085	1,2:3,4-Diepoxybutane (I,T)
U108	1,4-Diethylene dioxide
U086	N,N-Diethylhydrazine
U087	O,O-Diethyl-S-methyl-dithiophosphate
U088	Diethyl phthalate
U089	Diethylstilbestrol
U148	1,2-Dihydro-3,6-pyrazinedione
U090	Dihydrosafrole
U091	3,3'-Dimethoxybenzidine
U092	Dimethylamine (I)
U093	Dimethylaminoazobenzene
U094	7,12-Dimethylbenz(a)anthracene
U095	3,3'-Dimethylbenzidine
U096	alpha, alpha-Dimethylbenzyhydroperoxide (R)
U097	Dimethylcarbamoyl chloride
U098	1,1-Dimethylhydrazine
U099	1,2-Dimethylhydrazine
U101	2,4-Dimethylphenol
U102	Dimethyl phthalate
U103	Dimethyl sulfate
U105	2,4-Dinitrotoluene
U106	2,6-Dinitrotoluene
U107	Di-n-octyl phthalate
U108	1,4-Dioxane
U109	1,2-Diphenylhydrazine
U110	Dipropylamine (I)
U111	Di-N-propylnitrosamine
U001	Ethanal (I)
U174	Ethanamine, N-ethyl-N-nitroso-
U067	Ethane, 1,2-dibromo-
U076	Ethane, 1,1-dichloro-
U077	Ethane, 1,2-dichloro-
U114	1,2-Ethanedithiobis(2-mercaptoethane)carbamodithioic acid
U131	Ethane, 1,1,1,2,2,2-hexachloro-
U024	Ethane, 1,1'-(methylenebis(oxy)) bis(2-chloro-
U003	Ethanenitrile (I,T)
U117	Ethane, 1,1'-oxybis- (I)
U025	Ethane, 1,1'-oxybis (2-chloro-
U184	Ethane, pentachloro-

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U208	Ethane, 1,1,1,2-tetrachloro-
U209	Ethane, 1,1,2,2-tetrachloro-
U218	Ethanethioamide
U227	Ethane, 1,1,2-trichloro-
U247	Ethane, 1,1,1,-trichloro-2,2-bis(p-methoxyphenyl)
U043	Ethene, chloro-
U042	Ethene, 1-chloroethoxy-
U078	Ethene, 1,1-dichloro-
U079	Ethene, trans-1,2-dichloro-
U210	Ethene, 1,1,2,2-tetrachloro-
U173	Ethanol, 2,2'-(nitrosoimino)bis-
U004	Ethanone, 1-phenyl-
U006	Ethanoyl chloride (C,R,T)
U112	Ethyl acetate (I)
U113	Ethyl acrylate (I)
U238	Ethyl carbamate (urethan)
U038	Ethyl 4,4'-dichlorobenzilate
U114	Ethylenebis(dithiocarbamic acid)
U067	Ethylene dibromide
U077	Ethylene dichloride
U115	Ethylene oxide (I,T)
U116	Ethylene thiourea
U117	Ethyl ether (I)
U076	Ethylidene dichloride
U118	Ethylmethacrylate
U119	Ethyl methanesulfonate
U139	Ferric dextran
U120	Fluoranthene
U122	Formaldehyde
U123	Formic acid (C,T)
U124	Furan (I)
U125	2-Furancarboxaldehyde (I)
U147	2,5-Furandione
U213	Furn, tetrahydro- (I)
U125	Furfural (I)
U124	Furfuran (I)
U206	D-Glucopyranose, 2-deoxy-2(3-methyl-3-nitrosoureido)-
U126	Glycidylaldehyde
U163	Guanidine, N-nitroso-N-methyl-N'nitro-
U127	Hexachlorobenzene
U128	Hexachlorobutadiene
U129	Hexachlorocyclohexane (gamma isomer)
U130	Hexachlorocyclopentadiene
U131	Hexachloroethane
U132	Hexachlorophene
U243	Hexachloropropene
U133	Hydrazine (R,T)
U086	Hydrazine, 1,2-diethyl-

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U098	Hydrazine, 1,1-dimethyl-
U099	Hydrazine, 1,2-dimethyl-
U109	Hydrazine, 1,2-diphenyl-
U134	Hydrofluoric acid (C,T)
U134	Hydrogen flouride (C,T)
U135	Hydrogen sulfide
U096	Hydroperoxide, 1-methyl-1-phenylethyl-(R)
U136	Hydroxydimethylarsine oxide
U116	2-Imidazolidinethione
U137	Indeno(1,2,3-cd)pyrene
U139	Iron dextran
U140	Isobutyl alcohol (I,T)
U141	Isosafrole
U142	Kepone
U143	Lasiocarpine
U144	Lead acetate
U145	Lead phosphate
U146	Lead subacetate
U129	Lindane
U147	Maleic anhydride
U148	Maleic hydrazide
U149	Malononitrile
U150	Melphalan
U151	Mercury
U152	Methacrylonitrile (I,T)
U092	Methanamine, N-methyl-(I)
U029	Methane, bromo-
U045	Methane, chloro- (I,T)
U046	Methane, chloromethoxy-
U068	Methane, dibromo-
U080	Methane, dichloro-
U075	Methane, dichlorodifluoro-
U138	Methane, iodo-
U119	Methane, sulfonic acid, ethyl ester
U211	Methane, tetrachloro-
U121	Methane, trichlorofluoro-
U153	Methanethiol (I,T)
U225	Methane, tribromo-
U044	Methane, trichloro-
U121	Methane, trichlorofluoro-
U123	Methanoic acid (C,T)
U036	4,7-Methanoindan, 1,2,4,5,6,7,8,8-octa- chloro-3a,4,7,7a-tetrahydro-
U154	Methanol (I)
U155	Methapyriline
U247	Methoxychlor
U154	Methyl alcohol (I)
U029	Methyl bromide
U186	1-Methylbutadiene (I)
U045	Methyl chloride (I,T)

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U156	Methyl chlorocarbonate (I,T)
U226	Methylchloroform
U157	3-Methylcholanthrene
U158	4,4'-Methylenebis(2-chloroaniline)
U132	2,2'-Methylenebis (3,4,6-trichlorophenol)
U068	Methylene bromide
U080	Methylene chloride
U122	Methylene oxide
U159	Methyl ethyl ketone (I,T)
U160	Methyl ethyl ketone peroxide (R,T)
U138	Methyl iodide
U161	Methyl isobutyl ketone (I)
U138	Methyl iodide
U161	Methyl isobutyl ketone (I)
U162	Methyl methacrylate (I,T)
U163	N-Methyl-N'-nitro-N-nitrosoguanidine
U161	4-Methyl-2-pentanone (I)
U164	Methylthiouracil
U010	Mitomycin C
U059	5,12-Naphthacenedione, (8S-cis)-8-acetyl- 10-((3-amino-2,36-trideoxy-alpha-L-lyxo- hexopyranosyl)oxyl)-7,8,9,10-tetrahydro- 6,8,11-trihydroxy-1-methoxy-
U165	Naphthalene
U047	Naphthalene, 2-chloro-
U166	1,4-Naphthalenedione
U236	2,7-Naphthalenedisulfonic acid, 3,3'-(3,3'-dimethyl-(1,1'-biphenyl)- 4,4'diyl))-bis-(azo)bis(5-amino-4- hydroxy)-, tetrasodium salt
U166	1,4-Naphthaquinone
U167	1-Naphthylamine
U168	2-Naphthylamine
U167	alpha-Naphthylamine
U168	beta-Naphthylamine
U026	2-Naphthylamine, N,N'-bis(2-chloro- methyl)-
U169	Nitrobenzene (I,T)
U170	p-Nitrophenol
U171	2-Nitropropane (I)
U172	N-Nitrosodi-n-butylamine
U173	N-Nitrosodiethanolamine
U174	N-Nitrosodiethylamine
U111	N-Nitroso-N-propylamine
U176	N-Nitroso-N-ethylurea
U177	N-Nitroso-N-methylurethane
U179	N-Nitrosopiperidine
U180	N-Nitrosopyrrolidine
U181	5-Nitro-o-toluidine
U193	1,2-Oxathiolane, 2,2-dioxide

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U058	2H-1,3-2-Oxazaphosphorine, 2-(bis(2-chloro- ethyl)amino)tetrahydro-, oxide 2-
U115	Oxirane (I,T)
U041	Oxirane, 2-(chloromethyl)-
U182	Paraldehyde
U183	Pentachlorobenzene
U184	Pentachlorethane
U185	Pentachloronitrobenzene
U242	Pentachlorophenol
U186	1,3-Pentadiene (I)
U187	Phenacetin
U188	Phenol
U048	Phenol, 2-chloro-
U039	Phenol, 4-chloro-3-methyl-
U081	Phenol, 2,4-dichloro-
U082	Phenol, 2,6-dichloro-
U101	Phenol, 2,4-dimethyl-
U170	Phenol, 4-nitro-
U242	Phenol, pentachloro-
U212	Phenol, 2,3,4,6-tetrachloro-
U230	Phenol, 2,4,5-trichloro-
U231	Phenol, 2,4,6-trichloro-
U137	1,10-(1,2-phenylene)pyrene
U145	Phosphoric acid, lead salt
U087	Phosphorodithioic acid,)-)-diethyl-,S-methylester
U189	Phosphorous sulfide (R)
U190	Phthalic anhydride
U191	2-Picoline
U192	Pronamide
U194	1-Propanamine (I,T)
U110	1-Propanamine, N-propyl-(I)
U066	Propane, 1,2-dibromo-3-chloro-
U149	Propanedinitrile
U171	Propane, 2-nitro- (I)
U027	Propane, 2,2'oxybis (2-chloro-
U193	1,3-Propane sultone
U235	1-Propanol, 2,3-dibromo-, phosphate (3:1)
U126	1-Propanol, 2,3-epoxy-
U140	1-Propanol, 2-methyl- (I,T)
U002	2-Propanone (I)
U007	2-Propenamide
U084	Propene, 2,3-dichloro-
U243	1-Propene, 1,1,2,3,3,3-hexachloro-
U009	2-Propenenitrile
U152	2-Propenenitrile, 2-methyl- (I,T)
U008	2-Propenoic acid (I)
U113	2-Propenoic acid, ethyl ester (I)
U118	2-Propenoic acid, 2-methyl-, ethyl ester
U162	2-Propenoic acid, 2-methyl-, methyl ester

	(I,T)
U233	Propionic acid, 2-(2,4,5-trichloro phenoxy)-
U194	n-Propylamine (I,T)
U083	Propylene dichloride
U196	Pyridine
U155	Pyridine, 2-((2-dimethylamino)-2-thenyla- mino)-
U179	Pyridine, hexahydro-N-nitroso-
U191	Pyridine, 2-methyl-
U164	4(1H)-Pyrimidinone, 2,3-dihydro-6-methyl- 2-thioxo-
U180	Pyrrole, tetrahydro-N-nitroso-
U200	Reserpine
U201	Resorcinol
U202	Saccharin and salts
U203	Safrole
U204	Selenious acid
U204	Selenium dioxide
U205	Selenium disulfide (R,T)
U015	L-Serine, diazoacetate (ester)
U233	Silvex
U089	4,4'-Stilbenediol, alpha,alpha'-diethyl-
U206	Streptozotocin
U135	Sulfur hydride
U103	Sulfuric acid, dimethyl ester
U189	Sulfur phosphide (R)
U205	Sulfur selenide (R,T)
U232	2,4,5-T
U207	1,2,4,5-Tetrachlorobenzene
U208	1,1,1,2-Tetrachloroethane
U209	1,1,2,2-Tetrachloroethane
U210	Tetrachloroethylene
U212	2,3,4,6-Tetrachlorophenol
U213	Tetrahydrofuran (I)
U214	Thallium (I) acetate
U215	Thallium (I) carbonate
U216	Thallium (I) chloride
U217	Thallium (I) nitrate
U218	Thioacetamide
U153	Thiomethanol (I,T)
U219	Thiourea
U244	Thiram
U220	Toluene
U221	Toluenediamine
U223	Toluene diisocyanate (R,T)
U222	O-Toluidine hydrochloride
U011	1H-1,2,4-Triazol-3-amine
U226	1,1-Trichloroethane
U227	1,1,2-Trichloroethane

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U228	Trichloroethene
U228	Trichloroethylene
U121	Trichloromonofluoromethane
U230	2,4,5-Trichlorophenol
U231	2,4,6-Trichlorophenol
U232	2,4,5-Trichlorophenoxyacetic acid
U234	sym-Trinitrobenzene (R,T)
U182	1,3,5-Trioxane, 2,4,5-trimethyl-
U235	Tris(2,3-dibromopropyl) phosphate
U236	Trypan blue
U237	Uracil, 5(bis(2-chloromethyl)amino)-
U237	Uracil mustard
U043	Vinyl chloride
U248	Warfarin, when present at concentrations of 0.3% or less
U200	Yohimban-16-carboxylic acid, 11,17-di- methoxy-18-((3,4,5-trimethoxy- benzoyl)oxy)-, methyl ester,
U249	Zinc phosphide, when present at concentrations of 10%

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 Agency to be representative of the waste.

Extremely viscous liquid - ASTM Standard D140-70 Crushed or powdered material ASTM standard D346-75 Soil- or rock-like material - ASTM standard D420-69 Soil-like material ASTM standard 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 the Superintendent of Documents, U.S. Government Printing Office, Washington, D.C. 20402 (202) 783-3238).

Liquid waste in pits, ponds, lagoons, and similar reservoirs.--"Pond Sampler" described in "Test Methods for the Evaluation of Solid Waste, Physical/Chemical Methods."¹

This manual also contains additional information on application of these protocols.

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 or any other methods capable of yielding a representative sample within the meaning of Part 260. (For detailed guidance on conducting the various aspects of the EP see, "Test Methods for the Evaluation of Solid Waste, Physical/Chemical Methods," SW-846, U.S. Environmental Protection Agency Office of Solid Waste, Washington, D.C. 20460.2s)

1

These methods are also described in "Samplers and Sampling Procedures for Hazardous Waste Streams", EPA 600/2-80-018, January 1980.

2

Copies may be obtained from Superintendent of Documents, U.S. Government Printing Office, Washington, D.C. 20402 (202) 783-3238.

2. The sample should be separated into its component liquid and solid phases using the method described in "Separation Procedure" below. If the solid residue³ obtained using this method totals less than 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.

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 cm or passes through a 9.5 mm (0.375 inch) standard sieve, the operator should proceed to Step 4. 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 mm (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 should be weighed and placed in an extractor with 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 ± 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 ± 0.2. However, in no event shall the aggregate amount of acid added to the solution exceed 4 ml of acid per gram of solid. The mixture should be agitated for 24 hours and maintained at 20-40C (68-104F) 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:

3 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:

$$\frac{(\text{Weight of pad + solid}) - (\text{tare weight of pad})}{\text{Initial weight of sample}} \times 100 = \% \text{ solids}$$

(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 0.2. The pH of the solution should be adjusted at 15, 30 and 60 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 6 hours.

(d) If at the end of the 24-hour extraction period the ph of the solution is not below 5.2 and the maximum amount of acid (4 ml per gram of solids) has not been added, the pH should be adjusted 5.0 0.2 and the extraction continued for an additional four hours, during which the pH should be adjusted at one hour intervals.

6. At the end of the 24-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 = ml Deionized water to be added

W = weight in grams of solid charged to extractor

A = ml 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."

8. The liquids resulting from steps 2 and 7 should be combined. This combined liquid (or the waste itself if it has less than 1/2 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 I of 3.4.2 using the Analytical Procedures designated below.

Separation Procedure

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 so) 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 pressure differential, vacuum filters employing a 0.45 micrometers filter media can be used. (For further guidance on filtration equipment or procedures see "Test Methods for Evaluating Solid Waste, Physical/Chemical Methods.")

Procedure⁴

(i) 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.

(ii) The waste should be poured into the filtration unit.

(iii) 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 10-15 psig. Filtration should be continued until liquid flow ceases.

(iv) The pressure should be increased stepwise in 10 psi. 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.

(v) 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.

(vi) The liquid phase should be stored at 4-c for subsequent use in Step 8.

B. Structural Integrity Procedure

Equipment: A structural integrity tester having 3.18 cm (1.25 in.) diameter hammer weighing 0.33 kg (0.73 lbs.) and having a free fall of 15.24 cm (6 in.) 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.

⁴ This procedure is intended to result in separation of the "free" liquid portion of the waste from any solid matter having a particle size 0.45um. 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 0.45um filter prior to becoming mixed with the liquid portion of the waste obtained from the initial

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filtration. Any material that will not pass through the filter after centrifugation is considered a solid and is extracted.

Procedure

1. The sample holder should be filled with the material to be tested. If the sample of waste is a large monolithlock, a portion should be cut from the block having the dimensions of a 3.3 cm (1.3 in.) diameter x 7.1 cm (2.8 in.) cylinder. For a fixated waste, samples may be case in the form of a 3.3 cm (1.3 in.) diameter x 7.1 cm (2.8 in.) cylinder for purposes of conducting this test. In such cases, the waste may be allowed to cure for 30 days prior to further testing.
2. 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 times.
3. The material should be removed from the sample holder, weighed, and transferred to the extraction apparatus for extraction.

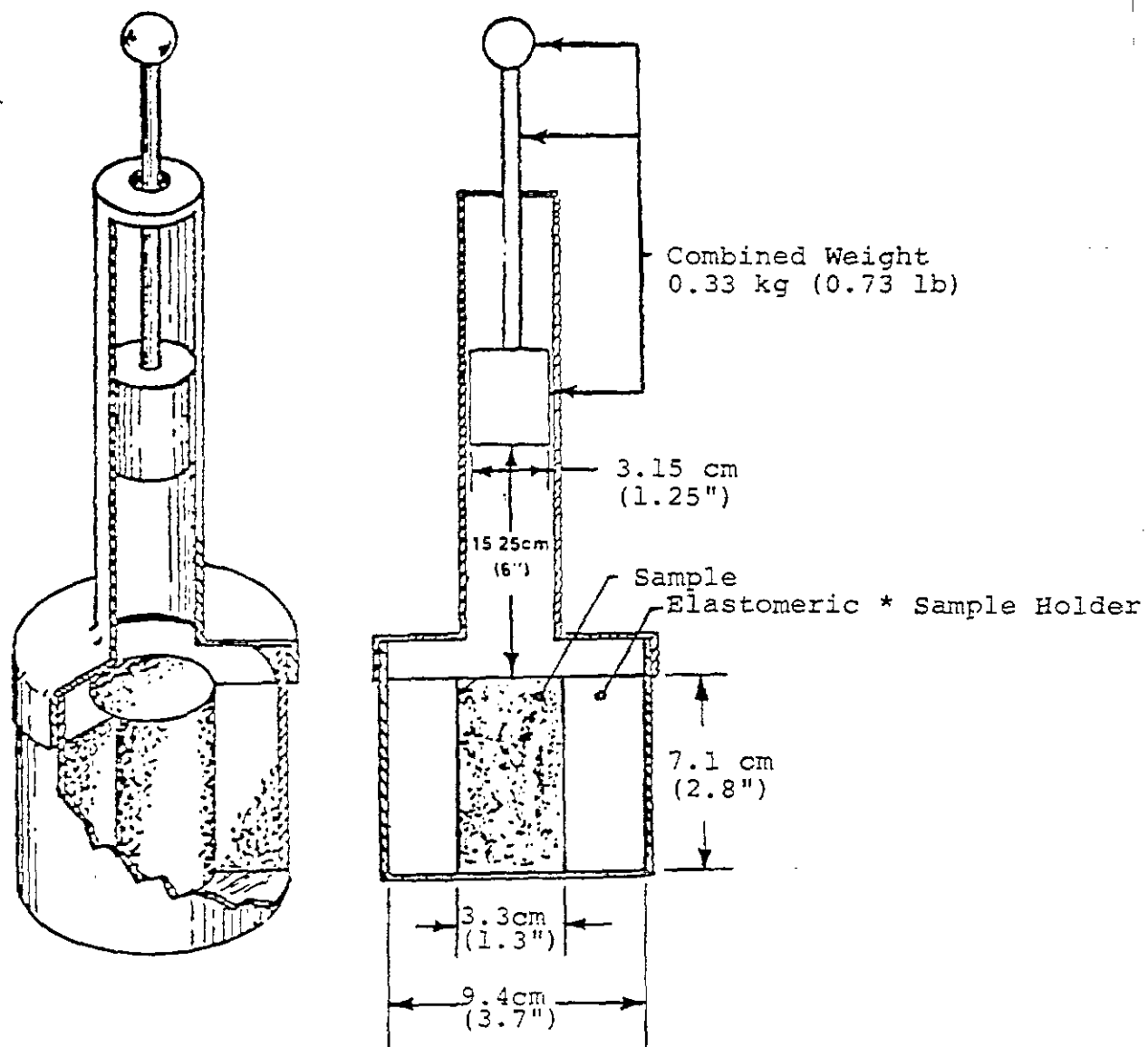
Analytical Procedures for Analyzing Extract Contaminants

The test methods for analyzing the extract are as follows:

(1) 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): "Test Methods for the Evaluation of Solid Waste, Physical/Chemical Methods," SW-846, U.S. Environmental Protection Agency, Office of Solid Waste, Washington, D.C. 20460.

(2) Reserved

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 III - Chemical Analysis Test Methods

Tables 1, 2 and 3 specify the appropriate analytical procedures, described in EPA's "Test Methods for Evaluating Solid Waste, Physical/Chemical Methods," (first and second edition) which shall be used to determine whether a sample contains a given appendix VII or VIII toxic constituent.

Table 1 identifies each Appendix VII or VIII organic constituent along with the approved measurement method. Table 2 identifies the corresponding methods for inorganic species. Table 3 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.

TABLE 1 - Analysis Methods for Organic Chemicals Contained in SW-846

Compound	First edition method(s)	Second edition method(s)
Acetonitrile	8.03, 8.24	8030, 8240
Acrolein	8.03, 8.24	8030, 8240
Acrylonitrile	8.01, 8.24	8015, 8240
Acrylonitrile	8.03, 8.24	8030, 8240
Benzene	8.02, 8.24	8020, 8024
Benz(a)anthracene	8.10, 8.25	8100, 8250, 8310
Benz(a)pyrene	8.10, 8.25	8100, 8250, 8310
Benzotrifluoride	8.12, 8.25	8120, 8250
Benzyl chloride	8.01, 8.12, 8.24, 8.25	8120, 8250
Benzyl fluoride	8.10, 8.25	8100, 8250, 8310
Bis(2-chloroethoxy)methane	8.01, 8.24	8010, 8240
Bis(2-chloroethyl)ether	8.01, 8.24	8010, 8240
Bis(2-chloroisopropyl)ether	8.01, 8.24	8010, 8240
Carbon disulfide	8.01, 8.24	8015, 8240
Carbon tetrachloride	8.01, 8.24	8010, 8240
Chlorane	8.08, 8.25	8080, 8250
Chlorinated biphenyls	8.08, 8.25	8080, 8250
Chlorinated biphenyls	8.08, 8.25	8080, 8250
Chloroacetaldehyde	8.01, 8.24	8010, 8240
Chlorobenzene	8.01, 8.02, 8.24	8020, 8240
Chloroform	8.01, 8.24	8010, 8240
Chloromethane	8.01, 8.24	8010, 8240
2-Chlorophenol	8.04, 8.25	8040, 8250
Chrysene	8.10, 8.25	8100, 8250, 8310
Cresols	8.10, 8.25	8100, 8250
Cresols	8.04, 8.25	8040, 8250
Cyanoic Acid(s)	8.04, 8.25	8040, 8250
Dichlorobenzene(s)	8.01, 8.02, 8.12, 8.25	8010, 8120, 8250
Dichloroethane(s)	8.01, 8.24	8010, 8240
Dichloromethane	8.01, 8.24	8010, 8240
Dichlorophenylacetic acid	8.04, 8.25	8150, 8250
Dichlorophenol	8.12, 8.25	8120, 8250
2,4-Dimethylphenol	8.04, 8.25	8040, 8250
Dinitrobenzene	8.09, 8.25	8090, 8250
4,6-Dinitro-o-cresol	8.04, 8.25	8040, 8250
2,4-Dinitrotoluene	8.09, 8.25	8090, 8250
Endrin	8.08, 8.25	8080, 8250
Ethyl ether	8.01, 8.02, 8.24	8015, 8240

Compound	First edition method(s)	Second edition method(s)
Formaldehyde	8.01, 8.24	8015, 8240
Formic acid	8.08, 8.25	8080, 8250
Heptachlor	8.08, 8.25	8080, 8250
Hexachlorobenzene	8.12, 8.25	8120, 8250
Hexachlorobutadiene	8.12, 8.25	8120, 8250
Hexachlorocyclopentadiene	8.12, 8.25	8010, 8240
Hexachlorocyclopentadiene	8.12, 8.25	8120, 8250
Lindane	8.08, 8.25	8080, 8250
Maleic anhydride	8.08, 8.25	8250
Methanol	8.01, 8.24	8010, 8240
Methanol	8.02	8250
Methyl ethyl ketone	8.01, 8.02, 8.24	8015, 8240
Methyl isobutyl ketone	8.01, 8.02, 8.24	8015, 8240
Naphthalene	8.10, 8.25	8100, 8250
Naphthoquinone	8.08, 8.09, 8.25	8090, 8250
Nitrobenzene	8.09, 8.25	8090, 8250
4-Nitrophenol	8.04, 8.25	8040, 8240
Paraldehyde (trimer of acetaldehyde)	8.01, 8.24	8015, 8240
Pentachlorophenol	8.04, 8.25	8040, 8250
Phenol	8.04, 8.25	8040, 8250
Phorate	8.23	8140
Phosphorodithioic acid esters	8.08, 8.09, 8.22	8140
Phthalic anhydride	8.08, 8.08, 8.25	8080, 8250
2-Picoline	8.08, 8.09, 8.25	8090, 8250
Pyridine	8.08, 8.09, 8.25	8090, 8250
Tetrachlorobenzene(s)	8.12, 8.25	8120, 8250
Tetrachlorobutene(s)	8.01, 8.24	8010, 8240
Tetrachloroethylene	8.01, 8.24	8010, 8240
Tetrachlorophenol	8.04, 8.24	8040, 8250
Toluene	8.02, 8.24	8020, 8024
Toluene diisocyanate(s)	8.08, 8.25	8250
Toluene	8.08, 8.25	8080, 8250
Trichloroethane	8.01, 8.24	8010, 8240
Trichloroethene(s)	8.01, 8.24	8010, 8240
Trichlorofluoromethane	8.01, 8.24	8010, 8240
Trichlorophenol(s)	8.04, 8.25	8040, 8250
2,4,5-Trichlorophenoxy propionic acid	8.40, 8.25	8150, 8250

APPENDIX III

TABLE 1 Continued,

Compound	First edition method(s)	Second edition method(s)
Trichloropropene.....	8.01, 8.24	8010, 8240
Vinyl chloride.....	8.01, 8.24	8010, 8240
Vinylidene chloride.....	8.01, 8.24	8010, 8240
Xylene.....	8.02, 8.24	8020, 8240

¹ Analyze for phenanthrene and carbazole; if these are present in a ratio between 1:4:1 and 5:1 creosole should be considered present.

TABLE 2- Analysis Methods for Inorganic Chemicals Contained in SW-846

Compound	First edition method(s)	Second edition method(s)
Antimony.....	8.50	7040, 7041
Arsenic.....	8.51	7060, 7061
Barium.....	8.52	7080, 7081
Cadmium.....	8.53	7090, 7091
Chromium.....	8.54	7180, 7181
Chromium Hexavalent.....	8.545, 8.546,	7185, 7186,
	8.547	7187
Cobalt.....	8.56	7420, 7421
Mercury.....	8.57	7470, 7471
Nickel.....	8.58	7520, 7521
Selenium.....	8.59	7740, 7741
Silver.....	8.60	7760, 7761
Cyanides.....	8.55	9010
Total Organic Halogen.....	8.66	9020
Sulfides.....	8.67	9030

APPENDIX III - Continued

TABLE 3—SAMPLING AND ANALYSIS METHODS CONTAINED IN SW-846

Title	First edition		Second edition	
	Section No.	Method No.	Section No.	Method No.
Sampling of Solid Wastes.....	1.0		1.0	
Development of Appropriate Sampling Plans.....	1.0		1.1	
Regulatory and Scientific Objectives.....	1.0-2		1.1.1	
Fundamental Statistical Concepts.....	1.0-3		1.1.2	
Basic Statistical Strategies.....	1.0-7		1.1.3	
Simple Random Sampling.....			1.1.3.1	
Stratified Random Sampling.....			1.1.3.2	
Systematic Random Sampling.....			1.1.3.3	
Special Considerations.....	1.0-7			
Composite Sampling.....			1.1.4.1	
Subsampling.....			1.1.4.2	
Cost and Loss Functions.....			1.1.4.3	
Implementation of Sampling Plan.....	1.0-7		1.2	
Selection of Sampling Equipment.....			1.2.1	
Composite Liquid Waste Sampler.....	3.2.1		1.2.1.1	
Weighted Bottle.....	3.2.2		1.2.1.2	
Dipper.....	3.2.3		1.2.1.3	
Thief.....	3.2.4		1.2.1.4	
Trier.....	3.2.5		1.2.1.5	
Auger.....	3.2.6		1.2.1.6	
Scoop and Shovel.....	3.2.7		1.2.1.7	
Selection of Sample Containers.....	3.3		1.2.2	
Processing and Storage of Samples.....	3.3		1.2.3	
Documentation of Chain of Custody.....	2.0		1.3	
Sample Labels.....	2.0-1		1.3.1	
Sample Seals.....	2.0-3		1.3.2	
Field Log Book.....	2.0-5		1.3.3	
Chain-of-Custody Record.....	2.0-6		1.3.4	
Sample Analysis Request Sheet.....	2.0-9		1.3.5	
Sample Delivery to Laboratory.....	2.0-10		1.3.6	
Shipping of Samples.....	2.0-10		1.3.7	
Receipt and Logging of Sample.....	2.0-12		1.3.8	
Assignment of Sample for Analysis.....	2.0-13		1.3.9	
Sampling Methodology.....	3.0		1.4	
Containers.....	3.2-2		1.4.1	
Tanks.....	3.2-2		1.4.2	
Waste Pits.....	3.2-2		1.4.3	
Landfills and Lagoons.....	3.2-2		1.4.4	
Waste Evaluation Procedures.....			2.0	
Characteristics of Hazardous Waste.....			2.1	
Ignitability.....	4.0		2.1.1	
Pensky-Martens Closed-Cup Method.....	4.1		2.1.1	1010
Settlesh Closed-Cup Method.....	4.1		2.1.1	1020
Corrosivity.....	5.0		2.1.2	
Corrosivity Toward Steel.....	5.3		2.1.2	1110
Reactivity.....	6.0		2.1.3	
Extraction Procedure Toxicity.....	7.0		2.1.4	
Extraction Procedure Toxicity Test.....	7.1, 7.2, 7.5			
Method and Structural Integrity Test.....	7.4		2.1.4	1310
Sample Workup Techniques.....			4.0	
Inorganic Techniques.....	8.4.9		4.1	
Acid Digestion for Flame AAS.....	1		4.1	3010
Acid Digestion for Furnace AAS.....	1		4.1	3020
Acid Digestion of Oil, Grease, or Wax.....	8.4.9-9		4.1	3030
Dissolution Procedure for Oil, Grease or Wax.....	8.4.9-8			
Alkaline Digestion.....	8.0	8.4.58	4.1	3060
Organic Techniques.....	8.0		4.2	
Separatory Funnel Liquid-Liquid Extraction.....	9.0	9.1	4.2	3510
Continuous Liquid-Liquid Extraction.....	9.0	9.01	4.2	3520
Acid-Base Cleanup Extraction.....	8.0	8.54	4.2	3530
Sonohel Extraction.....	8.0	8.56	4.2	3540
Sonication Extraction.....	8.0	8.55	4.2	3550
Sample Introduction Techniques.....			5.0	
Headspace.....	8.0	8.82	5.0	5020
Purge-and-Trap.....	8.0	8.83	5.0	5030

APPENDIX III - Continued

Table 3 - Continued

Title	First edition		Second edition	
	Section No.	Method No.	Section No.	Method No.
Inorganic Analytical Methods	8.0		7.0	
Antimony, Flame AAS	8.0	8.50	7.0	7470
Antimony, Furnace AAS	8.0	8.50	7.0	7471
Arsenic, Flame AAS	8.0	8.51	7.0	7060
Arsenic, Furnace AAS	8.0	8.51	7.0	7061
Barium, Flame AAS	8.0	8.52	7.0	7080
Barium, Furnace AAS	8.0	8.52	7.0	7081
Cadmium, Flame AAS	8.0	8.53	7.0	7130
Cadmium, Furnace AAS	8.0	8.53	7.0	7131
Chromium, Flame AAS	8.0	8.54	7.0	7090
Chromium, Furnace AAS	8.0	8.54	7.0	7191
Chromium, Hexavalent, Coprecipitation	8.0	8.545	7.0	7195
Chromium, Hexavalent, Colorimetric	8.0	8.546	7.0	7196
Chromium, Hexavalent, Chromatographic	8.0	8.547	7.0	7197
Lead, Flame AAS	8.0	8.56	7.0	7420
Lead, Furnace AAS	8.0	8.56	7.0	7421
Mercury, Cold Vapor, Liquid	8.0	8.57	7.0	7470
Mercury, Cold Vapor, Solid	8.0	8.57	7.0	7471
Nickel, Flame AAS	8.0	8.58	7.0	7520
Nickel, Furnace AAS	8.0	8.58	7.0	7521
Selenium, Flame AAS	8.0	8.59	7.0	7740
Selenium, Gaseous Hydride AAS	8.0	8.59	7.0	7741
Silver, Flame AAS	8.0	8.60	7.0	7750
Silver, Furnace AAS	8.0	8.60	7.0	7751
Organic Analytical Methods	8.0		8.1	
Gas Chromatographic Methods	8.0		8.1	
Halogenated Volatile Organics	8.0	8.01	8.1	8010
Nonhalogenated Volatile Organics	8.0	8.01	8.1	8015
Aromatic Volatile Organics	8.0	8.02	8.1	8020
Acrolein, Acrylonitrile, Acetonitrile	8.0	8.03	8.1	8030
Phenols	8.0	8.04	8.1	8040
Phthalate Esters	8.0	8.06	8.1	8060
Organochlorine Pesticides and PCBs	8.0	8.08	8.1	8080
Nitroaromatics and Cyclic Ketones	8.0	8.09	8.1	8090
Polynuclear Aromatic Hydrocarbons	8.0	8.10	8.1	8100
Chlorinated Hydrocarbons	8.0	8.12	8.1	8120
Organophosphorus Pesticides	8.0	8.22	8.1	8140
Chlorinated Herbicides	8.0	8.40	8.1	8150
Gas Chromatographic/Mass Spectroscopy Methods (GC/MS)	8.0		8.2	
GC/MS Volatiles	8.0	8.24	8.2	8240
GC/MS Semi-Volatiles, Packed Column	8.0	8.25	8.2	8250
GC/MS Semi-Volatiles, Capillary	8.0	8.27	8.2	8270
High Performance Liquid Chromatographic Methods (HPLC)	8.0		8.3	
Polynuclear Aromatic Hydrocarbons	8.0	8.10	8.3	8310
Miscellaneous Analytical Methods	8.0		9.0	
Cyanide, Total and Amenable to Chlorination	8.0	8.55	9.0	9010
Total Organic Halogen (TOX)	8.0	8.66	9.0	9020
Sulfides	8.0	8.67	9.0	9030
pH Measurement	8.0	5.2	9.0	9040
Quality Control/Quality Assurance	10.0		10.1	
Introduction	10.0		10.1	
Program Design	10.0		10.2	
Sampling	10.0		10.3	
Analysis	10.0		10.4	
Data Handling	10.0		10.5	

¹(See specific metal).

APPENDIX IV - [Reserved for Radioactive Waste Test Methods]

APPENDIX V - [Reserved]

APPENDIX VI - [Reserved for Etiologic Agents]

APPENDIX VII - Basis for Listing Hazardous Waste

EPA hazard-ous waste No.	Hazardous constituents for which listed
F001.....	Tetrachloroethylene, methylene chloride, trichloroethylene, 1,1,1-trichloroethane, carbon tetrachloride, chlorinated fluorocarbons
F002.....	Tetrachloroethylene, methylene chloride, trichloroethylene, 1,1,1-trichloroethane, chlorobenzene, 1,1,2-trichloro-1,2,2-trifluoroethane, ortho-dichlorobenzene, trichlorofluoromethane
F003.....	N.A.
F004.....	Cresols and cresylic acid, nitrobenzene
F005.....	Toluene, methyl ethyl ketone, carbon disulfide, isobutanol, pyridine
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)
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), dichloropropene, dichloropropene, 2-chloro-1,3-butadiene, hexachloro-1,3-butadiene, hexachlorocyclopentadiene, hexachlorocyclohexane, benzene, chlorobenzene, dichlorobenzenes, 1,2,4-trichlorobenzene, tetrachlorobenzene, pentachlorobenzene, hexachlorobenzene, toluene, naphthalene
K001.....	Pentachlorophenol, phenol, 2-chlorophenol, p-chloro-m-cresol, 2,4-dimethylphenyl, 2,4-dinitrophenol, trichlorophenols, tetrachlorophenols, 2,4-dinitrophenol, cresotols, chrysene, naphthalene, fluoranthene, benzo(b)fluoranthene, benzo(a)pyrene, indeno(1,2,3-cd)pyrene, benzo(a)anthracene, dibenz(a,h)anthracene, acenaphthylene
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, paraaldehyde, formic acid
K010.....	Chloroform, formaldehyde, methylene chloride, methyl chloride, paraaldehyde, formic acid, chloroacetaldehyde
K011.....	Acrylonitrile, acrylonitrile, hydrocyanic acid
K013.....	Hydrocyanic acid, acrylonitrile, acrylonitrile
K014.....	Acrylonitrile, acrylamide
K015.....	Benzyl chloride, chlorobenzene, toluene, benzoinchloride
K016.....	Hexachlorobenzene, hexachlorobutadiene, carbon tetrachloride, hexachloroethane, perchloroethylene
K017.....	Epichlorohydrin, chloroethers (bis(chloromethyl) ether and bis (2-chloroethyl) ethers), trichloropropene, dichloropropenols
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

EPA hazard-ous waste No.	Hazardous constituents for which listed
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.....	Paraaldehyde, 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.....	Cresols, chrysene, naphthalene, fluoranthene, benzo(b) fluoranthene, benzo(a)pyrene, indeno(1,2,3-cd) pyrene, benzo(a)anthracene, dibenz(a,h)anthracene, acenaphthylene
K036.....	Toluene, phosphorodithioic and phosphorothioic acid esters
K037.....	Toluene, phosphorodithioic and phosphorothioic acid esters
K038.....	Phosgene, formaldehyde, phosphorodithioic and phosphorothioic acid esters
K039.....	Phosphorodithioic and phosphorothioic acid esters
K040.....	Phosgene, formaldehyde, phosphorodithioic and phosphorothioic acid esters
K041.....	Toxaphene
K042.....	Hexachlorobenzene, ortho-dichlorobenzene
K043.....	2,4-dichlorophenol, 2,5-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
K059.....	Cyanide, naphthalene, phenolic compounds, arsenic
K061.....	Hexavalent chromium, lead, cadmium
K062.....	Hexavalent chromium, lead
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
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

APPENDIX VII - Continued

EPA hazard- ous waste No.	Hazardous constituents for which listed
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, monochlorobenzenes, dichlorobenzenes, 2,4,6-trichlorophenol.
K106.....	Mercury.

F024... Chloromethane, dichloromethane, trichloromethane, carbon tetrachloride, chloroethylene, 1,1-dichloroethane, 1,2-dichloroethane, trans-1,2-dichloroethylene, 1,1-dichloroethylene, 1,1,1-trichloroethylene, 1,1,2-trichloroethane, trichloroethylene, 1,1,1,2-tetrachloroethane, 1,1,2,2-tetrachloroethane, tetrachloroethylene, pentachloroethane, hexachloroethane, allyl chloride (3-chloropropene), dichloropropene, dichloropropene, 2-chloro-1,3-butadiene, hexachloro-1,3-butadiene, hexachlorocyclopentadiene, hexachlorocyclohexane, benzene, chlorobenzene, dichlorobenzenes, 1,2,4-trichlorobenzene, tetrachlorobenzene, pentachlorobenzene, hexachlorobenzene, toluene, naphthalene

N.A.—Waste is hazardous because it fails the test for the characteristic of ignitability, corrosivity, or reactivity.

APPENDIX VIII - Hazardous Constituents

Acetonitrile (Ethanenitrile)
Acetophenone (Ethanone, 1-phenyl)
3-(alpha-Acetylbenzyl)-4-hydroxycoumarin and salts (Warfarin)
2-Acetylaminofluorene (Acetamide, N-(9H-fluoren-2-yl)-)
Acetyl chloride (Ethanoyl chloride)
1-Acetyl-2-thiourea (Acetamide, N-(amin-othioxomethyl)-)
Acrolein (2-Propenal)
Acrylamide (2-Propenamide)
Acrylonitrile (2-Propenenitrile)
Aflatoxins
Aldrin (1,2,3,4,10,10-Hexachloro-1,4,4a,5,8,8a,8b-hexahydro-endo,exo-1,4:5,8-Dimethanonaphthalene)
Allyl alcohol (2-Propen-1-ol)
Aluminum phosphide
4-Aminobiphenyl ([1,1'-Biphenyl]-4-amine)
6-Amino-1,1a,2,8,8a,8b-hexahydro-8-(hydroxymethyl)-8a-methoxy-5-methyl-carbamate
azirino[2,3':3,4]pyrrolo[1,2-a]indole-4,7-dione, (ester) (Mitomycin C)
(Azirino[2,3':3,4]pyrrolo[1,2-a]indole-4,7-dione, 6-amino-8-(((amino-carbonyl)oxy)methyl)-1,1a,2,8,8a,8b-hexahydro-8a-methoxy-5-methyl-)

5-(Aminomethyl)-3-isoxazolol (3(2H)-Isoxazolone, 5-(aminomethyl)-) 4-Aminopyridine (4-Pyridinamine)
Amitrole (1H-1,2,4-Triazol-3-amine)
Aniline (Benzenamine)
Antimony and compounds, N.O.S.*
Aramite (Sulfurous acid, 2-chloroethyl, 2-[4-(1,1-dimethylethyl)phenoxy]-1-methylethyl ester)
Arsenic and compounds, N.O.S.*
Arsenic acid (Orthoarsenic acid)
Arsenic pentoxide (Arsenic (V) oxide)
Arsenic trioxide (Arsenic (III) oxide)
Auramine (Benzenamine, 4,4'-carbonimidoylbis[N,N-Dimethyl-, mono-hydrochloride])
Azaserine (L-Serine, diazoacetate (ester))
Barium and compounds, N.O.S.*
Barium cyanide
Benz[clacridine (3,4-Benzacridine)
Benz[a]anthracene (1,2-Benzanthracene)
Benzene (Cyclohexatriene)

* The abbreviation N.O.S. (not otherwise specified) signifies those members of the general class not specifically listed by name in this appendix.

APPENDIX VIII - Hazardous Constituents, Continued

Benzenearsonic acid (Arsonic acid, phenyl-)
Benzene, dichloromethyl- (Benzal chloride)
Benzenethiol (Thiophenol)
Benzidine ([1,1'-Biphenyl]-4,4'-diamine)
Benzo[b]fluoranthene (2,3-Benzofluoranthene)
Benzo[j]fluoranthene (7,8-Benzofluoranthene)
Benzofluoranthene (3,4-Benzofluoranthene)
p-Benzoquinone (1,4-Cyclohexadienedione)
Benzotrithloride (Benzene, trichloromethyl)
Benzyl chloride (Benzene, (chloromethyl)-)
Beryllium and compounds, N.O.S.*
Bis(2-chloroethoxy)methane (Ethane, 1,1'-[methylenebis(oxy)]bis(2-chloro-))
Bis(2-chloroethyl) ether (Ethane, 1,1'-oxybis(2-chloro-))
N,N-Bis(2-chloroethyl)-2-naphthylamine (Chloronaphazine)
Bis(2-chloroisopropyl) ether (Propane, 2,2'-oxybis(2-chloro-))
Bis(chloromethyl) ether (Methane, oxybis(chloro-))
Bis(2-ethylhexyl) phthalate (1,2-Benzenedicarboxylic acid, bis(2-ethylhexyl) ester)
Bromoacetone (2-Propanone, 1-bromo-)
Bromomethane (Methyl bromide)
4-Bromophenyl phenyl ether (Benzene, 1-bromo-4-phenoxy-)
Brucine (Strychnidin-10-one, 2,3-dimethoxy-)
2-Butanone peroxide (Methyl ethyl ketone, peroxide)
Butyl benzyl phthalate (1,2-Benzenedicarboxylic acid, butyl phenylmethyl ester)
2-sec-Butyl-4,6-dinitrophenol (DNBP) (Phenol, 2,4-dinitro-6-(1-methylpropyl)-)
Cadmium and compounds, N.O.S.*
Calcium chromate (Chromic acid, calcium salt)
Calcium cyanide
Carbon disulfide (Carbon bisulfide)
Carbon oxyfluoride (Carbonyl fluoride)
Chloral (Acetaldehyde, trichloro-)
Chlorambucil (Butanoic acid, 4-[bis(2-chloroethyl)amino]benzene-)
Chlordane (alpha and gamma isomers) (4,7-Methanoindan, 1,2,4,5,6,7,8-octachloro-3,4,7,7a-tetrahydro-) (alpha and gamma isomers)
Chlorinated benzenes, N.O.S.*
Chlorinated ethane, N.O.S.*
Chlorinated fluorocarbons, N.O.S.*
Chlorinated naphthalene, N.O.S.*
Chlorinated phenol, N.O.S.*
Chloroacetaldehyde (Acetaldehyde, chloro-)
Chloroalkyl ethers, N.O.S.*
p-Chloroaniline (Benzenamine, 4-chloro-)
Chlorobenzene (Benzene, chloro-)
Chlorobenzilate (Benzenecetic acid, 4-chloro-alpha-(4-chlorophenyl)-alpha-hydroxy-, ethyl ester)
2-Chloro-1,3-butadiene (chloroprene)
p-Chloro-m-cresol (Phenol, 4-chloro-3-methyl)
1-Chloro-2,3-epoxypropane (Oxirane, 2-(chloromethyl)-)
2-Chloroethyl vinyl ether (Ethene, (2-chloroethoxy)-)
Chloroform (Methane, trichloro-)
Chloromethane (Methyl chloride)
Chloromethyl methyl ether (Methane, chloromethoxy-)
2-Chloronaphthalene (Naphthalene, beta-chloro-)
2-Chlorophenol (Phenol, o-chloro-)
1-(o-Chlorophenyl)thiourea (Thiourea, (2-chlorophenyl)-)
3-Chloropropene (allyl chloride)
3-Chloropropionitrile (Propanenitrile, 3-chloro-)
Chromium and compounds, N.O.S.*
Chrysene (1,2-Benzphenanthrene)
Citrus red No. 2 (2-Naphthol, 1-[(2,5-dimethoxyphenyl)azo]-)
Coal tars
Copper cyanide
Creosote (Creosote, wood)
Cresols (Cresylic acid) (Phenol, methyl-)
Crotonaldehyde (2-Butenal)
Cyanides (soluble salts and complexes), N.O.S.*
Cyanogen (Ethanedinitrile)
Cyanogen bromide (Bromine cyanide)
Cyanogen chloride (Chlorine cyanide)
Cycasin (beta-D-Glucopyranoside, (methyl-ONN-azoxy)methyl-)
2-Cyclohexyl-4,6-dinitrophenol (Phenol, 2-cyclohexyl-4,6-dinitro-)
Cyclophosphamide (2H-1,3,2-Oxazaphosphorine, [bis(2-chloroethyl)amino]-tetrahydro-, 2-oxide)
Daunomycin (5,12-Naphthacenedione, (8S-cis)-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-)
DDD (Dichlorodiphenyldichloroethane) (Ethane, 1,1-dichloro-2,2-bis(p-chlorophenyl)-)
DDE (Ethylene, 1,1-dichloro-2,2-bis(4-chlorophenyl)-)
DDT (Dichlorodiphenyltrichloroethane) (Ethane, 1,1,1-trichloro-2,2-bis(p-chlorophenyl)-)
Diallate (S-(2,3-dichloroallyl) diisopropylthiocarbamate)
Dibenz[a,h]acridine (1,2,5,6-Dibenzacridine)
Dibenz[a,j]acridine (1,2,7,8-Dibenzacridine)
Dibenz[a,h]anthracene (1,2,5,6-Dibenzanthracene)
7H-Dibenzo[c,g]carbazole (3,4,5,6-Dibenzcarbazole)
Dibenzo[a,e]pyrene (1,2,4,5-Dibenzpyrene)
Dibenzo[a,h]pyrene (1,2,5,6-Dibenzpyrene)
Dibenzo[a,i]pyrene (1,2,7,8-Dibenzpyrene)
1,2-Dibromo-3-chloropropane (Propane, 1,2-dibromo-3-chloro-)
1,2-Dibromoethane (Ethylene dibromide)
Dibromomethane (Methylene bromide)
Di-n-butyl phthalate (1,2-Benzenedicarboxylic acid, dibutyl ester)
o-Dichlorobenzene (Benzene, 1,2-dichloro-)
m-Dichlorobenzene (Benzene, 1,3-dichloro-)
p-Dichlorobenzene (Benzene, 1,4-dichloro-)
Dichlorobenzene, N.O.S.* (Benzene, dichloro-, N.O.S.*)
3,3'-Dichlorobenzidine ([1,1'-Biphenyl]-4,4'-diamine, 3,3'-dichloro-)

APPENDIX VIII - Hazardous Constituents, Continued

- 1,4-Dichloro-2-butene (2-Butene, 1,4-dichloro-)
Dichlorodifluoromethane (Methane, dichlorodifluoro-)
1,1-Dichloroethane (Ethylidene dichloride)
1,2-Dichloroethane (Ethylene dichloride)
trans-1,2-Dichloroethene (1,2-Dichloroethylene)
Dichloroethylene, N.O.S.* (Ethene, dichloro-, N.O.S.*)
1,1-Dichloroethylene (Ethene, 1,1-dichloro-)
Dichloromethane (Methylene chloride)
2,4-Dichlorophenol (Phenol, 2,4-dichloro-)
2,6-Dichlorophenol (Phenol, 2,6-dichloro-)
2,4-Dichlorophenoxyacetic acid (2,4-D), salts and esters (Acetic acid, 2,4-dichlorophenoxy-, salts and esters)
Dichlorophenylarsine (Phenyl dichloroarsine)
Dichloropropane, N.O.S.* (Propane, dichloro-, N.O.S.*)
1,2-Dichloropropane (Propylene dichloride)
Dichloropropanol, N.O.S.* (Propanol, dichloro-, N.O.S.*)
Dichloropropene, N.O.S.* (Propene, dichloro-, N.O.S.*)
1,3-Dichloropropene (1-Propene, 1,3-dichloro-)
Dieldrin (1,2,3,4,10,10-hexachloro-6,7-epoxy-1,4,4a,5,6,7,8,8a-octa-hydro-endo-exo-1,4:5,8-Dimethanonaphthalene)
1,2:3,4-Diepoxybutane (2,2'-Bioxirane)
Diethylarsine (Arsine, diethyl-)
N,N-Diethylhydrazine (Hydrazine, 1,2-diethyl-)
O,O-Diethyl S-methyl ester of phosphorodithioic acid (Phosphorodithioic acid, O,O-diethyl S-methyl ester)
O,O-Diethylphosphoric acid, O-p-nitrophenyl ester (Phosphoric acid, diethyl p-nitrophenyl ester)
Diethyl phthalate (1,2-Benzenedicarboxylic acid, diethyl ester)
O,O-Diethyl O-2-pyrazinyl phosphorothioate (Phosphorothioic acid, O,O-diethyl O-pyrazinyl ester)
Diethylstilbesterol (4,4'-Stilbenediol, alpha,alpha-diethyl, bis(dihydrogen phosphate, (E)-)
Dihydrosaftrole (Benzene, 1,2-methylene-dioxy-4-propyl-)
3,4-Dihydroxy-alpha-(methylamino)methyl benzyl alcohol (1,2-Benzenediol, 4-[(1-hydroxy-2-(methylamino)ethyl)-]
Diisopropylfluorophosphate (DPP) (Phosphorofluoric acid, bis(1-methylethyl) ester)
Dimethoate (Phosphorodithioic acid, O,O-dimethyl S-[2-(methylamino)-2-oxoethyl] ester)
3,3'-Dimethoxybenzidine ([1,1'-Biphenyl]-4,4'-diamine, 3,3'-dimethoxy-)
p-Dimethylaminoazobenzene (Benzenamine, N,N-dimethyl-4-(phenylazo)-)
7,12-Dimethylbenz[*a*]anthracene (1,2-Benzanthracene, 7,12-dimethyl-)
3,3'-Dimethylbenzidine ([1,1'-Biphenyl]-4,4'-diamine, 3,3'-dimethyl-)
Dimethylcarbamoyl chloride (Carbamoyl chloride, dimethyl-)
1,1-Dimethylhydrazine (Hydrazine, 1,1-dimethyl-)
1,2-Dimethylhydrazine (Hydrazine, 1,2-dimethyl-)
3,3-Dimethyl-1-(methylthio)-2-butanone, O-[(methylamino) carbonyl]oxime (Thiofanox)
alpha,alpha-Dimethylphenethylamine (Eth-anamine, 1,1-dimethyl-2-phenyl-)
2,4-Dimethylphenol (Phenol, 2,4-dimethyl-)
Dimethyl phthalate (1,2-Benzenedicarboxylic acid, dimethyl ester)
Dimethyl sulfate (Sulfuric acid, dimethyl ester)
Dinitrobenzene, N.O.S.* (Benzene, dinitro-, N.O.S.*)
4,6-Dinitro-o-cresol and salts (Phenol, 2,4-dinitro-6-methyl-, and salts)
2,4-Dinitrophenol (Phenol, 2,4-dinitro-)
2,4-Dinitrotoluene (Benzene, 1-methyl-2,4-dinitro-)
2,6-Dinitrotoluene (Benzene, 1-methyl-2,6-dinitro-)
Di-n-octyl phthalate (1,2-Benzenedicarboxylic acid, dioctyl ester)
1,4-Dioxane (1,4-Diethylene oxide)
Diphenylamine (Benzenamine, N-phenyl-)
1,2-Diphenylhydrazine (Hydrazine, 1,2-diphenyl-)
Di-n-propylnitrosamine (N-Nitroso-di-n-propylamine)
Disulfoton (O,O-diethyl S-[2-(ethylthio)ethyl] phosphorodithioate)
2,4-Dithiobiuret (Thioimidodicarbonic diamide)
Endosulfan (5-Norbornene, 2,3-dimethanol, 1,4,5,6,7,7-hexachloro-, cyclic sulfite)
Endrin and metabolites (1,2,3,4,10,10-hexachloro-6,7-epoxy-1,4,4a,5,6,7,8,8a-octahydro-endo,endo-1,4:5,8-dimethanonaphthalene, and metabolites)
Ethyl carbamate (Urethan) (Carbamic acid, ethyl ester)
Ethyl cyanide (propanenitrile)
Ethylenebisdithiocarbamic acid, salts and esters (1,2-Ethanedithyldithiocarbamodithioic acid, salts and esters)
Ethyleneimine (Aziridine)
Ethylene oxide (Oxirane)
Ethylenethiourea (2-Imidazolidinethione)
Ethyl methacrylate (2-Propenoic acid, 2-methyl-, ethyl ester)
Ethyl methanesulfonate (Methanesulfonic acid, ethyl ester)
Fluoranthene (Benz[*a*],*k*]fluorene)
Fluorine
2-Fluoroacetamide (Acetamide, 2-fluoro-)
Fluoroacetic acid, sodium salt (Acetic acid, fluoro-, sodium salt)
Formaldehyde (Methylene oxide)
Formic acid (Methanoic acid)
Glycidylaldehyde (1-Propanol-2,3-epoxy)
Halomethane, N.O.S.*
Heptachlor (4,7-Methano-1H-indene, 1,4,5,6,7,8,8-heptachloro-3a,4,7,7a-tetrahydro-)

APPENDIX VIII - Hazardous Constituents, Continued

Heptachlor epoxide (alpha, beta, and gamma isomers) (4,7-Methano-1H-indene, 1,4,5,6,7,8,8-heptachloro-2,3-epoxy-3a,4,7,7-tetrahydro-, alpha, beta, and gamma isomers)
Hexachlorobenzene (Benzene, hexachloro-)
Hexachlorobutadiene (1,3-Butadiene, 1,1,2,3,4,4-hexachloro-)
Hexachlorocyclohexane (all isomers) (Lindane and isomers)
Hexachlorocyclopentadiene (1,3-Cyclopentadiene, 1,2,3,4,5,5-hexachloro-)
Hexachloroethane (Ethane, 1,1,1,2,2,2-hexachloro-)
1,2,3,4,10,10-Hexachloro-1,4,4a,5,8,8a-hexahydro-1,4:5,8-endo,endo-dimethanonaphthalene (Hexachlorohexahydro-endo,endo-dimethanonaphthalene)
Hexachlorophene (2,2-Methylenebis(3,4,6-trichlorophenol))
Hexachloropropene (1-Propene, 1,1,2,3,3,3-hexachloro-)
Hexaethyl tetraphosphate (Tetraphosphoric acid, hexaethyl ester)
Hydrazine (Diamine)
Hydrocyanic acid (Hydrogen cyanide)
Hydrofluoric acid (Hydrogen fluoride)
Hydrogen sulfide (Sulfur hydride)
Hydroxydimethylarsine oxide (Cacodylic acid)
Indeno(1,2,3-cd)pyrene (1,10-(1,2-phenylene)pyrene)
Iodomethane (Methyl iodide)
Iron dextran (Ferric dextran)
Isocyanic acid, methyl ester (Methyl isocyanate)
Isobutyl alcohol (1-Propanol, 2-methyl-)
Isosafrole (Benzene, 1,2-methylenedioxy-4-allyl-)
Kepone (Decachlorooctahydro-1,3,4-Methano-2H-cyclobuta[cd]pentalen-2-one)
Lasiocarpine (2-Butenoic acid, 3-methyl-, 7-[(2,3-dihydroxy-2-(1-methoxyethyl)-3-methyl-1-oxobutoxy)methyl]-2,3,5,7a-tetrahydro-1H-pyrolizin-1-yl ester)
Lead and compounds, N.O.S.*
Lead acetate (Acetic acid, lead salt)
Lead phosphate (Phosphoric acid, lead salt)
Lead subacetate (Lead, bis(acetato-O))tetrahydroxytri-)
Maleic anhydride (2,5-Furandione)
Maleic hydrazide (1,2-Dihydro-3,6-pyridazinedione)
Malononitrile (Propanedinitrile)
Melfalan (Alanine, 3-[p-bis(2-chloroethyl)aminophenyl-, L-)
Mercury fulminate (Fulminic acid, mercury salt)
Mercury and compounds, N.O.S.*
Methacrylonitrile (2-Propenenitrile, 2-methyl-)
Methanethiol (Thiomethanol)
Methapyrilene (Pyridine, 2-[(2-dimethylamino)ethyl]-2-thenylamino-)
Metholmyl (Acetimidic acid, N-[(methylcarbamoyl)oxylthio-, methyl ester)
Methoxychlor (Ethane, 1,1,1-trichloro-2,2-bis(p-methoxyphenyl)-)
2-Methylaziridine (1,2-Propylenimine)
3-Methylcholanthrene (Benz[il]aceanthrylene, 1,2-dihydro-3-methyl-)
Methyl chlorocarbonate (Carbonochloridic acid, methyl ester)
4,4'-Methylenebis(2-chloroaniline) (Benzenamine, 4,4'-methylenebis(2-chloro-)
Methyl ethyl ketone (MEK) (2-Butanone)
Methyl hydrazine (Hydrazine, methyl-)
2-Methylactonitrile (Propanenitrile, 2-hydroxy-2-methyl-)
Methyl methacrylate (2-Propenoic acid, 2-methyl-, methyl ester)
Methyl methanesulfonate (Methanesulfonic acid, methyl ester)
2-Methyl-2-(methylthio)propionaldehyde-O-(methylcarbonyl) oxime (Propanal, 2-methyl-2-(methylthio)-, O-[(methylamino)carbonyl]oxime)
N-Methyl-N'-nitro-N-nitrosoguanidine (Guanidine, N-nitroso-N-methyl-N'-nitro-)
Methyl parathion (O,O-dimethyl O-(4-nitrophenyl) phosphorothioate)
Methylthiouracil (4-1H-Pyrimidinone, 2,3-dihydro-6-methyl-2-thioxo-)
Mustard gas (Sulfide, bis(2-chloroethyl)-)
Naphthalene
1,4-Naphthoquinone (1,4-Naphthalenedione)
1-Naphthylamine (alpha-Naphthylamine)
2-Naphthylamine (beta-Naphthylamine)
1-Naphthyl-2-thiourea (Thiourea, 1-naphthalenyl-)
Nickel and compounds, N.O.S.*
Nickel carbonyl (Nickel tetracarbonyl)
Nickel cyanide (Nickel (II) cyanide)
Nicotine and salts (Pyridine, (S)-3-(1-methyl-2-pyrrolidinyl)-, and salts)
Nitric oxide (Nitrogen (II) oxide)
p-Nitroaniline (Benzenamine, 4-nitro-)
Nitrobenzene (Benzene, nitro-)
Nitrogen dioxide (Nitrogen (IV) oxide)
Nitrogen mustard and hydrochloride salt (Ethanamine, 2-chloro-, N-(2-chloroethyl)-N-methyl-, and hydrochloride salt)
Nitrogen mustard N-Oxide and hydrochloride salt (Ethanamine, 2-chloro-, N-(2-chloroethyl)-N-methyl-, and hydrochloride salt)
Nitroglycerine (1,2,3-Propanetriol, trinitrate)
4-Nitrophenol (Phenol, 4-nitro-)
4-Nitroquinoline-1-oxide (Quinoline, 4-nitro-1-oxide-)
Nitrosamine, N.O.S.*
N-Nitrosodi-n-butylamine (1-Butanamine, N-butyl-N-nitroso-)
N-Nitrosodiethanolamine (Ethanol, 2,2'-(nitrosolmino)bis-)
N-Nitrosodiethylamine (Ethanamine, N-ethyl-N-nitroso-)
N-Nitrosodimethylamine (Dimethylnitrosamine)
N-Nitroso-N-ethylurea (Carbamide, N-ethyl-N-nitroso-)
N-Nitrosomethylethylamine (Ethanamine, N-methyl-N-nitroso-)
N-Nitroso-N-methylurea (Carbamide, N-methyl-N-nitroso-)

APPENDIX VIII - Hazardous Constituents, Continued

N-Nitroso-N-methylurethane (Carbamic acid, methylnitroso-, ethyl ester)
N-Nitrosomethylvinylamine (Ethenamine, N-methyl-N-nitroso-)
N-Nitrosomorpholine (Morpholine, N-nitroso-)
N-Nitrososarcosine (Sarcosine, N-nitroso-)
N-Nitrosopiperidine (Pyridine, hexahydro-, N-nitroso-)
Nitrosopyrrolidine (Pyrrole, tetrahydro-, N-nitroso-)
N-Nitrososarcosine (Sarcosine, N-nitroso-)
5-Nitro-o-toluidine (Benzenamine, 2-methyl-5-nitro-)
Octamethylpyrophosphoramide (Diphosphoramide, octamethyl-)
Osmium tetroxide (Osmium (VIII) oxide)
7-Oxabicyclo[2.2.1]heptane-2,3-dicarboxylic acid (Endothal)
Paraldehyde (1,3,5-Trioxane, 2,4,6-trimethyl-)
Parathion (Phosphorothioic acid, O,O-diethyl O-(p-nitrophenyl) ester)
Pentachlorobenzene (Benzene, pentachloro-)
Pentachloroethane (Ethane, pentachloro-)
Pentachloronitrobenzene (PCNB) (Benzene, pentachloronitro-)
Pentachlorophenol (Phenol, pentachloro-)
Phenacetin (Acetamide, N-(4-ethoxyphenyl)-)
Phenol (Benzene, hydroxy-)
Phenylenediamine (Benzenediamine)
Phenylmercury acetate (Mercury, acetatophenyl-)
N-Phenylthiourea (Thiourea, phenyl-)
Phosgene (Carbonyl chloride)
Phosphine (Hydrogen phosphide)
Phosphorodithioic acid, O,O-diethyl S-[(ethylthio)methyl] ester (Phorate)
Phosphorothioic acid, O,O-dimethyl O-[p-[(dimethylamino)sulfonyl]phenyl] ester (Famphur)
Phthalic acid esters, N.O.S.* (Benzene, 1,2-dicarboxylic acid, esters, N.O.S.*)
Phthalic anhydride (1,2-Benzenedicarboxylic acid anhydride)
2-Picoline (Pyridine, 2-methyl-)
Polychlorinated biphenyl, N.O.S.*
Potassium cyanide
Potassium silver cyanide (Argentate(1-), dicyano-, potassium)
Pronamide (3,5-Dichloro-N-(1,1-dimethyl-2-propynyl)benzamide)
1,3-Propane sultone (1,2-Oxathiolane, 2,2-dioxide)
n-Propylamine (1-Propanamine)
Propylthiouracil (Undecamethylenediamine, N,N'-bis(2-chlorobenzyl)-, dihydrochloride)
2-Propyn-1-ol (Propargyl alcohol)
Pyridine
Reserpine (Yohimban-16-carboxylic acid, 11,17-dimethoxy-18-[(3,4,5-trimethoxybenzoyl)oxy]-, methyl ester)
Resorcinol (1,3-Benzenediol)
Saccharin and salts (1,2-Benzisothiazolin-3-one, 1,1-dioxide, and salts)
Safrole (Benzene, 1,2-methylenedioxy-4-allyl-)

Selenious acid (Selenium dioxide)
Selenium and compounds, N.O.S.*
Selenium sulfide (Sulfur selenide)
Selenourea (Carbamimidoseleonic acid)
Silver and compounds, N.O.S.*
Silver cyanide
Sodium cyanide
Streptozotocin (D-Glucopyranose, 2-deoxy-2-(3-methyl-3-nitrosoureido)-)
Strontium sulfide
Strychnine and salts (Strychnidin-10-one, and salts)
1,2,4,5-Tetrachlorobenzene (Benzene, 1,2,4,5-tetrachloro-)
2,3,7,8-Tetrachlorodibenzo-p-dioxin (TCDD) (Dibenzo-p-dioxin, 2,3,7,8-tetrachloro-)
Tetrachloroethane, N.O.S.* (Ethane, tetrachloro-, N.O.S.*)
1,1,1,2-Tetrachloroethane (Ethane, 1,1,1,2-tetrachloro-)
1,1,2,2-Tetrachloroethane (Ethane, 1,1,2,2-tetrachloro-)
Tetrachloroethane (Ethene, 1,1,2,2-tetrachloro-)
Tetrachloromethane (Carbon tetrachloride)
2,3,4,6-Tetrachlorophenol (Phenol, 2,3,4,6-tetrachloro-)
Tetraethyldithiopyrophosphate (Dithiopyrophosphoric acid, tetraethyl-ester)
Tetraethyl lead (Plumbane, tetraethyl-)
Tetraethylpyrophosphate (Pyrophosphoric acid, tetraethyl ester)
Tetranitromethane (Methane, tetranitro-)
Thallium and compounds, N.O.S.*
Thallic oxide (Thallium (III) oxide)
Thallium (I) acetate (Acetic acid, thallium (I) salt)
Thallium (I) carbonate (Carbonic acid, dithallium (I) salt)
Thallium (I) chloride
Thallium (I) nitrate (Nitric acid, thallium (I) salt)
Thallium selenite
Thallium (I) sulfate (Sulfuric acid, thallium (I) salt)
Thioacetamide (Ethanethioamide)
Thiosemicarbazide (Hydrazinecarbothioamide)
Thiourea (Carbamide thio-)
Thiuram (Bis(dimethylthiocarbamoyl) disulfide)
Toluene (Benzene, methyl-)
Toluenediamine (Diaminotoluene)
o-Toluidine hydrochloride (Benzenamine, 2-methyl-, hydrochloride)
Tolylene diisocyanate (Benzene, 1,3-diisocyanatomethyl-)
Toxaphene (Camphene, octachloro-)
Tribromomethane (Bromoform)
1,2,4-Trichlorobenzene (Benzene, 1,2,4-trichloro-)
1,1,1-Trichloroethane (Methyl chloroform)
1,1,2-Trichloroethane (Ethane, 1,1,2-trichloro-)
Trichloroethene (Trichloroethylene)
Trichloromethanethiol (Methanethiol, trichloro-)
Trichloromonofluoromethane (Methane, trichlorofluoro-)
2,4,5-Trichlorophenol (Phenol, 2,4,5-trichloro-)

APPENDIX VIII - Hazardous Constituents, Continued

2,4,6-Trichlorophenol (Phenol, 2,4,6-trichloro-)
2,4,5-Trichlorophenoxyacetic acid (2,4,5-T)
(Acetic acid, 2,4,5-trichlorophenoxy-)
2,4,5-Trichlorophenoxypropionic acid (2,4,5-TP) (Silvex) (Propionic acid, 2-(2,4,5-trichlorophenoxy-))
Trichloropropane, N.O.S.* (Propane, trichloro-, N.O.S.*)
1,2,3-Trichloropropane (Propane, 1,2,3-trichloro-)
O,O,O-Triethyl phosphorothioate (Phosphorothioic acid, O,O,O-triethyl ester)
sym-Trinitrobenzene (Benzene, 1,3,5-trinitro-)
Tris(1-aziridinyl) phosphine sulfide (Phosphine sulfide, tris(1-aziridinyl-))
Tris(2,3-dibromopropyl) phosphate (1-Propanol, 2,3-dibromo-, phosphate)
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)
Uracil mustard (Uracil, 5-[bis(2-chloroethyl)aminol-])
Vanadic acid, ammonium salt (ammonium vanadate)
Vanadium pentoxide (Vanadium (V) oxide)
Vinyl chloride (Ethene, chloro-)
Zinc cyanide
Zinc phosphide

Section 4. Notification of Hazardous Waste Activity Regulations

4.1 General

4.1.a 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.b Any person as described in paragraph (a) that has notified the EPA or is subject to the requirements to notify EPA as specified in Volume 45, No. 39 of the Federal Register, dated February 26, 1980, pages 12746 through 12754 is subject to the provisions of this section.

4.1.c The purpose of this section 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 paragraph (b) of these regulations and to assure that all persons who did not notify EPA as described in paragraph (b) of these regulations or all who initiated hazardous waste activities subsequent to the requirements of EPA as referenced above in paragraph (b), shall notify the Chief of their hazardous waste activities.

4.2 Notification

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

4.2.b Any person involved in hazardous waste activities that did not comply with the notification requirements of EPA, as referenced above in Section 4.1, 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.c Any person exempted from the federal notification requirements but subject to West Virginia notification requirements as specified in 3.1.4 and 3.1.5 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.d One (1) notification form is required for each generator.

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

4.2.g New generators and those initiating activities subsequent to EPA notification period referenced in paragraph 4.1.(b) the 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.

Section 5. Standards Applicable to Transporters of Hazardous
Waste by Air and/or Water

The Director hereby adopts and incorporates by reference 40 CFR Part 263, as published in the Code of Federal Regulations on the effective date of these regulations insofar as such regulations relate to the transportation of hazardous waste by air and water.

Whenever the term Administrator or Regional Administrator is used, the term shall have the meaning of the Director of the Department of Natural Resources.

Section 6. Standards Applicable to Generators of Hazardous Waste

6.1 Purpose, Scope and Applicability

6.1.a This section establishes standards and regulations for generators of hazardous wastes.

6.1.a.1 Generators that generate more than 1000 kilograms of hazardous waste, identified or listed in Section 3 of these regulations, in any calendar month or who generate acutely hazardous waste in quantities greater than the amounts listed in 3.1.4.e are subject to all sections of these regulations, except as otherwise provided in Section 6 of these regulations.

6.1.a.2 Small quantity generators that generate between 100 and 1000 kilograms of hazardous waste, identified or listed in Section 3 of these regulations, in any calendar month are subject to the requirements of Section 6 listed in Section 3.1.4(j) of these regulations.

6.1.b A generator who treats, stores, or disposes of hazardous waste on-site must only comply with the following subsections of this Section with respect to that waste: 6.1.1 for determining whether his waste is hazardous; 6.1.2 for obtaining an EPA identification number; 6.4.1(c) and (d) for recordkeeping; 6.4.4 for additional reporting; and, if applicable, 6.5.2 for farmers; and 6.3.5 for accumulation of hazardous waste.

6.1.c Any person who imports hazardous waste into West Virginia shall comply with the standards applicable to generators established in this section.

6.1.d A farmer who generates waste pesticides which are hazardous wastes and who complies with all the requirements of Section 6.5.2 is not required to comply with the remainder of these regulations with respect to such pesticides.

6.1.e A person who generates a hazardous waste, as defined in Section 3 is subject to the compliance requirements and penalties prescribed in Sections 14, 15 and 16 of the Hazardous Waste Management Act if he does not comply with the requirements of this section.

6.1.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 this section.

6.1.1 Hazardous Waste Determination

A person who generates a waste, as defined in Section 3.1.1, shall determine if that waste is a hazardous waste using the following method:

6.1.1.a He shall first determine if the waste is excluded from regulation under Section 3.1.3.

6.1.1.b He shall then determine if the waste is listed as hazardous waste in Section 3.4. (Note: Even if the waste is listed, the generator still has an opportunity under 40 C.F.R. 260.22 of the federal regulations to demonstrate that the waste from his particular facility or operation is not a hazardous waste.)

6.1.1.c If the waste is not listed as a hazardous waste in Section 3.4, the generator shall determine whether the waste is identified in Section 3.3 by either:

6.1.1.c.1 Testing the waste according to the methods set forth in Section 3.3, or according to an equivalent method; or

6.1.1.c.2 Applying knowledge of the hazard characteristics of the waste in light of the materials or the processes used.

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

6.1.2 EPA Identification Numbers.

6.1.2.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.

6.1.2.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.

6.1.2.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 on EPA form 8700-22, and, if necessary, EPA form 8700-22A, according to the requirements adopted in Appendix I of this section.

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 Beginning on September 1, 1985, and thereafter, generators shall insert on the manifest, at item 16 "Generator Certification", in addition to the certification which already exists at item 16, the following waste minimization certification:

"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.

6.2.2 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 the 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 is of at least the number of copies which will provide the generator, each transporter, and the owner or operator of the designated facility with one copy for their records and another copy to be returned to the generator.

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, and

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

6.2.4.a.3 Retain one copy, in accordance with section 6.4.1.a.

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 copies of the manifest dated and signed in accordance with this section 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 copies of the manifest dated and signed in accordance with this Section to:

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

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

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

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 Department of Transportation (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 package the waste in accordance with the applicable Department of Transportation (DOT)

regulations on packaging 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 Department of Transportation regulation 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 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: "HAZARDOUS WASTE" - Federal Law Prohibits Improper Disposal. If found, contact the nearest police or public safety authority or the U.S. Environmental Protection Agency.

Generator's name and address _____.

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 Department of Transportation regulations for hazardous materials under 49 C.F.R. Part 172, Subpart F.

6.3.5 Accumulation Time

6.3.5.a 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 either in containers which meet the standards of Section 6.3.1 and are managed in accordance with 40 CFR Part 265 Subpart I, or in tanks, and the generator complies with Subpart J of 40 C.F.R. Part 265 except 265.193;

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;

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 in 40 C.F.R. Part 265 and with 265.16;

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 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 Director if hazardous wastes must remain on-site for longer than 90 days due to unforeseen, temporary, and uncontrollable circumstances. An extension of up to 30 days may be granted at the discretion of the Director on a case-by-case basis. Before the end of ninety (90) days, or any extension period granted by the Director (not to exceed thirty 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 11.00 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 55 gallons of hazardous waste or one quart of acutely hazardous waste listed in Section 3.4.4(e) 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 paragraph (a) of this section, provided he:

6.3.5.c.1.i Complies with 40 CFR Sections 265.171, 265.172, and 265.173(a) of the federal regulations; and

6.3.5.c.1.ii 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 3.4.4.e of these regulations in excess of the amounts listed in paragraph (c)(1) of this section at or near any point of generation must, with respect to that amount of excess waste, comply within three (3) days with paragraph (a) of this section or other applicable provisions of these regulations. During the three day period the generator must continue to comply with paragraphs (c)(1)(i)-(ii) of this section. 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 Recordkeeping and Reporting

6.4.1 Recordkeeping

6.4.1.a A generator shall keep a copy of each manifest signed in

accordance with 6.2.4(a) for three years or until he receives a signed copy from the designated facility which received the waste. This signed copy must be retained as a record for at least three years from the date the waste was accepted by the initial transporter.

6.4.1.b A generator shall keep a copy of each Annual Report and Exception Report for a period of at least three years from the due date of the report.

6.4.1.c A generator shall keep records of any test results, waste analyses, or other determinations made in accordance with 6.1.1 for at least three 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 this section 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 Reporting

6.4.2.a A generator who ships hazardous waste off-site shall submit an Annual Report to the Chief on a form prescribed by him, no later than March 1 for the preceding calendar year. Such report must include, at least, the following information:

- (1) The EPA identification number, name, and address of the generator;
- (2) The calendar year covered by the report;
- (3) The EPA identification number, name, and address for each off-site treatment, storage, or disposal facility to which waste was shipped during the year; for exported shipments, the report must give the name and address of the foreign facility.
- (4) The name and EPA identification number of each transporter used during the reporting year.
- (5) A description, EPA hazardous waste number (from 40 CFR Part 261, Subpart C or D), 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) A description of the efforts undertaken during the year to reduce the volume and toxicity of waste generated.
- (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.

(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 an Annual Report covering those wastes in accordance with the provisions of Sections 8.00 and 11.00 of these regulations, and 40 C.F.R. Part 265.

6.4.3 Exception Reporting

6.4.3.a A generator, who does not receive a copy of the manifest with the handwritten signature of the owner or operator of the facility within 35 days of the date the waste was accepted by the initial transporter, shall contact the transporter and/or the owner or operator of the designated facility to determine the status of the hazardous waste.

6.4.3.b A generator 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.

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. Section 271.128(b)(8).

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.

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 CFR Part 262 and this section.

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

6.5.1.b.1 Notify the chief and the EPA administrator in writing four 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 Department of Transportation 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 Office of International Activities (A-106), U.S. Environmental Protection Agency, Washington, D.C. 20460, and one copy to the Chief, Division of Water Resources.

6.5.1.b.3 Require that the foreign consignee conform 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 for the manifest, except that:

6.5.1.b.4.ii 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.ii 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 45 days from the date it was accepted by the initial transporter; or

6.5.1.c.2 Within 90 days from the date the waste was accepted by the initial transporter, the generator has not received written 6.5.1.c.2 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 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.

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 this section or other standards in Section 8, 11 or 12, or 40 C.F.R. Part 265, for those wastes, provided he triple rinses each emptied pesticide container in accordance with Section 3.1.6 (b)(3) and disposes of the pesticide residues on his own farm in a manner consistent with the disposal instructions on the pesticide label.

APPENDIX I

The Director hereby adopts and incorporates by reference 40 CFR Part 262, Appendix - Uniform Hazardous Waste Manifest and instructions, as published in the Federal Register on July 15, 1985 (attached).

Wherever the term Administrator or Regional Administrator is used, the term shall have the meaning of the Director of the Department of Natural Resources.

Wherever the term Environmental Protection Agency or EPA is used, the term shall have the meaning of the West Virginia Department of Natural Resources.

APPENDIX

Please print or type. (Form designed for use on 8 1/2 inch typewriter)

Form Approved OMB No. 2000-0404 Expires 7-31-95

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	
4. Generator's Phone ()				B. State Generator ID	
5. Transporter 1 Company Name	6. US EPA ID Number			C. State Transporter ID	
7. Transporter 2 Company Name	8. US EPA ID Number			D. Transporter 2 State ID	
9. Designated Facility Name and Site Address	10. US EPA ID Number			E. State Facility ID	
				F. Facility Phone	
				G. State Facility ID	
				H. Facility 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
a.					
b.					
c.					
d.					
15. Special Handling Instructions and Additional Information					
16. GENERATOR'S CERTIFICATION: I hereby declare that the contents of this consignment 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.					
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.					
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 box					
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	

EPA Form 8700-22 (Rev. 4-85) Previous edition is obsolete.

BILLING CODE 6560-50-C

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Dept. of Nat. Res.
Leg. Rule, 20-5E
Series XV, Section 7

Section 7. (Reserved)

Section 8. Standards for owners and operators of Hazardous Waste Treatment, Storage and Disposal Facilities

8.1 General, Purpose, Scope and Applicability

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

8.1.2 The standards in this section apply to owners and operators of all facilities which treat, store, or dispose of hazardous waste except as Section 8.1.5 provides otherwise. In addition to the standards in this section, the regulations of the Air Pollution Control Commission, Series 25 - "To Prevent and Control Air Pollution from Hazardous Waste Treatment, Storage or Disposal Facilities" apply to management facilities which may emit hazardous waste or the constituents thereof to the atmosphere including incineration facilities except as 8.1.5 provides otherwise. For purposes of this section 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 2.00 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 this section 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 this section under the Underground Injection Control Program established pursuant to the Water Pollution Control Act, W. Va. Code §20-5A, et seq.

8.1.4 The requirements of this section 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.

8.1.5 The requirements of this section do not apply to:

8.1.5a The owner or operator of a facility managing recyclable materials described in Section 3.1.5a.2 and 3.1.5a.3 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).

8.1.5b Generator accumulating waste on site in compliance with Section 6.03.05 provided the requirements of Sections 3.1.4 and 3.1.5 are complied with.

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

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

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

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

8.1.5g Except as provided in paragraph (g)(2) of this Section, a person engaged in treatment or containment activities during immediate response to any of the following situations:

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

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

8.1.5.g.1.iii 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 this Section must comply with all applicable requirements of Section 8.3 and 8.4.

8.1.5.g.3 Any person who is covered by paragraph g.1 of this subsection and who continues or initiates hazardous waste treatment or containment activities after the immediate response is over is subject to all applicable requirements of Chapter 20, Article 5E for these activities.

8.1.5h 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 Section 8.2.8 (b), 8.7.2 and 8.7.3 are complied with.

8.1.6 Relation to Interim Status Standards

A facility owner or operator shall comply with the requirements of Chapter 20-5E-10 of the Hazardous Waste Management Act and the corresponding Federal requirements of 40 CFR Section 270 Subpart G and 40 CFR Part 265 in lieu of the regulations of this section 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 Chapter 20-5E-17 of the West

Virginia Code.

8.2 General Facility Standards

8.2.1 Applicability

The regulations in this section apply to owners and operators of all hazardous waste facilities, except as provided in Section 8.1.

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

8.2.3a 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.

8.2.3b 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.

8.2.3c 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.

8.2.3d An owner's or operator's failure to notify the new owner or operator of the requirements of this section in no way relieves the new owner or operator of the obligation to comply with all applicable requirements.

8.2.4 General Waste Analysis

8.2.4a.1 Before an owner or operator treats, stores, or disposes of any hazardous waste, a detailed chemical and physical analysis of a representative sample of the waste must be obtained. At a minimum, this analysis must contain all the information which must be known to treat, store, or dispose of the waste in accordance with the requirements of this section or with the conditions of a permit issued under Section 11.00 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.)

8.2.4a.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.

8.2.4.a.3 The facility's records of analysis 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 (a)(1) of this section. 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 (a)(1) of this section. 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.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.i When the owner or operator is notified, or has reason to believe, that the process or operation generating the hazardous waste has changed; and

8.2.4.a.4.ii For off-site facilities, when the results of the inspection required in (a)(5) of this section 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.

8.2.4b The owner or operator must develop and follow a written waste analysis plan which describes the procedures which will comply with (a) of this section. 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 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 (a) of this section).

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.i One of the sampling methods described in Appendix I of Section 3 of these regulations.

8.2.4.b.3.ii 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; and

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 8.02.08 and the Air Pollution Control Commission's Regulation XXV.

8.2.4.c For off-site facilities, the waste analysis plan required in (b) of this section 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.

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

8.2.5a 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 a 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 this section.

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.

8.2.5b Unless the owner or operator has made a successful demonstration under paragraphs (a)(1) and (a)(2) of this section, a facility must have:

8.2.5.b.1 A twenty-four 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.i 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.ii A means to control entry, at all times, through the gates or other entrances to the active portion of the facility (e.g., an attendant, television monitors, locked entrance, or controlled roadway access to the facility).

8.2.5.b.3 The requirements of (b) of this section 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 (b)(1) or (b)(2) of this section.

8.2.5.c Unless the owner or operator has made a successful demonstration under (a)(1) and (a)(2) of this section, 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

8.2.6a The owner or operator must inspect the facility for malfunctions and deterioration, operator errors, and discharges which may be causing - or may lead to:

8.2.6.a.1 Release of hazardous waste constituents to the environment; or

8.2.6.a.2 A threat to human health. The owner or operator must conduct these inspections often enough to identify problems in time to correct them before they harm human health or the environment.

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, etc.).

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 of any operator error goes undetected between inspections. Areas subject to spills, such as loading and unloading areas, must be inspected daily when in use. At a minimum, the inspection schedule must include the terms and frequencies called for in Sections 8.7.6, 8.8.4, 8.9.5, 8.10.5, and 8.11.3 where applicable.

8.2.6.b.5 A copy of the inspection schedule as required by Section 8.02.06(b) 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.

8.2.6c 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.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 this section. The owner or operator must ensure that this program includes all the elements described in the

document required under (d)(3) of this section.

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 emergency by familiarizing them with emergency procedures, emergency equipment and emergency systems, including where applicable:

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

8.2.7.a.3.ii Key parameters for automatic waste feed cut-off systems;

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

8.2.7.a.3.iv Response to fires or explosions.

8.2.7.a.3.v Response to groundwater contamination incidents, and

8.2.7.a.3.vi Shutdown of operations.

8.2.7.a.4 An outline of the training program required by Section 8.2.7 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 (a) of this section 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 (a) of this section.

8.2.7c Facility personnel must take part in an annual review of the initial training required in (a) of this section.

8.2.7d 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 (d)(1) of this section. 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 (d)(1) of this section.

8.2.7.d.4 Records that document that the training or job experience required under (a), (b), and (c) of this section 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

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

8.2.8b 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 waste or 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.

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

8.2.8c When required to comply with (a) or (b) of this section, 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) 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 this section apply to owners and operators of all hazardous waste management facilities except as Section 8.1 provides otherwise.

8.3.2 Design and Operation of Facility

Facilities shall be designed, constructed, maintained and operated to minimize the possibility of a fire, explosion, or any unplanned sudden or non-sudden 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 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 that 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.

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.

8.3.6 Required Aisle Space

The owner or operator shall maintain aisle space to allow the unobstructed 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 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 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 and fire department might respond to an emergency, agreements designating primary emergency authority to

a specific police and a specific fire department, and agreements with any others to provide support to the primary emergency authority.

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 this section apply to owners and operators of all hazardous waste facilities except as Section 8.1 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 Section 8.4.2 and Section 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 CFR 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 this section.

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.

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 minor modification 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 run-off 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, 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 of Water Resources' Emergency Notification Number 1-800-642-3074. The notification shall include:

8.4.7.d.2.i Name and telephone number of notifier;

8.4.7.d.2.ii Name and address of facility;

8.4.7.d.2.iii Time and type of incident;

8.4.7.d.2.iv Name and quantity of material(s) involved to the extent known;

8.4.7.d.v The extent of injuries, if any, and

8.4.7.d.2.vi The possible hazards to human health, be 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 sub-sections 8.4.7 f,g,h,i and j of this section 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.

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. Recordkeeping, and Reporting

8.5.1 Applicability

The regulations in this section apply to owners and operators of both on-site and off-site facilities, except as Section 8.1 provides otherwise. Sections 8.5.2, 8.5.3, and 8.5.7 do not apply to owners and operators of on-site facilities that do not receive a hazardous waste from off-site sources.

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 8.5.3.a 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 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 years from the date of delivery.

8.5.2b 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 8.5.3.a) 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 30 days after the delivery, send a copy of the signed and dated manifest to the generator; however, if the manifest has not been received within 30 days after delivery, the owner or operator, or his agent, must send a copy of the shipping paper signed and dated to the generator; and

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 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

8.5.3a Manifest discrepancies are differences between the quantity or type of hazardous waste designated on the manifest or shipping paper, and the quantity or type of hazardous waste a facility actually receives. Significant discrepancies in quantity are:

8.5.3.a.1 For bulk waste, variations greater than 10 percent 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.

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.

8.5.3b 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 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) of its treatment, storage or disposal at the facility, as required by Appendix I;

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 manifest.

8.5.4.b.3 Records and results of waste analyses performed as specified in Sections 8.2.4 and 8.2.8.

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).

8.5.4.b.5 Records and results of inspections as required by Section 8.2.6.

8.5.4.b.6 For off-site facilities, notices to generators as specified in Section 8.2.3(b).

8.5.4.b.7 All closure cost estimates, and for disposal facilities all post-closure cost estimates.

8.5.4.b.8 Monitoring, testing, or analytical data where required by Sections 8.13, 8.9.5, 8.10.4, 8.10.5, 8.12.7, 8.12.9, 8.12.11, 8.11.3(a), 8.11.3(b), 8.11.10(a), and 8.11.10(b).

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 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.

8.5.5 Availability, Retention and Disposition of Records

8.5.5.a All records, including plans required under this section 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) shall be submitted to the Chief and to the appropriate land authority upon closure of the facility.

8.5.6 Annual Report

The owner or operator shall prepare and submit a single copy of an annual report for the preceding year (January 1 - December 31) to the Chief by March of each year. A form prescribed by the Chief shall be used for this report. The annual 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 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 post-closure cost estimate and, for disposal facilities, the most recent post-closure cost estimate.

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 3.1.4, 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.

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 this section 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 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.

8.5.8.b Facility closure as specified in Section 8.6.

8.5.8.c As otherwise required by sections 8.9, 8.10, 8.11, 8.12, and 8.13.

8.6 Closure and Post-Closure

8.6.1 Applicability

Except as Section 8.1 provides otherwise:

8.6.1a Sections 8.6.2 - 8.6.8 and 15.1 (which concern closure) apply to the owners and operators of all hazardous waste management facilities; and

8.6.1b Sections 8.6.2 - 8.6.8, 15.1 and 15.3 (which concern post-closure care) apply to the owners and operators of all hazardous waste disposal facilities.

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 prevent threats to human health and the environment, post-closure escape of hazardous waste, hazardous waste constituents, leachate, contaminated rainfall, or waste decomposition products to the State waters or to the atmosphere.

8.6.3 Closure Plan; Amendment of Plan

8.6.3.a The owner or operator of a hazardous waste management facility must have a written 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 become a condition of the permit. A copy of the approved plan and all revisions to the plan must be kept at the facility until closure is completed and certified. The plan must identify steps necessary to completely or partially close the facility at any point during its intended operating life and to completely close the facility at the end of its intended operating life. The closure plan must include, at least:

8.6.3.a.1 A description of how and when the facility will be partially closed, if applicable, and finally closed. The description must identify the maximum extent of the operation which will be unclosed during the life of the facility, and how the applicable requirements of this section will be met;

8.6.3.a.2 An estimate of the maximum inventory of wastes in storage and treatment at any time during the life of the facility;

8.6.3.a.3 A Description of the steps needed to decontaminate facility equipment during closure;

8.6.3.a.4 An estimate of the expected year of closure and a schedule for final closure. The schedule must include, at a minimum, the total time required to close the facility and the time required for intervening closure activities which will allow tracking of the progress of closure. (Comment: For example, in the case of a landfill, estimates of the time required to treat and dispose of all waste inventory and of the time required to place a final cover must be included);

8.6.3.a.5 And must satisfy the applicable requirements of Sections 8.6.2, 8.6.4, 8.6.6, 8.7.10, 8.8.5, 8.9.7, 8.9.10, 8.10.9, 8.11.11, 8.12.11 and Air Pollution Control Regulation XXV, Section 24.

8.6.3.b The owner or operator may amend the closure plan at any time during the active life of the facility. (The active life of the facility is that period during which waste are periodically received.) The owner or operator must amend the plan whenever changes in operating plans or facility design affect the closure plan, or whenever there is a change in the expected year of closure. When the owner or operator requests a permit modification to authorize a change in operating plans or facility design, a modification of the closure plan must be made at the same time. If a permit modification is not needed to authorize the change in operating plans or facility design, the request for modification of the closure plan must be made within sixty (60) days after the change in operating plans or facility design occurs.

8.6.3.c The owner or operator must notify the chief at least 180 days prior to the expected closure date.

8.6.3.d All closure plans must be approved by the chief based on the determination of compliance with the applicable requirements of Sections 8.6.2, 8.6.4, 8.6.6, 8.7.10, 8.8.5, 8.9.7, 8.9.10, 8.10.9, 8.11.11, 8.12.11 and Air Pollution Control Regulation XXV, Section 24. Upon approval, the closure plan shall become a condition of the Hazardous Waste Management Permit.

8.6.4 Closure: Time Allowed for Closure

8.6.4.a Within ninety (90) days after receiving the final volume of hazardous wastes, the owner or operator must treat, remove from the site, or dispose of on-site, all hazardous wastes in accordance with the approved closure plan. The Chief may approve a longer period if the owner or operator demonstrated that:

8.6.4.a.1.i The activities required to comply with this paragraph will, of necessity, take longer than 90 days to complete; or

8.6.4.a.1.ii.A. The facility has the capacity to receive additional wastes.

8.6.4.a.1.ii.B. There is a reasonable likelihood that a person other than the owner or operator will recommence operation of the site; and

8.6.4.a.1.ii.C. Closure of the facility would be incompatible with continued operation of the site; and

8.6.4.a.2 He has taken, and will continue to take, all steps to prevent threats to human health and the environment.

8.6.4.a.2.b The owner or operator must complete closure activities in accordance with the approved closure plan and within 180 days after receiving the final volume of wastes. The Chief may approve a longer closure period if the owner or operator demonstrates that:

8.6.4.a.2.b.1.i The closure activities will, of necessity, take longer than 180 days to complete; or

8.6.4.a.2.b.1.ii.A The facility has the capacity to receive additional wastes;

8.6.4.a.2.b.1.ii.B There is reasonable likelihood that a person other than the owner or operator will recommence operation of the site; and

8.6.4.a.2.b.1.ii.C Closure of the facility would be incompatible with continued operation of the site; and

8.6.4.a.2.b.2 He has taken and will continue to take all steps to prevent threats to human health and the environment from the unclosed but inactive facility. (Comment: Any extension of the ninety (90) or

180 day period in this section shall be made as a major modification under Section 11. Under paragraphs (a) (1)(ii) and (b)(1)(ii) of this section, if operation of the site is recommenced, the Chief may defer completion of closure activities until the new operation is terminated.)

8.6.5 Disposal or Decontamination of Equipment

When closure is completed, all facility equipment and structures must have been properly disposed of, or decontaminated by removing all hazardous waste and residues.

8.6.6 Certification of Closure

When closure is completed, the owner or operator must submit to the Chief certification both by the owner or operator and by an independent registered professional engineer that the facility has been closed in accordance with the specifications in the approved closure plan.

8.6.7 Post-Closure Care and Use of Property

8.6.7.a.1 Post closure care must continue for thirty (30) years after the date of completing closure and must consist of at least the following:

8.6.7.a.1.i Groundwater monitoring and reporting as applicable.

8.6.7.a.1.ii Maintenance of monitoring and waste containment systems as applicable.

8.6.7.a.1.iii All applicable post closure regulations of Sections 8.9; 8.10; 8.11; 8.12; and 8.13.

8.6.7.a.2.i During the 180 day period preceding closure or at any time thereafter, the Chief may reduce the post-closure care period to less than thirty (30) years if it is found that the reduced period is sufficient to protect human health and the environment (e.g., leachate or groundwater monitoring results, characteristics of the waste, application of advanced technology, or alternative disposal, treatment, or re-use techniques indicate that the facility is secure).

8.6.7.a.2.ii Prior to the time that the post-closure period is due to expire, the Chief may extend the post-closure care period if it is found that the extended period is necessary to protect human health and the environment (e.g., leachate or groundwater monitoring results indicate a potential for migration of waste at levels which may be harmful to human health and the environment.)

8.6.7.b The chief may require, at closure, continuation of any of the security requirements of Section 8.2.5 during part or all of the

post-closure period after the date of completing closure when access by the public or domestic livestock may pose a hazard to human health.

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 Is necessary to reduce a threat to human health or the environment.

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.

8.6.8 Post-Closure Plan; Amendment of Plan

8.6.8a The owner or operator of a disposal facility must have a written post-closure plan. The plan must be submitted with Part B of the permit application and approved by the Chief as a part of the permit issuance proceeding. The approved post-closure plan will become a condition of any permit issued. A copy of the approved plan and all revisions must be kept at the facility until the post-closure care period begins. This plan must identify the activities which will be carried on after closure and the frequency of these activities, and include at least:

8.6.8.a.1 A description of the planned groundwater monitoring activities and frequencies at which they will be performed.

8.6.8.a.2 A description of the planned maintenance activities, and frequencies at which they will be performed, to ensure:

8.6.8.a.2.i The integrity of the cap and final cover or other containment structures where applicable; and

8.6.8.a.2.ii The function of the facility monitoring equipment.

8.6.8.a.3 The name, address, and phone number of the person or office to contact about the disposal facility during the post-closure period. This person or office must keep an updated post-closure plan during the post-closure period.

8.6.8b The owner or operator may amend the post-closure plan at any time during the active life of the disposal facility or during the post-closure care period. The owner or operator must amend the plan

whenever changes in operating plans or facility design, or events which occur during the active life of the facility or during the post-closure period, affect the post-closure plan. This plan must be amended whenever there is a change in the expected year of closure.

8.6.8c When a permit modification is requested during the active life of the facility to authorize a change in operating plans or facility design, modification of the post-closure plan must be requested at the same time. In all other cases, the request for modification of the post-closure plan must be made within sixty (60) days after the change in operating plans or facility design or the events which affect the post-closure plans occur.

8.7 Use and Management of Containers

8.7.1 Applicability

The regulations in this section apply to owners and operators of all hazardous waste management facilities that store containers of hazardous waste, except as Section 8.1 provides otherwise. (Comment: Under Sections 3.1.6 and 3.4.4(c) 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 3.1.6. In that event, management of the container is exempt from the requirements of this section.)

8.7.2 Conditions of Containers

If a container holding hazardous waste is not in good condition (e.g., severe rusting, apparent structural defects) or if it begins to leak, the owner or operator must transfer the hazardous waste 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 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 paragraph (b) of this section, except as otherwise provided by paragraph (c) of this section.

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 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 paragraph (b)(3) of this section 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 waters of the State, it is subject to the State 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 paragraph (b) of this section, 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.

8.7.8 Special Requirements for Ignitable or Reactive Waste

Containers holding ignitable or reactive waste must be located at least 15 meters (50 feet) from the facility's property line.

8.7.9 Special Requirements for Incompatible Wastes

8.7.9.a Incompatible wastes, or incompatible wastes and materials must not be placed in the same container, unless Section 8.2.8 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 materials stored nearby in other containers, piles, open tanks, or surface impoundments must be separated from the other materials or protected from them by means of a dike, berm, wall, or other device.

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

8.8.1.a The regulations in this section apply to owners and operators of facilities that use tanks to treat or store hazardous waste except

as Section 8.1 and (b) of this section provide otherwise.

8.8.1.b The regulations in this section do not apply to facilities that treat or store hazardous waste in covered underground tanks that cannot be entered for inspection. Existing covered underground tanks may continue to operate under interim status but existing and new covered underground tanks will not be able to receive a finally effective Hazardous Waste Management Permit.

8.8.2 Design of Tanks

Tanks must have sufficient shell strength and, for closed tanks, pressure controls (e.g., vents) to assure that they do not collapse or rupture. The Chief will review the design of the tanks, including the foundation, structural support, seams and pressure controls. The Chief shall require that a minimum shell thickness be maintained at all times to ensure sufficient shell strength. Factors to be considered in establishing minimum thickness include the width, height, and materials of construction of the tank, and the specific gravity of the waste which will be placed in the tank. In reviewing the design of the tank and establishing a minimum thickness, the Chief shall rely upon appropriate industrial design standards and other available information.

8.8.3 General Operating Requirements

8.8.3.a Wastes and other materials (e.g., treatment reagents) which are incompatible with the material of construction of the tank must not be placed in the tank unless the tank is protected from accelerated corrosion, erosion or abrasion through the use of:

8.8.3.a.1 An inner liner or coating which is compatible with the waste or material and which is free of leaks, cracks, holes or other deterioration; or

8.8.3.a.2 Alternative means of protection (e.g., cathodic protection or corrosion inhibitors).

8.8.3.b The owner or operator must use appropriate controls and practices to prevent overfilling. These must include:

8.8.3.b.1 Controls to prevent overfilling (e.g., waste feed cutoff system or by-pass system to a standby tank); and

8.8.3.b.2 For uncovered tanks, maintenance of sufficient freeboard to prevent overtopping by wave or wind action or by precipitation. The freeboard shall not be less than 60 centimeters (2 feet) unless the permittee can demonstrate to the Chief that an alternate freeboard level will be sufficient to prevent overtopping.

8.8.4 Inspections

8.8.4a The owner or operator must inspect:

8.8.4.a.1 Overfilling control equipment (e.g., waste feed cut-off systems and by-pass systems) at least once each operating day to ensure that it is in good working order.

8.8.4.a.2 Data gathered from monitoring equipment (e.g., pressure and temperature gauges) where present, at least once each operating day to ensure that the tank is being operated according to design.

8.8.4.a.3 For uncovered tanks, the level of waste in the tank, at least once each operating day to ensure compliance with Section 8.8.3(b).

8.8.4.a.4 The construction materials of above-ground portions of the tank, at least weekly to detect corrosion or erosion and leaking of fixtures and seams.

8.8.4.a.5 The area immediately surrounding the tank, at least weekly, to detect obvious signs of leakage (e.g., wet spots, or dead vegetation).

8.8.4.b As part of the inspection schedule required in Section 8.2.6(b) and in addition to the specific requirements of paragraph (a) of this section, the owner or operator must develop a schedule and procedure for assessing the condition of the tank. The schedule and procedure must be adequate to detect cracks, leaks, corrosion and erosion which may lead to cracks or leaks, or wall thinning to less than the thickness required under Section 8.8.2. Procedures for emptying a tank to allow entry and inspection of the interior must be established when necessary to detect corrosion or erosion of the tank sides and bottom. The frequency of these assessments must be based on the material of construction of the tank, type of corrosion or erosion protection used, rate of corrosion or erosion observed during previous inspections, and the characteristics of the waste being treated or stored.

8.8.4.c As part of the contingency plan required under Section 8.4 the owner or operator must specify the procedures to be used to respond to tank spills or leakage, including procedures and timing for expeditious removal of leaked or spilled waste and repair of the tank.

8.8.5 Closure

8.8.5.a At closure, all hazardous waste and hazardous waste residues must be removed from tanks, discharge control equipment, and discharge confinement structures.

8.8.5.b At closure, as throughout the operating period, unless the owner or operator can demonstrate in accordance with Section 3.1.2.d

that the waste removed from the tank is not a hazardous waste, the owner or operator becomes a generator of hazardous waste and must manage it in accordance with all applicable State laws and regulations promulgated thereunder.

8.8.6 Special Requirements for Ignitable or Reactive Wastes

8.8.6.a Ignitable or reactive waste must not be placed in a tank unless:

8.8.6.a.1 The waste is treated, rendered, or mixed before or immediately after placement in the tank so that the resulting waste, mixture, or dissolution of material no longer meets the definition or ignitable or reactive waste and Section 8.2.8 is complied with; or

8.8.6.a.2 The waste is stored or treated in such a way that it is protected from any material or conditions which may cause the waste to ignite or react; or

8.8.6.a.3 The tank is used solely for emergencies.

8.8.6.b The owner or operator of a facility which treats or stores ignitable or reactive waste in covered tanks must comply with the National Fire Protection Association's (NFPA's) buffer zone requirements for tanks, contained in Tables 2-1 through 2-6 of the "Flammable and Combustible Liquids Code --1981."

8.8.7 Special Requirements for Incompatible Wastes

8.8.7.a Incompatible wastes or incompatible wastes and materials, must not be placed in the same tank, unless Section 8.2.8.b is complied with.

8.8.7.b Hazardous waste must not be placed in an unwashed tank which previously held an incompatible waste or material unless Section 8.2.8(b) is complied with.

8.9 Surface Impoundments

8.9.1 Applicability

8.9.1.a The regulations in this section apply to owners and operators of facilities that use surface impoundments to treat, store, or dispose of hazardous waste, except as Section 8.1 provides otherwise.

8.9.2 General Design Requirements

8.9.2.a A surface impoundment must be designed and constructed to provide maintenance of sufficient freeboard, and to prevent overtopping resulting from wave or wind action, normal and abnormal operation,

malfunctions or level controllers, alarms and other equipment, precipitation and human error or any combination thereof. The freeboard shall not be less than 60 centimeters (2 feet); or an amount of freeboard other than 60 centimeters 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 waters of the State (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, except as provided in (f) of this section.

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.1 Existing facilities are exempt from the requirements outlined in Sections 8.9.2(c), (e), 8.9.4(a)(1), (c), (d), 8.9.6, 8.9.10(c)(2) and (d) provided that paragraph (2) of this section is complied with.

8.9.2.f.2 The owner or operator, in order to qualify for the exemption in (1) above, 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 (f)(4) of this Section.

8.9.2.f.3 If statistically significant increases of hazardous constituents are detected as outlined in Section 8.13.8(d) 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 (if ground water contamination has been determined).

8.9.2.f.4 If the owner or operator determines that the corrective action program being implemented under Section 8.13.09 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:

8.9.2.f.4.i Retrofit the unit with liners; in accordance with Section 8.9.4(a)(1);

8.9.2.f.4.ii Stop the leak;

8.9.2.f.4.iii Continue the operation of the unit, (while concurrently developing/implementing an alternate treatment, storage or disposal method), for a period of five years at which time the unit must be closed; or

8.9.2.f.4.iv 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.f.4.iv.A Potential adverse effects on groundwater quality, considering:

8.9.2.f.iv.A.1 The physical and chemical characteristics of the waste in the regulated unit, including its potential for migration;

8.9.2.f.4.iv.A.2 The hydrogeological characteristics of the facility and surrounding land;

8.9.2.f.4.iv.A.3 The quantity of ground water and the direction of ground water flow;

8.9.2.f.4.iv.A.4 The proximity and withdrawal rates of ground water users;

8.9.2.f.4.iv.A.5 The current and future uses of ground water in the area;

8.9.2.f.4.iv.A.6 The existing quality of ground water, including other sources of contamination and their cumulative impact on the ground water quality;

8.9.2.f.4.iv.A.7 The potential for health risks caused by human exposure to waste constituents;

8.9.2.f.iv.A.8 The potential damage to wildlife, crops, vegetation, and physical structures caused by exposure to waste constituents;

8.9.2.f.4.iv.A.9 The persistence and permanence of the potential adverse effects; and

8.9.2.f.4.iv.B Potential adverse effects on hydraulically connected surface water quality, considering:

8.9.2.f.4.iv.B.1 The volume and physical and chemical characteristics of the waste in the regulated unit;

8.9.2.f.4.iv.B.2 The hydrogeological characteristics of the facility and surrounding land;

8.9.2.f.4.iv.B.3 The quantity and quality of ground water, and the direction of ground water flow;

8.9.2.f.4.iv.B.4 The patterns of rainfall in the region;

8.9.2.f.4.iv.B.5 The proximity of the regulated unit to surface waters;

8.9.2.f.4.iv.B.6 The current and future uses of surface waters in the area and any water quality standards established for those surface waters;

8.9.2.f.4.iv.B.7 The existing quality of surface water, including other sources of contamination and the cumulative impact on surface water quality;

8.9.2.f.4.iv.B.8 The potential for health risks caused by human exposure to waste constituents;

8.9.2.f.4.iv.B.9 The potential damage to wildlife, crops, vegetation, and physical structures caused by exposure to waste constituents; and

8.9.2.f.4.iv.B.10 The persistence and permanence of the potential adverse effects.

8.9.2.f.4.iv.C In making any determination under paragraph (4) of this section concerning the use of ground water in the area around the facility, the Chief will consider any identification of underground sources of drinking water and exempted aquifers made under the West Virginia Administrative Regulations of the State Water Resources Board Chapter 20, Article 5E, Series IX (1983).

8.9.3 Operating Requirements

8.9.3.a A surface impoundment must be operated and maintained to prevent any overtopping resulting from normal and abnormal operations, wind and wave action, overfilling, precipitation, malfunctions of level controllers, alarms and other equipment, and 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 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 and/or leachate out of the impoundment to the adjacent subsurface, soil or groundwater or surface water at any time during the operating life, closure (and the 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 and/or leachate from passing into the liner during the operating life, closure (and the post closure period where applicable) of the facility. All liners must be:

8.9.4.a.1.i 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.ii 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; and

8.9.4.a.1.iii Installed to cover all surrounding earth likely to be in contact with the waste and leachate; and

8.9.4.a.1.iv Constructed to be free of lenses, cracks, channels, holes, or other structural nonuniformities; and

8.9.4.a.1.v 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 nomore 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 lower most liner components) which must be located at a minimum of 3 feet above the highest known seasonal water table elevation. This 3 foot distance may be achieved by elevating the surface impoundment artificially or by the non-mechanical 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 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 prior to placement of wastes into the impoundment.

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 tested for compaction density, moisture content, 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 Section 8.09.03(a), (b) and (c) 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).

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 8.09.05(b), 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.i The stress of the pressure head of liquids placed into the impoundment;

8.9.5.c.1.ii 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.iii 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.iv 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 the liner system, that system must be inspected in accordance with the provisions of the liner system evaluation and repair plan required by paragraph (d) of this section. 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 (b) of this section, 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 of Water Resources' Emergency Notification Number 1-800-642-3074.

8.9.6.c.4 If all leaks specified in (b) of this section (including leaks not evident at the surface) cannot be stopped by any other means, empty the impoundment.

8.9.6.c.5 Within 15 days after detecting the leak, submit to the Chief a written report of the problem and corrective measures taken.

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 8.04, the owner or operator must specify:

8.9.6.d.1 A procedure for complying with the requirements of (c) of this section; 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 (b) of this section may be restored to service unless:

8.9.6.e.1 The liner system and leachate detection, collection and removal system have been repaired; 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 (b) of this section and that is not being repaired must be closed in accordance with Section 8.09.07.

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 waters of the State 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 8.09.10). Any component of the surface impoundment or any appurtenant structures or equipment (e.g., 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 8.9.2f of these regulations must:

1. Prepare a contingent plan for complying with Sections 8.9.10(a)(1), (a)(2) and (b) of these regulations in case not all contaminated

subsoils can be practicably removed at closure; and

2. Prepare a contingent post-closure plan for complying with Section 8.9.10c, except paragraph 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:

8.9.8.a Ignitable or reactive waste must not be placed in a surface impoundment unless: 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 is complied with; or

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

Incompatible wastes, or incompatible wastes and materials must not be placed in the same surface impoundment, unless Section 8.2.8.b is complied with.

8.9.10 Additional Requirements for Impoundments Used for Disposal of Hazardous Wastes

In addition to all the other requirements of this section, when an owner or operator leaves wastes, or 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;

8.9.10.a.2 Stabilize the remaining wastes to a bearing capacity sufficient to support the final cover;

8.9.10b 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, 13.00, 15.1 and 15.3 including maintenance and monitoring throughout the post closure period (specified in the permit under Section 8.6.7). The owner or operator must:

8.9.10.c.1 Maintain the integrity and 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;

8.9.10.c.4 Prevent run-on and run-off from eroding or otherwise damaging the cover; and

8.9.10d 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.i Immediately notify the Chief through the Division of Water Resources' Emergency Notification Number 1-800-642-3074.

8.9.10.d.1.ii Within 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.

Section 8.10 Waste Piles

8.10.1 Applicability

8.10.1a The regulations in this section apply to owners and operators of facilities that store or treat hazardous waste in piles, except as Section 8.1 provides otherwise.

8.10.1b (Reserved)

8.10.1c Owners and operators of waste piles used to store or treat 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 with respect to these 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 run-off nor leachate is generated;

8.10.1.c.3 The pile is protected from surface water run-on by the 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 waters of the State during the active life (including the closure period) of the waste pile. The liner must be:

8.10.2.a.1.i Constructed of materials that have appropriate chemical

properties and sufficient strength and thickness to prevent failure due to pressure gradients (including static head and external hydrogeologic forces), physical contact with the waste or leachate to which they are exposed, climatic conditions, the stress of installation, and the stress of daily operation;

8.10.2.a.1.ii Placed upon a foundation or base capable of providing support to the liner and resistance to pressure gradients above and below the liner to prevent failure of the liner due to settlement, compression, or uplift; and

8.10.2.a.1.iii At least three (3) feet above the seasonal high water table; and

8.10.2.a.1.iv 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 insure 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.1.i Constructed of materials that are:

8.10.2.a.2.i.A Chemically resistant to the waste managed in the pile and the leachate expected to be generated; and

8.10.2.a.2.i.B Of sufficient strength and thickness to prevent collapse under the pressures exerted by overlaying wastes, waste cover materials, and by any equipment used at the pile; and

8.10.2.a.2.ii 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 run-off is a hazardous waste under Section 3.00, it must be managed as a hazardous waste in accordance with all applicable requirements. If collected leachate or run-off is discharged through a point source to waters of the State, 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 run-off management system to collect and control at least

the water volume resulting from a 24-hour, 25-year storm.

8.10.2.d 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 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 this section are satisfied.

8.10.2.g A liner system must be protected from plant growth which could 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 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.

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;

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.

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 of Water Resources' Emergency Notification Number 1-800-642-3074;

8.10.3.b.2 Within 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 8.10.06.

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 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 8.02.06 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.

8.10.4.a.3 The requirements listed in section 8.10.2.a and Section 8.10.2.b.

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 of Water Resources' Emergency Notification Number 1-800-642-3074.

8.10.4.b.2 Within 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 8.10.06.

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; and

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 run-off control systems;

8.10.5.b.2 The presence of liquids in the leachate detection systems, where installed to comply with Section 8.10.03;

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 (d) of this section. 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 (b) of this section, 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.

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 the owner or operator must specify:

8.10.6.d.1 All procedures, and design and operating specifications for complying with the requirements of (c) of this section; 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 (b) of this section 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 (b) of this section and that is not being repaired must be closed in accordance with Section 8.10.09.

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 waters of the State 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 pile unless 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 8.02.08; 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 material must not be placed in the same pile, unless Section 8.02.8 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 8.02.8.

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 paragraph (c) of this Section. 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 8.02.2; 8.02.3; 8.02.4; 8.02.5; 8.02.6; 8.02.7; and 8.02.8.

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 paragraph (a) of this Section due to technical infeasibility, then the owner or operator must submit an application for modifying the permit pursuant to section 11.17. Such application must contain all information which demonstrates compliance with the requirements for managing a landfill, pursuant to Sections 8.11, 11.00 and 13.00

8.11 Landfills

8.11 Landfills

8.11.1 Applicability

The regulations in this section apply to owners and operators of facilities that dispose of hazardous waste in landfills, except as Section 8.1 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 and/or leachate 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 and/or leachate 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.i 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.ii 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.iii Installed to cover all surrounding earth likely to be in contact with the waste and leachate;

8.11.2.a.1.iv Constructed to be free of lenses, cracks, channels, holes, or other structural nonuniformities; and

8.11.2.a.1.v 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.i Constructed of materials that are:

8.11.2.a.2.i.A Chemically resistant to the waste managed in the landfill and the leachate expected to be generated; and

8.11.2.a.2.i.B Of sufficient strength and thickness to prevent collapse under the pressures exerted by overlying wastes, waste cover materials, and by any equipment used at the landfill; and

8.11.2.a.2.ii Must be overlain by a graded granular material assuring a hydraulic conductivity of 1×10^{-3} cm/sec placed with a minimum slope of 2%.

8.11.2.a.2.iii Designed and operated to function without clogging through the operating life and scheduled closure and post closure period of the landfill.

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, 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, 24-hour storm.

8.11.2.c 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 25-year 24-hour storm.

8.11.2.d 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.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 3 feet above the highest known seasonal water table elevation. This 3 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 this section are satisfied.

8.11.2.h 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 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), (c)(3), and (d) provided that paragraph (i)(1), is complied with.

8.11.2.i.1 The owner or operator, in order to qualify for the exemption in paragraph (i) above, 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 paragraph (j) of this Section.

8.11.2.i.2 If statistically significant increases of hazardous constituents are detected as outlined in Section 8.13.08(d) 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 (if groundwater contamination has been determined).

8.11.2.j If the owner or operator determines that the corrective action program being implemented under Section 8.13.09 is in sufficient 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 Retrofit the unit with liners; in accordance with Section 8.11.01(a)(1);

8.11.2.j.2 Stop the leak;

8.11.2.j.3 Continue the operation of the unit, (while concurrently developing/implementing an alternate treatment, storage, or disposal method), for a period of five years at which time the unit must be closed; or

8.11.2.j.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 continue to comply with an approved corrective action program. Such demonstration must include and discuss the following:

8.11.2.j.4.i Potential adverse effects on ground water quality, considering:

8.11.2.j.4.i.A The physical and chemical characteristics of the waste in the regulated unit, including its potential for migration;

8.11.2.j.4.i.B The hydrogeological characteristics of the facility and surrounding land;

8.11.2.j.4.i.C The quantity of ground water and the direction of ground water flow;

8.11.2.j.4.i.D The proximity and withdrawal rates of ground users;

8.11.2.j.4.i.E The current and future uses of ground water in the area;

8.11.2.j.4.i.F The existing quality of ground water, including other sources of contamination and their cumulative impact on ground water quality;

8.11.2.j.4.i.G The potential for health risks caused by human exposure to waste constituents;

8.11.2.j.4.i.H The potential damage to wildlife, crops, vegetation, and physical structures caused by exposure to waste constituents;

8.11.2.j.4.i.I The persistence and permanence of the potential adverse effects; and

8.11.2.j.4.ii Potential adverse effects on hydraulically connected surface water quality, considering:

8.11.2.j.4.ii.A The volume and physical and chemical characteristics of the waste in the regulated unit;

8.11.2.j.4.ii.B The hydrogeological characteristics of the facility and surrounding land;

8.11.2.j.4.ii.C The quantity and quality of ground water, and the direction of ground water flow;

8.11.2.j.4.ii.D The patterns of rainfall in the region;

8.11.2.j.4.ii.E The proximity of the regulated unit to surface waters;

8.11.2.j.4.ii.F 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.ii.G The existing quality of surface water, including other

sources of contamination and the cumulative impact on surface water quality;

8.11.2.j.4.ii.H The potential for health risks caused by human exposure to waste constituents;

8.11.2.j.4.ii.I The potential damage to wildlife, crops, vegetation, and physical structures caused by exposure to waste constituents; and

8.11.2.j.4.ii.J The persistence and permanence of the potential adverse effects.

8.11.2.j.4.iii In making any determination under paragraph (4) of this section concerning the use of ground water in the area around the facility, the Chief will consider any identification of underground sources of drinking water and exempted aquifers made under the West Virginia Administrative Regulations of the State Water Resources Board, Chapter 20, Article 5A, Series IX (1983).

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; and

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 run-off 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.

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 of Water Resources; Emergency Notification Number 1-800-642-3074 and follow with written notification within 7 days of detecting the leak.

8.11.3.c.2 Within 15 days after detecting 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 from a registered professional engineer that, to the best of his knowledge and opinion, the leak has been stopped.

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 this section 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 the provisions of that system's evaluation and repair plan required by (d) of this section. 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.

8.11.4b 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.

8.11.4c If the landfill must be removed from service as required by (b) of this section, 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 of Water Resources; Emergency Notification Number 1-800-642-3074.

8.11.4.c.6 Within 15 days after detecting 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 the owner or operator must specify:

8.11.4.d.1 A procedure for complying with the requirements of (c) of this section; 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; 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 landfill to be removed from service.

8.11.4.e No landfill that has been removed from service in accordance with (b) of this section 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 (b) of this section and that is not being repaired must be closed

in accordance with Section 8.11.11.

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 waters of the State is subject to the requirements of the Water Pollution Control Act and all regulations promulgated thereunder.

8.11.5 - 11.11.9 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:

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 and/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; and

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 including maintenance and monitoring throughout the post closure period (specified in the permit under Section 8.6.7). 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, where such a system is present between double liner 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.

8.11.11.d During the post-closure period, if liquid leaks into a leachate detection system installed under Section 8.11.2, the owner or operator must:

8.11.11.d.1 Immediately notify the chief through the Division of Water Resources' Emergency Notification Number 1-800-642-3074 followed with written notification within 7 days of detecting the leak.

8.11.11.d.2 Within 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.

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 paragraph (b) of this section, and in Section 8.11.17, ignitable or reactive waste must not be placed in a landfill, unless the waste is treated, rendered, or mixed before or immediately after placement in a landfill so that:

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) is complied with.

8.11.13.b Non-liquid ignitable wastes in containers may be landfilled without meeting the requirements of paragraph (a) of this section, provided that the wastes are disposed of in such a way that they are protected from any material or conditions which may cause them to ignite. At a minimum, ignitable wastes must be disposed of in non-leaking containers which are carefully handled and placed so as to avoid heat, sparks, rupture, or any other condition that might cause ignition of the wastes; must be covered after placement with soil or other non-combustible material to minimize the potential for ignition of the wastes; and must not be disposed of in cells that contain or will contain other wastes which may generate heat sufficient to cause ignition of the waste.

8.11.14 Special Requirements for Incompatible Wastes

Incompatible wastes, or incompatible wastes and materials, (see Appendix I of this section for examples) must not be placed in the same landfill cell, unless Section 8.2.8.b is complied with.

8.11.15 Restrictions on Liquid Waste

8.11.15a Bulk or non-containerized 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 leachate collection and removal system that meet the requirements of 8.11.2; 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.

8.11.15b 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

8.11.15.b.2 The container is placed in an overpack drum (lab pack) as defined in Section 8.11.17 and is disposed of in accordance with Section 8.11.17.

8.11.16 Special Requirements for Containers

Containers must be either:

8.11.16.a At least 90 percent full when placed in the landfill; or

8.11.16.b Crushed, shredded, or similarly reduced in volume to the maximum practical 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 Department of Transportation (DOT) hazardous materials regulations (49 CFR Parts 173, 178, and 179), if those regulations specify a particular inside container for the waste.

8.11.17.b The inside containers must be packed in an open head DOT specification metal shipping container (49 CFR Parts 178 and 179) of no more than 416 liter (110 gallon) capacity and surrounded by, at a minimum, a sufficient quantity of absorbent material to completely absorb all of the liquid contents of the inside containers. The metal outer container must be full after packing with inside containers and absorbent material.

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.

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 non-reactive prior to packaging in accordance with paragraphs (a) through (d) of this section. Cyanide and sulfide bearing reactive waste may be packed in accordance with paragraphs (a) through (d) of this section without first being treated or rendered non-reactive.

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 increases permeability).

8.11.19 - 8.11.40 (Reserved)

8.12 Land Treatment

8.12.1 Applicability

The regulations in this section apply to owners and operators of facilities that treat or dispose of hazardous waste in land treatment units, except as Section 8.1 provides otherwise.

8.12.2 Treatment Program

8.12.2.a An owner or operator subject to this section 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;

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; and

8.12.2.a.3 Unsaturated zone monitoring provisions meeting the requirements of Section 8.12.9.

8.12.2.b The chief will specify in the facility permit the hazardous constituents that must be degraded, transformed, or immobilized under this section. Hazardous constituents are constituents identified in Appendix VIII of Section 3 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 paragraph (a) of this section, he must obtain a treatment or disposal permit under Section 11. 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 paragraph (c) of this section.

8.12.3.c Any field test or laboratory analysis conducted in 8.12.3.c order to make a demonstration under paragraph (a) of this section 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.i The characteristics of the waste (including the presence of Appendix VIII constituents);

8.12.3.c.1.ii The climate in the area,

8.12.3.c.1.iii The topography of the surrounding area,

8.12.3.c.1.iv The characteristics of the soil in the treatment zone (including depth); and

8.12.3.c.1.v 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 tested 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.i The characteristics of the waste to be tested,

8.12.3.c.3.ii The operating and monitoring measures taken during the course of the test;

8.12.3.c.3.iii The duration of the test,

8.12.3.c.3.iv The volume of waste used in the test, and

8.12.3.c.v 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 this section.

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 accord with all design and operating conditions that were used in the treatment demonstration under Section 8.12.2. 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, 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 run-off 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 run-off management system to collect and control at least the water volume resulting from a 24-hour, 25-year storm.

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

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/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 run-off control systems; and

8.12.4.h.2 Improper functioning of wind dispersal control measures.

8.12.5 - 8.12.6 (Reserved)

8.12.7 Food Chain Crops

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 this section. 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.i Will not be transferred to the food or feed portions of the crop by plant uptake or direct contact, and will not otherwise be ingested by food chain animals (e.g., by grazing); or

8.12.7.a.1.ii Will not occur in greater concentrations in or on the food or feed portions of crops grown on the treatment zone than in or 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 this paragraph prior to the planting of crops at the facility for all constituents identified in Appendix VIII of Section 3 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 this paragraph, 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.i Base the demonstration on conditions similar to those present in the treatment zone, including soil characteristics (e.g., pH, cation exchange capacity), specific wastes, application rates, application methods, and crops to be grown; and

8.12.7.a.3.ii 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 this paragraph, he must obtain a permit for conducting such activities.

8.12.7b The owner or operator must comply with the following conditions if cadmium is contained in wastes applied to the treatment zone:

8.12.7.b.1.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.b.1.ii The annual application from cadmium from waste must not exceed .44 lbs/acre on land used for production of tobacco, leafy vegetables, or root crops grown for human consumption. For other food

chain crops, the annual cadmium application rate must not exceed:

Time Period	Annual Cd application rate lbs/acre
Present to June 30, 1984	1.78
July 1, 1984 to December 31, 1986	1.11
Beginning January 1, 1987	.44

8.12.7.b.1.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.b.1.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.b.2.i Animal feed must be the only food chain crop produced;

8.12.7.b.2.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.b.2.iii There must be an operating plan which demonstrates how the animal feed will be distributed to preclude ingestion by humans. The operating plan must describe the measures to be taken to safeguard against possible health hazards from cadmium entering the food chain, which may result from alternative land uses; and

8.12.7.b.2.iv Future property owners must be notified by a stipulation in the land record or property deed which states that the property has received waste at high cadmium application rates and that food chain crops must not be grown except in compliance with paragraph (b)(2) of this section.

8.12.8 (Reserved)

8.12.9 Unsaturated Zone Monitoring

An owner or operator subject to this section 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.

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. 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 at least equivalent levels for the other hazardous constituents in the wastes.

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 soil-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 paragraph (a) of this section. 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 paragraph (f) of this section.

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 paragraph (b) (1) of this section.

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 of statistically significant increases under paragraph (f) of this section.

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 paragraph (a) of this section below the treatment zone each time he conducts soil monitoring and soil-pore liquid monitoring under paragraph (d) of this section.

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 paragraph (d) of this section, to the background value for that constituent according to the statistical procedure specified in the facility permit under this paragraph.

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 that 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.i Is appropriate for the distribution of the data used to establish background values; and

8.12.9.f.3.ii Provides a reasonable balance between the probability of falsely identifying migration from the treatment zone and the probability of failing to identify real migration from the treatment zone.

8.12.9.g If the owner or operator determines, pursuant to paragraph (f) of this section, 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.

8.12.9.g.2 Within 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, or immobilization processes in the treatment zone.

8.12.9.h If the owner or operator determines, pursuant to paragraph (f) of this section, 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 this paragraph in addition to, or in lieu of, submitting a permit modification application under paragraph (g)(2) of this section, he is not relieved of the requirement to submit a permit modification application within the time specified in paragraph (g)(2) unless the demonstration made under this paragraph successfully shows that the increase resulted from an error in sampling, analysis, or evaluation. In making a demonstration under this paragraph, 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 this paragraph;

8.12.9.h.2 Within 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 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 accord with the unsaturated zone monitoring program established under this section.

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.

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), except to the extent such measure are inconsistent with paragraph (a)(8 of this section;

8.12.11.a.2 Continue all operations in the treatment zone to minimize run-off of hazardous constituents as required under Section 8.12.4(b);

8.12.11.a.3 Maintain the run-on control system required under Section 8.12.4(c);

8.12.11.a.4 Maintain the run-off management system required under Section 8.12.4(d);

8.12.11.a.5 Control wind dispersal of hazardous waste if required under Section 8.12.4(f);

8.12.11.a.6 Continue to comply with any prohibitions or conditions concerning growth of food chain crops under Section 8.12.7;

8.12.11.a.7 Continue unsaturated zone monitoring in compliance with Section 8.12.09, except that soil-pore liquid monitoring may be terminated 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 8.06.06, 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 care 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);

8.12.11.c.4 Maintain the run-off management system required under Section 8.12.4(d);

8.12.11.c.5 Control wind dispersal of hazardous waste if required under Section 8.12.04(f);

8.12.11.c.6 Continue to comply with any prohibitions or conditions concerning growth of food chain crops under Section 8.12.7; and

8.12.11.c.7 Continue unsaturated zone monitoring in compliance with Section 8.12.9 except that soil-pore liquid monitoring may be terminated 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 paragraphs (a)(8) and (c) of this section if the Chief finds that the level of hazardous constituents in the treatment zone soil does not exceed the background value of those constituents by an amount that is statistically significant when using the test specified in paragraph (d)(3) of this section. 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 this paragraph:

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).

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

8.12.11.d.1.ii The owner or operator must express background values and values for hazardous constituents in the treatment zone in a form necessary for the determination of statistically significant increases under paragraph (d)(3) of this section.

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.i Is appropriate for the distribution of the data used to establish background values; and

8.12.11.d.3.ii Provides a reasonable balance between the probability of falsely identifying hazardous constituent presence in the treatment zone and the probability of failing to identify real presence in the treatment zone.

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 paragraph (d) of this section and if unsaturated zone monitoring under Section 8.12.9 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

The owner or operator must not apply ignitable or reactive waste to the treatment zone unless:

8.12.12.a The waste is immediately incorporated into the soil so that:

8.12.12.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

8.12.12.a.2 Section 8.2.8(b) is complied with, or

8.12.12.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.

8.12.13 Special Requirements for Incompatible Wastes

The owner or operator must not place incompatible wastes, or incompatible wastes and materials (see Appendix V for examples), in or

on the same treatment zone, unless Section 8.2.8.b is complied with.

8.12.14 - 8.12.30 (Reserved)

Section 8.13 Groundwater Protection

8.13.1 Applicability

8.13.1.a Except as provided in paragraph (b) of this section, the regulations in Section 8.13 apply to owners and operators of facilities that treat, store, or dispose of hazardous waste in surface impoundments, waste piles, land treatment units, or landfills. The owner or operator must satisfy the requirements of Section 8.13 for all wastes (or constituents thereof) contained in any such waste management unit at the facility that receives hazardous waste after the effective date of Section 8.13 (hereinafter referred to as a "regulated unit"). Any waste or waste constituent migrating beyond the waste management area under Section 8.13.05(b) 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 if:

8.13.1.b.1 He is exempted under Section 8.01;

8.13.1.b.2 He designs and operates a pile in compliance with Section 8.10.01(c);

8.13.1.b.3 The Chief finds, pursuant to Section 8.12.11(d), 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 has not shown a statistically significant increase in hazardous constituents below the treatment zone during the operating life of the unit. An exemption under this paragraph can only relieve an owner or operator of responsibility to meet the requirements of Section 8.13 during the post closure care period.

8.13.1.c The regulations under Section 8.13 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:

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 8.06.07 in all other cases.

8.13.2 Required Programs

8.13.2.a Owners and operators subject to Section 8.13 must conduct a monitoring and corrective action program as follows:

8.13.2.a.1 Whenever the Water Resources Board's Groundwater Protection Standard Regulations Series VII, Section 1 is exceeded, the owner or operator must institute a corrective action program under Section 8.13.9;

8.13.2.a.2 In all other cases, the owner or operator must institute a groundwater monitoring program under Section 8.13.8.

8.13.2.b In order to prevent potential adverse effects on human health and the environment that might occur before final administrative action on a permit modification application to incorporate such a program could be taken, the owner or operator must institute each of these programs when they are required under Section 8.13.2.a.

The owner or operator must specify in the permit application the specific elements of the groundwater monitoring system and the elements of the corrective action program identified in paragraph (a) of this section. These 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 Water Resources Board's Groundwater Protection Standard Regulation Series VII, Section 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.

8.13.3 (Reserved)

8.13.4 Hazardous Constituents

The Chief will specify in the permit the hazardous constituents to which the Water Resources Board's Groundwater Protection Standard Regulation, Series VII, Section 1 applies. Hazardous constituents are constituents identified in Appendix VIII of Section 3 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 1 of Section 3.3.5 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 Water Resources Board's Groundwater Protection Standard Regulation Series VII, Section 1 applies and at which monitoring must be conducted. The point of compliance is a vertical surface located at the hydraulically downgradient limit of the waste management area that extends 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 a 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 8.13.9.

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 paragraph (a) of this section, the compliance period is extended until the owner or operator can demonstrate that the Water Resources Board's Groundwater Protection Standard Regulation, Series VII, Section 1 has 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; and

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 8.13.07(c). The screened interval of an individual well should not exceed 20 feet (screened intervals greater than 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 non-reactive, non-synergistic and non-catalytic to the hazardous constituents being monitored;

8.13.7.b.5 The annular space (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 this section.

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 the 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 8.13.05(b)(2).

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 8.13.04 and/or reaction products that provide a reliable indication of the presence of hazardous constituents in groundwater. The Chief will specify the monitoring parameters (indicator parameters and/or reaction products) and constituents to be monitored in the permit, after considering the following factors:

8.13.8.a.1.i The types, quantities, and concentrations of hazardous constituents in wastes managed at the regulated unit;

8.13.8.a.1.ii 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.iii The detectability of indicator parameters, hazardous constituents, and reaction products in groundwater; and

8.13.8.a.1.iv 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 8.13.05. The groundwater monitoring system must comply with Section 8.13.07.

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.i Sample collection;

8.13.8.a.3.ii Sample preservation and shipment;

8.13.8.a.3.iii Analytical procedures; and

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:

- (1) Sample collection;
- (2) Sample preservation and shipment;
- (3) Analytical procedures; and
- (4) Chain of custody control.

(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 paragraph (a) of this section below the treatment zone each time he conducts soil monitoring and soil-pore liquid monitoring under paragraph (d) of this section.

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

(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 that time period in the facility permit after considering the complexity of the statistical test and the availability of laboratory facilities to perform the analysis of soil and soil-pore liquid samples.

(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:

- (i) Is appropriate for the distribution of the data used to establish background values; and
- (ii) Provides a reasonable balance between the probability of falsely identifying migration from the treatment zone and the probability of failing to identify real migration from the treatment zone.

(g) If the owner or operator determines, pursuant to paragraph (f) of this section, that there is a statistically significant increase of hazardous constituents below the treatment zone, he must:

(1) Notify the Chief of this finding in writing within seven (7) days. The notification must indicate what constituents have shown statistically significant increases.

(2) Within 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, or immobilization processes in the treatment zone.

(h) If the owner or operator determines, pursuant to paragraph (f) of this section, 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 this paragraph in addition to, or in lieu of, submitting a permit modification application under paragraph (g)(2) of this section, he is not relieved of the requirement to submit a permit modification application within the time specified in paragraph (g)(2) unless the demonstration made under this paragraph successfully shows that the increase resulted from an error in sampling, analysis, or evaluation. In making a demonstration under this paragraph, the owner or operator must:

(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 this paragraph;

(2) Within 45 days, submit a report to the Chief demonstrating that the increase resulted from error in sampling, analysis, or evaluation;

(3) Within 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

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

8.12.10 Record Keeping.

The owner or operator must include hazardous waste application dates and rates in the operating record required under Section 8.05.04.

8.12.11 Closure and Post Closure care.

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

(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 8.12.04(a), except to the extent such measures are inconsistent with paragraph (a)(8) of this section.

(2) Continue all operations in the treatment zone to minimize run-off of hazardous constituents as required under Section 8.12.04(b);

(3) Maintain the run-on control system required under Section 8.12.04(c);

(4) Maintain the run-off management system required under Section 8.12.04(d);

(5) Control wind dispersal of hazardous waste if required under Section 8.12.04(f);

(6) Continue to comply with any prohibitions or conditions concerning growth of food chain crops under Section 8.12.07.

(7) Continue unsaturated zone monitoring in compliance with Section 8.12.09, except that soil-pore liquid monitoring may be terminated 90 days after the last application of waste to the treatment zone; and

(8) Establish a vegetative cover on the portion of the facility being closed at 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.

(b) For the purpose of complying with Section 8.06.06, 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.

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

(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 care activities;

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

(3) Maintain the run-on control system required under Section 8.12.04(c);

(4) Maintain the run-off management system required under Section

(5) Control wind dispersal of hazardous waste if required under Section 8.12.04(f);

(6) Continue to comply with any prohibitions or conditions concerning growth of food chain crops under Section 8.12.07; and

(7) Continue unsaturated zone monitoring in compliance with § 8.12.09 except that soil-pore liquid monitoring may be terminated 90 days after the last application of waste to the treatment zone.

(d) The owner or operator is not subject to regulation under paragraphs (a)(8) and (c) of this section if the Chief finds that the level of hazardous constituents in the treatment zone soil does not exceed the background value of those constituents by an amount that is statistically significant when using the test specified in paragraph (d)(3) of this section. 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 this paragraph:

(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 8.12.02(b).

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

(ii) The owner or operator 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 paragraph (d) (3) of this section.

(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.

(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:

- (i) Is appropriate for the distribution of the data used to establish background values; and
- (ii) Provides a reasonable balance between the probability of falsely identifying hazardous constituent presence in the treatment zone and the probability of failing to identify real presence in the treatment zone.

(e) The owner or operator is not subject to regulation under Section 8.13 of these regulations if the Chief finds that the owner or operator satisfies paragraph (d) of this section and if

unsaturated zone monitoring under Section 8.12.09 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.

The owner or operator must not apply ignitable or reactive waste to the treatment zone unless:

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

(1) The resulting waste, mixture, or dissolution of material no longer meets the definition of ignitable or reactive waste under Section 3.03.02 or 3.03.04 of these regulations; and

(2) Section 8.02.08(b) is complied with; or

(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.

8.12.13 Special Requirements for Incompatible Wastes.

The owner or operator must not place incompatible wastes, or incompatible wastes and materials (see Appendix V for examples), in or on the same treatment zone, unless Section 8.02.08(b) is complied with.

8.12.14 - 8.12.30 [Reserved]

DNR
Adm. Reg. 20-5E
Series XV

Section 8.13 Groundwater Protection

8.13.01 Applicability.

(a) Except as provided in paragraph (b) of this section, the regulations in Section 8.13 apply to owners and operators of facilities that treat, store, or dispose of hazardous waste in surface impoundments, waste piles, land treatment units, or landfills. The owner or operator must satisfy the requirements of Section 8.13 for all wastes (or constituents thereof) contained in any such waste management unit at the facility that receives hazardous waste after the effective date of Section 8.13 (hereinafter referred to as a "regulated unit"). Any waste or waste constituent migrating beyond the waste management area under Section 8.13.05(b) is assumed to originate from a regulated unit unless the Chief finds that such waste or waste constituent originated from another source.

(b) The owner or operator is not subject to regulation under Section 8.13 if:

- (1) He is exempted under Section 8.01;
- (2) He designs and operates a pile in compliance with Section 8.10.01(c).
- (3) The Chief finds, pursuant to Section 8.12.11(d), 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 8.12.09 has not shown a statistically significant increase

Section 1.00 General

1.01 Scope and Purpose

The purposed 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 environment.

1.02 Authority

These regulations are promulgated under the authority of the West Virginia Code Chapter 20, Article 5E, Sections 4, 5, 6 and 7.

1.03 Effective Date

These regulations will become effective upon filing.

1.04 Filing Date

These regulations were filed in the Office of the Secretary of State on April 2 , 1984.

1.05 Certification

These regulations are certified authentic by the Chairman of the State Water Resources Board and the Director of the Department of Natural Resources.

FILED IN THE OFFICE OF
A. JAMES MANCHIN
SECRETARY OF STATE

THIS DATE April 2, 1984
Administrative Law Division

Section 2.00 Definitions.

For the purposes of these regulations, the following words and phrases shall have the meanings ascribed to them in this section unless the context of the regulations indicate otherwise.

(1) "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) "Administrator" means the administrator of the United States Environmental Protection Agency or his designee;

(3) "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 of the Division of Water Resources or the Director of the Department of Natural Resources;

(4) "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;

(5) "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;

(6) "Application, Part B" means that part of the application which a permit applicant must complete to be considered for a permit;

PREAMBLE

Introduction

In recognition of the express statutory provisions contained in Section 20-5E et seq., regarding duplication and consultation, and for the purpose of achieving maximum effectiveness while imposing the least burden of duplicative requirements on those persons subject to these regulations, the Director has attempted in these regulations to create a workable hazardous waste management program. The complexity of the regulations and the number of rulemaking agencies involved made this a difficult task, and there is likely to remain a number of areas which will require continued cooperation, coordination, and consultation among the agencies. Towards this effort, the Director of the Department of Natural Resources expects to employ the use of Memorandums of Agreement which will outline the specific areas of responsibilities between the various agencies, particularly with regard to the permits to be issued by the Chief of the Division of Water Resources and the Director of the Air Pollution Control Commission.

Summary of Specific Sections

Section 2 of these regulations is promulgated by the Director of the Department of Natural Resources and contains the definitions of the words and phrases used in these regulations.

Section 3 of these regulations is promulgated by the Director of the Department of Natural Resources and provides the criteria for identifying a hazardous waste and a list of hazardous wastes that have been identified by the Director.

Section 4 of these regulations is promulgated by the Director of the Department of Natural Resources and contains the notification requirements applicable to those persons engaged in hazardous waste activities, and is promulgated pursuant to authority contained in Section 20-5E-6(a)(12). The purpose of Section 4 is to provide a means for the State of West Virginia to obtain information from all persons who engage in hazardous waste activities.

Section 5 of these regulations, is promulgated by the Director and established standards applicable to transporters of hazardous waste by air and/or water by adopting and incorporating by reference 40 CFR Part 263 and are promulgated under authority of Section 20-5E-6(a)(12).

Section 6 of these regulations is promulgated by the Director of the

Department of Natural Resources and contains requirements for generators of hazardous waste which include recordkeeping, reporting, and originating a manifest for off-site shipments.

Section 7 (Reserved)

Section 8 is promulgated by the Director and the Water Resources Board and establishes the standards for owners and operators of hazardous waste treatment, storage, and disposal facilities.

Section 9, in its proposed form, contained standards for facility owners and operators to comply with during interim status. These standards have been deleted in the final regulations inasmuch as Chapter 20, Article 5E, Section 10 governs the hazardous waste activities of facilities during interim status. Section 9 has been reserved for future regulations to be promulgated by the Director.

Section 10 established interim standards for land disposal facilities. Section 10 standards have been deleted because they will be superceded upon final promulgation of the final Section 8 standards.

Section 11 of these regulations is promulgated by the Director under the authority of Chapter 20, Article 5E, Section 6(a)(4) and requires the Director to promulgate rules and regulations respecting compliance with permits for treatment, storage, or disposal under Chapter 20, Article 5E, Section 8. Additionally, the Director is required by Chapter 20, Article 5E, Section 6(a)(5) to promulgate rules and regulations specifying the terms and conditions under which the Chief shall issue, modify, suspend, revoke, or deny permits.

Section 12 is promulgated by the Director under the authority of Chapter 20, Article 5E, Section 6(a)(1), (a)(4), and (a)(12). This section establishes the location standards for all hazardous waste management facilities.

Section 13 establishes financial requirements for existing and new facilities. The Director adopted and incorporated by reference 40 CFR Part 264, Subpart H, as published in the Code of Federal Regulations on July 1, 1982 with modifications.

Section 14 (Reserved)

Section 15 is promulgated by the Director establishes the requirements on deed and lease disclosures, and approvals for land disturbance.

Section 16 is promulgated by the Director and provides a mechanism for persons desiring to notify the Water Resources Board or the Director of changes in the federal Solid Waste Disposal Act, or the regulations promulgated thereunder.