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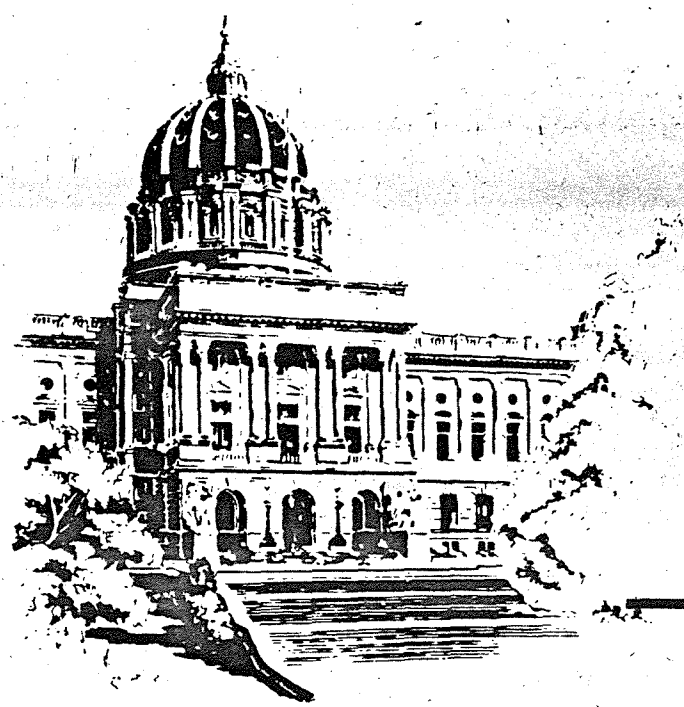
Part II

This part contains the Department of Environmental Resources' Solid Waste and Hazardous Waste Management Regulations



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Rules and Regulations

Title 25— ENVIRONMENTAL RESOURCES

DEPARTMENT OF ENVIRONMENTAL RESOURCES

ENVIRONMENTAL QUALITY BOARD

[25 PA. CODE CH. 75]

Solid Waste Management

The Environmental Quality Board, by this order, amends 25 Pa. Code Chapter 75 (relating to solid waste management) by amending Subchapter D to add section 75.259 (describing the scope of the subchapter) and to amend sections 75.260 (relating to definitions), 76.261 (relating to criteria for identification and listing of hazardous waste), 75.262 (relating to generator of hazardous waste), 75,263 (relating to transporters of hazardous waste), 75.264 (relating to standards for new hazardous waste management facilities), and 75.265 (relating to interim status for hazardous waste management facilities and permit programs for new and existing hazardous waste management facilities) as set forth in Annex A hereto.

The amendments are adopted pursuant to the authority contained in the act of July 7, 1980 (P. L. 380, No. 97) (35 P. S. §§ 6018.101 — 6018.1003), known as the Solid Waste Management Act. These revisions of Pennsylvania regulation on generation, transportation, treatment, storage, and disposal of hazardous waste are designed to bring Pennsylvania's regulation of hazardous waste into conformance with revisions to the Resource Conservation and Recovery Act (42 U.S.C.A. § 6901 *et seq.*) enacted since November, 1980. Bringing Pennsylvania standards into conformity with Federal revisions will enable Pennsylvania to obtain Phase II interim authorization to operate its own regulatory program over hazardous waste, rather than being subjected to Federal preemption in the operation of this program under the Resource Conservation and Recovery Act. In addition, these regulations complete design, construction, and permitting requirements and clarify imprecise or vague language.

Notice of proposed rulemaking and Fiscal Note EQB-81-13 were published at 11 Pa. B. 3157 (September 12, 1981). The notice contained an invitation to submit written comments, to which 56 individuals and groups responded. The Department has prepared a document entitled "Summary of Comments and Department Responses," which contains a summary of the testimony and the comments received and the Department's responses thereto. This document has been sent to all persons who submitted comments to the Board.

As a consequence of the comments received, the Department has made numerous revisions to the proposals as published at 11 Pa. B. 3157. The revisions have been made to clarify certain provisions, or to add to the level of detail required to insure that hazardous wastes are managed safely and in a manner consistent with preemptive Federal regulations. The revisions do not enlarge the purpose of the proposals, as published at 11 Pa. B. 3157; and, accordingly, further notice of the proposed rulemaking is not required. The revisions have been incorporated into the text of the regulations as set forth in Annex A hereto. The following are examples of the more significant changes:

Section 75.259 — A section describing the scope of Subchapter D has been added, which also clarifies the relationship of Subchapter D regulations to other applicable environmental statutes mentioned in Act 97.

Section 261(c)(16) — This new provision makes it clear that scrap leather from tanneries and shoe manufacturers is not a listed hazardous waste. Several commenters suggested this change, and it is consistent with Federal hazardous waste criteria and listings.

Section 261(e)(2) — This section has been revised to provide an exemption for the reuse of spent pickle liquor by wastewater treatment facilities with NPDES permits from all regulatory requirements of section 76.262 — 76.267 except notification, manifest system and quarterly reporting. The section has been revised to include requirements for applicable approvals under the Department's Air Quality Program. These changes coordinate regulation of certain facilities so that duplication of regulation is avoided, but information as to the quantity and movement of wastes is not lost.

Section 264(a)(4) — This variance provision has been modified to revise the phrase "have no significant adverse impact on public health or the environment" to the phrase "result in a level of protection of the environment and public health equivalent to that which would have resulted from compliance with the suspended provisions." This change makes it clear that the test to be used will be one of equivalency, rather than the somewhat vague concept of "no significant adverse impact." The section has also been revised to require that variances be no less stringent than requirements under the Federal Resource Conservation and Recovery Act, so that Federal authorization of the hazardous waste program will not be jeopardized. The response of the Environmental Quality Board to those commenters requesting broader variances has been to promulgate two new variance provisions as proposed rulemaking. These proposed revisions are being published separately for public comment.

Section 264(q)(14) — This section has been revised to provide for container height, grouping aisle space consistent with National Fire Protection Association requirements for indoor or outdoor storage of ignitable or reactive waste. This section has also been revised to allow indoor or outdoor storage of nonreactive or nonignitable waste in any configuration which allows access for inspection and remedial action as long as container height does not exceed nine feet. These changes acknowledge existing fire protection standards and incorporate a performance standard which achieves regulatory goals in the most flexible manner.

Section 265(w)(16) — This section has been revised to require that the combustion unit or processes, as defined in air quality regulations, which thermally destroy hazardous wastes need not obtain a solid waste permit but most obtain an approved air quality plan. This change will prevent duplication of regulation and clarify the relationship between air quality regulations and hazardous waste regulations for these facilities.

Contact Person

Additional information on revisions or responses to public comments may be obtained by contacting Gary Galida, Chief, Division of Hazardous Waste Management, Bureau of Solid Waste Management, Department of Environmental Resources, P. O. Box 2063, Harrisburg, Pa. 17120, or calling (717) 787-7381.

As a result of these regulations, there will be increases in required paperwork; the nature and degree of

these increases will vary depending upon each entity's role in the management of hazardous waste. The paperwork required under these regulations for facilities for the storage, treatment and disposal of hazardous wastes will not differ significantly from the paperwork that would be required under the Federal regulations if Pennsylvania did not receive Phase II interim authorization and the Federal program preempted Pennsylvania regulation.

Significant fiscal impact from increased cost to the private sector is expected to result from compliance with the provisions of these rules and regulations regarding design, construction and permitting of hazardous waste facilities. Approximately 700 hazardous waste storage, treatment or disposal facilities exist in the Commonwealth and can be subject to these rules and regulations.

New Federal hazardous waste facility design, construction and permitting requirements are currently in effect. See 40 C.F.R. Parts 260 — 265. These Federal requirements will result in increased private costs for compliance, and the vast majority of these rules and regulations for Pennsylvania are equivalent to such Federal standards. Any increased costs of compliance with differing or more stringent Pennsylvania requirements cannot be calculated separately from cost of compliance with Federal standards before detailed engineering design plans are submitted in the future. In addition, federal cost estimates will not be available until 1983.

The failure to comply with facility standards adequate to protect the environment has in the past and would in the future result in increased costs of abatement for the Commonwealth and political subdivisions. According to Federal notifications as many as 500 inactive or abandoned hazardous waste facilities have been reported in the Commonwealth. Currently six inactive facilities have been designated for abatement measures including removal or treatment of wastes, ground and surface water protection measures and monitoring and long term maintenance at a minimum cost of $2,500,000 for each of these six facilities.

Editor's Note: There is a proposal to amend § 75.265 at 12 Pa. B. 3082 (September 4, 1982).

The Environmental Quality Board finds:

(1) That public notice of intention to amend the regulations amended by this order has been duly given pursuant to §§ 201 and 202 of the CDL (45 P. S. §§ 1201 and 1202) and the regulations thereunder, 1 Pa. Code §§ 7.1 and 7.2.

(2) That the revisions to the proposed amendments as set forth at 11 Pa. B. 3157 do not enlarge the purpose of said proposals; accordingly additional notice of proposed rulemaking is not necessary.

(3) That the revisions of the regulations of the Department of Environmental Resources, in the manner provided in this order, are necessary and appropriate for the administration and enforcement of the authorizing statute.

The Environmental Quality Board, acting pursuant to the authorizing statutes, orders:

(A) That the regulations of the Department of Environmental Resources, 25 Pa. Code Chapter 75, are amended by amending sections 75.260 — 75.265, 75.267 and by adding 75.259 to read as set forth in Annex A hereto.

(B) The Chairman of the Environmental Quality Board shall submit this order and Annex A hereto to the Offices of the General Counsel and the Attorney General for approval as to legality as required by law.

(C) The Chairman of the Environmental Quality Board shall duly certify this order and Annex A hereto and deposit the same with the Legislative Reference Bureau as required by law.

(D) This order shall take effect upon publication in the *Pennsylvania Bulletin.*

By the Environmental Quality Board

PETER S. DUNCAN,
Chairman

Fiscal Note: EQB 82-9. No fiscal impact; (8) recommends adoption. Administration of these rules and regulations will be conducted according to existing procedures and with existing resources, therefore no significant increased cost to the Commonwealth or to political subdivisions is anticipated.

Annex A

TITLE 25. ENVIRONMENTAL RESOURCES

PART I. DEPARTMENT OF ENVIRONMENTAL RESOURCES

Subpart C. PROTECTION OF NATURAL RESOURCES

ARTICLE I. LAND RESOURCES

CHAPTER 75. SOLID WASTE MANAGEMENT

Subchapter D. HAZARDOUS WASTE

§ 75.259. Scope.

This subchapter shall apply to the identification and listing, generation, transportation, storage, treatment, and disposal of hazardous waste. Nothing contained in this subchapter shall relieve or limit a person or municipality who generates, transports, stores, treats, or disposes of hazardous waste from complying with the requirements of the act of June 22, 1937 (P. L. 1987, No. 394), known as The Clean Streams Law, the act of January 8, 1960 (1959 P. L. 2119, No. 787), known as the Air Pollution Control Act, the act of May 31, 1945 (P. L. 1198, No. 418), known as the Surface Mining Conservation and Reclamation Act, the act of November 26, 1978 (P. L. 1375, No. 325), known as the Dam Safety and Encroachments Act, the act of July 17, 1961 (P. L. 659, No. 339), known as the Pennsylvania Bituminous Coal Mine Act, the act of November 10, 1965 (P. L. 721, No. 346), known as the Pennsylvania Anthracite Coal Mine Act, and the act of July 9, 1976 (P. L. 931, No. 178), entitled "An Act providing emergency medical personnel; employment of emergency medical personnel and emergency communications in coal mines," or the rules and regulations promulgated pursuant to the above-enumerated statutes, where applicable.

§ 75.260. Definitions and requests for determinations.

(a) Definitions. The following words, phrases and abbreviations when used in this subchapter shall have the meanings given to them in this subsection, unless the context clearly indicates otherwise:

Abatement — The restoration, reclamation, recovery, and the like of a natural resource adversely affected by the activity of a person, permittee or municipality.

Access road — A paved roadway or all-weather course providing access to a treatment, storage, or disposal area within a HWM facility, suitable for use by transport vehicles and emergency equipment in all types of weather.

Act — The Solid Waste Management Act (35 P. S. §§ 6018.101 — 6018.1003).

Active portion — A portion of a facility where hazardous waste treatment, storage, or disposal operations are being conducted subsequent to November 19, 1980, and are not yet a closed portion.

Agricultural waste — Poultry and livestock manure, or residual materials in liquid or solid form generated in the production and marketing of poultry, livestock, fur bearing animals, and their products, provided that such agricultural waste is not hazardous.

The term includes the residual materials generated in producing, harvesting, and marketing of all agronomic, horticultural, and silvicultural crops or commodities grown on what are usually recognized and accepted as farms, forests, or other agricultural lands.

Aquifer — A geologic formation, group of formations, or part of a formation capable of yielding ground water to wells or springs.

ASTM — American Society for Testing and Materials.

Authorized representative — The individual responsible for the overall operation of a facility or an operational unit of the facility, or his assistant.

Captive facilities — Facilities which are located upon lands owned by a generator of hazardous waste and which are operated to provide for the treatment or disposal solely of such generator's hazardous waste.

Cell — A landfill cell.

C.F.R. — Code of Federal Regulations.

Closed portion — Any portion of a facility where hazardous waste treatment, storage, or disposal operations have been conducted, but which have been closed in accordance with the approved facility closure plan and all applicable closure requirements of this chapter.

Commercial establishment — Any establishment engaged in nonmanufacturing or nonprocessing business, including, but not limited to, stores, markets, office buildings, restaurants, shopping centers, and theaters.

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

Constituent — A chemical component of a waste or chemical compound which qualifies a waste as hazardous under § 75.261 (relating to criteria, identification and listing of hazardous waste), or which is listed as a hazardous waste or hazardous compound in § 75.261 (relating to criteria, identification, and listing of hazardous waste).

Container — A portable device in which a material is stored, transported, treated, disposed of, or otherwise handled.

Contingency plan — A document setting forth an organized, planned, and coordinated course of action to be followed in order to prevent pollution incidents and limit potential pollution in case of a fire, explosion, or discharge of hazardous waste or hazardous waste constituents which could threaten human health or the environment.

Designated facility — A hazardous waste treatment, storage, or disposal facility that has been designated on the manifest by the generator, and which has or is considered to have a solid waste management permit from the Department and has interim status, or has a hazardous waste management permit from the Department, or if located outside the Commonwealth, which has received an EPA permit (or is a facility with interim status) in accordance with requirements 40 C.F.R. Parts 122 and 124 of Subtitle C of RCRA, or has a permit from a state authorized in accordance with Part 123 of Subtitle C of RCRA.

Dike — An embankment of natural or man-made materials constructed to contain or obstruct the movement of liquid, sludge, or other substances.

Discharge — An intentional or accidential spilling, leaking, pumping, pouring, dumping, emitting, or any other release of hazardous wastes, hazardous waste constituents, or hazardous materials which when released into or onto land or water becomes hazardous waste.

Disposal — The incineration, deposition, injection, dumping, spilling, leaking, or placing of solid waste into or on the land or water in a manner that the solid waste or a constituent of the solid waste enters the environment, is emitted into the air, or is discharged to the waters of this Commonwealth.

Disposal facility — A facility or part of a facility at which hazardous waste is placed into or on any land or water and at which waste will remain after closure.

Elementary neutralization unit — A device which is used for neutralizing wastes which are hazardous wastes only because they exhibit the corrosivity characteristic defined in § 75.261 or are listed in § 75.261 (relating to criteria, identification and listing of hazardous waste) only for this reason; and which meets the definition of tank, container, transport vehicle, or vessel.

EPA — The United States Environmental Protection Agency.

Equivalent method — A testing or analytical method determined by the Department to be equivalent to methods specified in this chapter.

Existing hazardous waste management facility — Any storage facility, any treatment facility, or any permitted disposal facility which was in operation on November 19, 1980, or for which construction was begun on or before November 19, 1980. Construction shall be deemed to have begun if the owner or operator has obtained all permits and preconstruction approvals required by the act and either:

(i) on-going physical, on-site construction was underway; or

(ii) the owner or operator has entered into contractual obligations for construction which cannot be cancelled or modified without substantial loss.

Facility — All land, structures, and other appurtenances or improvements on a property where hazardous waste is treated, stored, or disposed.

Facility personnel — Personnel.

Food-chain crops — Crops grown for human consumption, including tobacco, and pasture and crops grown for feed for animals whose products or by-products are or will be used for human consumption.

Food processing waste — Residual materials in liquid or solid form generated in the slaughtering of poultry and livestock, or in processing and converting fish, seafood, milk, meat, and eggs to food products; the term also means residual materials generated in the processing, converting, or manufacturing of fruits, vegetables, crops and other commodities into marketable food items.

Food processing wastes used for agricultural purposes — The use of food processing wastes in normal farming operations as defined in this section.

Freeboard — The vertical distance between the top of a tank sidewall or lowest elevation of a surface impoundment dike or berm, and the elevation of the highest surface of the waste contained in the tank or impoundment.

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

FWPCA — The Federal Water Pollution Control Act (33 U.S.C. §§ 1251 — 1376).

Generator — A person or municipality who produces or creates hazardous waste identified or listed under § 75.261 (relating to criteria, identification, and listing of hazardous waste). If the generator generates hazardous waste at more than one site, he shall be deemed a separate generator in each case.

Ground water — Water below the land surface in a zone of saturation.

Ground water plume — A body of contaminated ground water originating from a specific source and influenced by such factors as the local ground water flow pattern, density and concentration of contaminant, and character of the aquifer.

Hazardous waste — Any garbage, refuse, sludge from an industrial or other waste water treatment plant, sludge from a water supply treatment plant, or air pollution control facility and other discarded material including solid, liquid, semisolid or contained gaseous material resulting from municipal, commercial, industrial, institutional, mining, or agricultural operations, and from community activities, or any combination of these factors, which, because of its quantity, concentration, or physical, chemical, or infectious characteristics, may:

(i) cause or significantly contribute to an increase in mortality or morbidity in either an individual or the total population; or

(ii) pose a substantial present or potential hazard to human health or the environment when improperly treated, stored, transported, disposed of or otherwise managed.

The term hazardous waste shall not include coal refuse as defined in the Coal Refuse Disposal Control Act (52 U.S.C. §§ 30.51 — 30.62). The term hazardous waste shall not include treatment sludges from coal mine drainage treatment plants, disposal of which is being carried on pursuant to and in compliance with a valid permit issued under the Clean Streams Law (35 P. S. §§ 691.1 — 691.1001). The term hazardous waste shall not include solid or dissolved material in domestic sewage, or solid dissolved materials in irrigation return flows or industrial discharges which are point sources subject to permits under § 402 of the Federal Water Pollution Control Act (33 U.S.C. § 1342) or source, special nuclear, or by-product material as defined by the Atomic Energy Act of 1954 (42 U.S.C. §§ 2011 — 2394).

Hazardous waste constituent — A constituent.

Hazardous waste discharge — A discharge.

Hazardous waste management facility — A facility where storage, treatment, or disposal of hazardous waste occurs.

Hazardous waste number — The number assigned by the Department to each hazardous waste listed and to each hazardous waste characteristic identified in § 75.261 (relating to criteria, identification and listing of hazardous waste).

HWM — Hazardous waste management.

Identification number — The number assigned by the Department to each generator, transporter, and treatment, storage, or disposal facility handling hazardous waste.

Impoundment — Surface impoundment.

Inactive portion — A portion of a hazardous waste management facility which is not operated after November 19, 1980, but which is not yet a closed portion.

Incinerator — An enclosed device using controlled flame combustion, the primary purpose of which is to thermally break down hazardous waste. Examples of incinerators are rotary kiln, fluidized bed, and liquid injection incinerators.

Incompatible waste — A hazardous waste which is unsuitable for:

(i) placement in a particular device or facility because it may cause corrosion or decay of containment materials such as container inner liners or tank walls; or

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

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

Industrial establishment — An establishment engaged in manufacturing or processing, including but not limited to, factories, foundries, mills, processing plants, refineries, mines and slaughterhouses.

Injection well — A well into which fluids are injected.

Inner liner — A continuous layer or lining of material placed inside a tank or other container which protects the construction materials of the tank or container from the contents.

In operation — Active functioning of a hazardous waste management facility.

Institutional establishment — An establishment engaged in service, including, but not limited to, hospitals, nursing homes, orphanages, schools and universities.

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

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

LC-50 — Lethal Concentration Fifty. The calculated concentration of a substance in air, exposure to which for a specified length of time is expected to cause the death of 50% of an entire defined experimental animal population. The mode of exposure to the toxic, such as inhalation, and the test species, such as rat or mouse, usually accompany LC-50 values.

LD-50 — Lethal Dose Fifty. The calculated dose of a substance which is expected to cause the death of 50% of an entire defined experimental animal population. The mode of exposure to the toxic, such as oral or dermal, and the test species, such as rat or rabbit, usually accompany LD-50 values.

Leachate — A liquid, including suspended or dissolved components in the liquid, that has permeated through or drained from hazardous waste.

Liner — A continuous layer of natural or synthetic materials beneath or on the sides of a storage or treatment device, surface impoundment, landfill or landfill cell, which severely restricts or prevents the downward or lateral escape of hazardous waste, hazardous waste constituents, or leachate.

Liner compatability — Absence of destructive or deleterious effect on the structure, integrity, and effectiveness of a liner as a result of physical or chemical exposure to hazardous waste or hazardous waste constituents.

Management — The entire process, or any part thereof, of storage, collection, transportation, treatment, and disposal of solid wastes by any person or municipality engaging in such process. "Hazardous waste management" refers to management of hazardous waste.

Manifest — A shipping document

originated and signed by the generator, which provides information required by § 75.262 (relating to generators of hazardous waste).

Manifest document number — The unique number assigned to a particular manifest form, usually printed in the upper right corner of the form.

Manifest system — A written record identifying the quantity, composition, origin, routing, and destination of hazardous waste from the point of generation to the point of treatment, storage, or disposal.

Mine — A deep or surface mine, whether active, inactive, or abandoned.

Mining — The process of the extraction of minerals from the earth, or from waste or stockpiles, or from pits or banks.

Mining overburden returned to the mine site — 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.

Municipality — A city, borough, incorporated town, township, or county, or any authority created by any of the foregoing.

Municipal waste — Garbage, refuse, industrial lunchroom or office waste, and other material including solid, liquid, semisolid, or contained gaseous material resulting from operation of residential, municipal, commercial, or institutional establishments and from community activities, and any sludge not meeting the definition of residual or hazardous waste hereunder from a municipal, commercial, or institutional water supply treatment plant, waste water treatment plant, or air pollution control facility.

New facility — A new hazardous waste management facility.

New hazardous waste management facility — A facility for which construction began after November 19, 1980.

Normal farming operations — The customary and generally accepted activities, practices and procedures that farms adopt, use, or engage in year after year in the production and preparation for market of poultry, livestock, and their products; and in the production, harvesting and preparation for market of agricultural, agronomic, horticultural, silvicultural, and aquicultural crops and commodities; provided that such operations are conducted in compliance with applicable laws, and provided that the use or disposal of these materials will not pollute the air, water, or other natural resources of this Commonwealth. The term includes the storage and utilizing of agricultural and food process wastes for animal feed, and includes the agricultural utilization of septic tank cleanings and sewage sludges which are generated off-site. The term includes the management, collection, storage, transportation, use or disposal of manure, other agricultural waste and food processing waste on land where such materials will improve the condition of the soil, the growth of crops, or in the restoration of the land for the same purposes.

NPDES — National Pollutant Discharge Elimination System.

Off-site — Any property which is not defined as on-site.

On-site — The same or geographically contiguous property owned or leased or used by a generator or HWM facility, which may be divided by public or private right-of-way, provided the entrance and exit between the properties is at a crossroads intersection, and access is by crossing, as opposed to going along, the right-of-way. Noncontiguous properties owned or leased by the same person or municipality but connected by a right-of-way which he controls and to which the public does not have access, is also considered on-site property. Any facility that does not meet the requirements of this definition is an off-site facility.

Open burning — The combustion of material without the following characteristics:

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

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

(iii) Control of emission of the gaseous combustion products.

Operator — The person responsible for the overall operation of a facility.

Owner — The person or municipality who is the owner of record of a facility or part of a facility.

Partial closure — The closure of a discrete portion of a facility or its activities in accordance with provisions of §§ 75.264 and 75.265 (relating to new hazardous waste management facilities and interim status standards and permit program). For example, partial closure may include closure of a trench, landfill cell, or unit operation, while other parts of the same facility remain in operation or to be placed in operation.

Permeability — The rate of movement of liquid and/or gases through a medium.

Person — An individual, partnership, corporation, association, institution, cooperative enterprise, municipal authority, Federal Government or agency, State institution and agency — including, but not limited to, the Department of General Services and the State Public School Buildings Authority — or any other legal entity which is recognized by law as the subject of rights and duties. In a provision of the act prescribing a fine, imprisonment or penalty, or any combination of the foregoing, the term person shall include the officers and directors of a corporation or other legal entity having officers and directors.

Personnel — The staff of employees and others who oversee operation of, or work at, a hazardous waste management facility.

Pile — A noncontainerized accumulation of solid, nonflowing hazardous waste.

Point source — A discernible, confined, and discrete conveyance, including, but not limited to a 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.

Point sources subject to permits under § 402 of the Federal Water Pollution Control Act — Point source discharges for which valid and current permits have been issued under § 402 of the Federal Water Pollution Control Act (33 U.S.C. § 1342), to the extent that such discharges are authorized by the permits.

Pollution — Contamination of air, water, land or other natural resources of this Commonwealth such as will create or are likely to create a public nuisance or to render such air, water, land or other natural resources harmful, detrimental or injurious to public health, safety or welfare, or to domestic, municipal, commercial, industrial, agricultural, recreational or other legitimate beneficial uses, or to livestock, wild animals, birds, fish or other life.

Precious metals — Recoverable gold, silver, or platinum metal.

Processing — Technology used for the purpose of reducing the volume or bulk of municipal or residual waste or

to convert part or all of such waste materials for off-site reuse. Processing facilities include but are not limited to transfer facilities, composting facilities, and resource recovery facilities.

Professional engineer — A registered professional engineer.

Publicly-owned treatment works (POTW) — A 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 Clean Water Act (33 U.S.C. § 1362). This definition includes sewers, pipes, or other conveyance only if they convey wastewater to a POTW providing treatment.

RCRA — Resource Conservation and Recovery Act of 1976 (42 U.S.C. §§ 6901 — 6986).

Registered professional engineers — An engineer registered to practice engineering in this Commonwealth.

Reportable quantity — The minimum quantity — or greater — of hazardous waste generated as a result of a discharge or spill, which must be reported to the Department.

Representative sample — A sample of a universe or whole, such as a waste pile, lagoon, or ground water, which can be expected to exhibit the average properties of the universe or whole.

Residual waste — Garbage, refuse, other discarded material or other waste including solid, liquid, semisolid, or contained gaseous materials resulting from industrial, mining, and agricultural operations and sludge from an industrial, mining or agricultural water supply treatment facility, waste water treatment facility or air pollution control facility, provided that it is not hazardous. The term shall not include coal refuse as defined in the Coal Refuse Disposal Control Act (52 P. S. § 30.53). The term shall not include treatment sludges from coal mine drainage treatment plants, disposal of which is being carried on under a valid permit issued pursuant to The Clean Streams Law (35 P. S. §§ 691.1 — 691.901).

Responsible official — For corporations, corporate officers; for limited partnerships, general partners; for all other partnerships, partners; for a sole proprietorship, the proprietor; for a municipal, state or federal authority or agency, an executive officer or ranking elected official responsible for compliance of the authority's or agency's hazardous waste activities and facilities with all applicable rules and regulations.

Run-off — Rainwater, leachate, or other liquid that drains overland from part of a facility.

Run-on — Rainwater, leachate, or other liquid that drains overland onto part of a facility.

Saturated zone — A part of the earth's crust in which all voids are filled with water.

SIC number — A number assigned to a corresponding type of industry, manufacture, or product under the Standard Industrial Code prepared by the U. S. Office of Management and Budget.

Sludge — Solid, semisolid, or liquid waste generated from a municipal, commercial, or industrial waste treatment facility or wastewater treatment plant, water supply treatment plant, or air pollution control facility, exclusive of the treated effluent from a wastewater treatment plant.

Solid waste — Waste, including but not limited to, municipal, residual, or hazardous waste, including solid, liquid, semisolid, or contained gaseous materials.

Spill — A discharge.

Statistically significant — Significant as determined by the Student's t-test — a statistical method — referred to in Appendix III of § 75.265 (relating to interim status standards and permit program).

Storage — The containment of waste on a temporary basis in such a manner as not to constitute disposal of such waste. It shall be presumed that the containment of waste in excess of one year constitutes disposal. This presumption can be overcome by clear and convincing evidence to the contrary.

Sump — A stationary device designed to contain an accumulation of hazardous waste resulting from a hazardous waste discharge from a tank, container, waste pile, surface impoundment, landfill, or other hazardous waste management structure.

Surface impoundment — 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 synthetic materials — which is designed to hold an accumulation of liquid wastes or wastes containing free liquids, and which is not an injection well. Examples of surface impoundments are holding, storage, settling, and aeration pits, ponds, and lagoons.

Tank — A stationary device designed to contain an accumulation of hazardous waste and constructed primarily or entirely of non-earthen materials — such as, concrete, steel, plastic — which provide structural support and containment.

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

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

Transportation — The off-site removal of solid waste at any time after generation.

Transporter — A person or municipality engaged in the off-site transportation of hazardous waste by air, rail, highway, or water.

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

Treatment — A method, technique, or process, including neutralization, designed to change the physical, chemical, or biological character or composition of any waste so as to neutralize such waste or so as to render such waste non-hazardous, safer for transport, suitable for recovery, suitable for storage, or reduced in volume. The term includes activity or processing designed to change the physical form or chemical composition of waste so as to render it neutral or nonhazardous.

TSD — Abbreviation for treatment, storage, or disposal of hazardous waste.

Underground injection — The subsurface emplacement of fluids through a bored, drilled, or driven well; or through a dug well, where the depth of the dug well is greater than the largest surface dimension.

U. N. Number — A specific number assigned to a corresponding individual chemical compound under a numbering system adopted for worldwide use

by the United Nations Committee of Experts on the Transport of Dangerous Goods. "U. N. Number" shall include North American (N. A.) Numbers.

Unsaturated zone — The zone between the land surface and the upper boundary of the zone of saturation. This upper boundary of the zone of saturation is often called the water table.

Vessel — Any watercraft used or capable of being used as a means of transportation on the water.

Wastewater treatment unit — A device which meets the definition of a tank, and which is part of a wastewater treatment facility subject to regulation under either sections 402 or 307(B) of the Clean Water Act, and receives and treats or stores an influent wastewater which is a hazardous waste, or generates and accumulates a wastewater treatment sludge which is a hazardous waste, or treats or stores a wastewater treatment sludge which is a hazardous waste.

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

Well — A driven, drilled, bored, or dug excavation, however inclined from the vertical, with a depth greater than the largest surface dimension, generally of a cylindrical form, and often walled by some means to prevent the excavation from caving in.

Well injection — An underground injection.

Zone of aeration — An unsaturated zone.

Zone of saturation — A saturated zone.

(b) Written requests to determine if a waste generated at a particular facility does not exhibit the properties nor contain the substances which were the bases for listing that waste as a hazardous waste in § 75.261 (relating to criteria, identification and listing of hazardous wastes) shall consist of the following:

(1) A person or municipality may make a request in writing to the Department for a determination of nonapplicability. The request shall be accompanied by demonstrated proof that the waste generated at that facility does not meet any of the criteria under which the waste was listed as a hazardous waste under § 75.261(f)(2)(i) (relating to criteria, identification and listing of hazardous waste), and that it also does not meet the criterion in § 75.261(f)(2)(ii) (relating to criteria, identification and listing of hazardous waste). It also shall not meet any of the characteristics of hazardous waste under § 75.261(g) (relating to criteria, identification and listing of hazardous waste). All demonstrations performed under this subsection shall be completed using representative samples of the waste.

(2) The procedures in this subsection may also be used to request the Department for a determination of nonapplicability of § 75.261(b)(1)(ii) or (3) (relating to criteria, identification and listing of hazardous waste) to a waste listed in § 75.261(h) (relating to criteria, identification and listing of hazardous waste), containing a waste listed in § 75.261(h), or derived from a waste listed in § 75.261(h). This determination shall only apply to a particular generating, storage, treatment, or disposal facility. The request shall be accompanied by demonstrated proof that the subject waste generated at the facility does not meet any of the criteria under § 75.261(g) (relating to criteria, identification and listing of hazardous waste). However, if the waste is a mixture of solid waste and one or more hazardous wastes listed under § 75.261(h) (relating to criteria, identification and listing of hazardous waste), or is derived from one or more hazardous wastes, the demonstration may be performed specific to each constituent listed waste, or to the waste mixture as a whole.

(3) If the waste is listed with hazard codes I, C, E, or R in § 75.261(h)(2) and (3) (relating to criteria, identification and listing of hazardous waste), the request shall include verification that demonstration samples of the waste do not exhibit any of the characteristics of hazardous waste described in § 75.261(g) (relating to criteria, identification and listing of hazardous waste).

(4) If the waste is listed with hazard code T in § 75.261(h)(2) and (3) and (4)(vi) (relating to criteria, identification and listing of hazardous waste), the request shall include demonstrated proof that:

(i) demonstration samples of the waste do not contain the constituents shown in Appendix VII of § 75.261 (relating to criteria, identification and listing of hazardous waste) which cause the waste to be listed, using the test methods prescribed in Appendix III of § 75.261 (relating to criteria, identification and listing of hazardous waste); or

(ii) the waste does not meet the criterion of § 75.261(f)(2)(ii) (relating to criteria, identification and listing of hazardous waste) when considering the factors in § 75.261(f)(2)(ii)(A) — (K) (relating to criteria, identification and listing of hazardous waste).

(5) If the waste is listed with the hazard code H in § 75.261(h)(4)(v) (relating to criteria, identification and listing of hazardous waste), the request shall include demonstrated proof that the waste does not meet either:

(i) the criterion in § 75.261(f)(2)(i) (relating to criteria, identification and listing of hazardous waste); or

(ii) the criterion in § 75.261(f)(2)(ii) (relating to criteria, identification and listing of hazardous waste) when considering the factors listed in § 75.261(f)(2)(ii)(A) — (K) (relating to criteria, identification and listing of hazardous waste).

(6) Demonstration samples shall consist of sufficient, but in no case less than four, representative samples taken over a period capable of representing the variability or uniformity of the waste.

(7) Each request shall be submitted to the Department by certified mail and shall include the following:

(i) The requestor's name and address.

(ii) A statement of the requestor's interest in the proposed determination.

(iii) A description of the proposed determination.

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

(8) Each request shall also include the following:

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

(ii) The name and qualifications of the individuals sampling or testing the waste.

(iii) The dates of sampling and testing.

(iv) The name and location of the generating facility.

(v) A description of the materials, manufacturing process, or other operations producing the waste, and an assessment of whether such processes, operations, or raw materials could or would produce a waste that is not considered by the demonstration.

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

(vii) Pertinent data on and discussion of the factors delineated in the re-

spective criteria for listing a hazardous waste, where the requestor's demonstration is based on the factors in § 75.261(f)(2)(ii) (relating to criteria, identification and listing of hazardous waste).

(viii) A description of the methods and equipment used to obtain the representative samples.

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

(x) A description of the tests performed, including test results.

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

(xii) The following statement signed by the generator of the waste or his authorized representative:

"I certify under penalty of law that I have personally examined and am familiar with the information submitted in this demonstration and all attached documents, and that, based on my inquiry of those individuals immediately responsible for obtaining the information, I believe the submitted information to be true, accurate, and complete. I am aware that there are significant penalties for submitting false information, including the possibility of fine and imprisonment."

(9) After receiving a request for determination, the Department may request any additional information which it deems necessary to evaluate the request.

(10) A determination shall apply only to the waste generated at the requestor's individual facility covered by the demonstration, and shall not apply to any waste from any other facility.

(11) The Department may make a determination of nonapplicability for only part of the waste for which the demonstration is submitted when variability of the waste justifies such a determination.

§ 75.261. Criteria, identification and listing of hazardous waste.

(a) *Scope.*

(1) This section defines the term "hazardous wastes", and identifies those solid wastes which are excluded from regulation under some portion or all of §§ 75.262 — 75.267.

(2) This section identifies those solid wastes which are subject to regulation as hazardous wastes under §§ 75.262 — 75.267.

(3) This section identifies hazardous wastes by characteristic, source and specific substance and establishes special management requirements for hazardous waste produced by small quantity generators and hazardous waste which is used, reused, recycled or reclaimed.

(b) *Determination of hazardous waste.*

(1) A hazardous waste is a solid waste which is not excluded as hazardous waste under subsection (c) and meets any of the following criteria:

(i) Is listed in subsection (h) of this section and has not been exempted in accordance with § 75.260 (relating to definitions and requests for determination).

(ii) Is a mixture of solid waste and one or more hazardous wastes listed in subsection (h) and has not been exempted in accordance with § 75.260 (relating to definitions and requests for determination).

(iii) Exhibits any of the characteristics of hazardous waste identified in subsection (g).

(2) A solid waste which is not excluded under subsection (c) becomes a hazardous waste when any of the following occur:

(i) In the case of a waste listed in subsection (h) when the waste first meets the listing description.

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

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

(3) Unless and until it meets the criteria of paragraph (4):

(i) A hazardous waste will remain a hazardous waste as identified in this section.

(ii) Any solid waste generated from the treatment, storage or disposal of a hazardous waste, including any sludge, spill residue, ash, emission control dust or leachate — but not including precipitation run-off, is a hazardous waste.

(4) Any solid waste described in paragraph (3) is not a hazardous waste if it meets the following criteria:

(i) In the case of any solid waste, it does not exhibit any of the characteristics of hazardous waste identified in subsection (g).

(ii) In the case of a waste which is a hazardous waste listed in subsection (h), contains a hazardous waste listed in subsection (h) or is derived from a hazardous waste listed in subsection (h), if it has been exempted under § 75.260 (relating to definitions and requests for determinations).

(5) 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 §§ 75.262 — 75.265 or to the notification requirements of 75.267 (notification of hazardous waste activities) until it exits the unit in which it was generated. However, this paragraph shall not apply if the unit is a surface impoundment or if the hazardous waste remains in the unit more than 90 days after the unit ceases to be operated for manufacturing, or for storage or transportation of product or raw materials.

(c) *Exclusions.* The following solid wastes are specifically excluded as hazardous wastes:

(1) Solid or dissolved material in domestic sewage and any mixture of domestic sewage and other wastes that pass through a sewer system to publicly-owned treatment works for treatment.

(2) Industrial wastewater discharges that are point sources subject to regulation under section 402 of the Federal Water Pollution Control Act, as amended (86 Stat. 880). This exclusion applies only to the actual point source discharge. It does not exclude industrial wastewaters while they are being collected, stored or treated prior to discharge, nor does it exclude sludges that are generated by industrial wastewater treatment.

(3) Solid or dissolved materials in irrigation return flows.

(4) Source, special nuclear, or byproduct material as defined by the United States Atomic Energy Act of 1954, as amended (68 Stat. 923).

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

(6) Industrial lunchroom or office waste and household waste, including household waste that has been collected, transported, stored, treated, disposed, recovered (such as refuse-derived fuel) or reused.

harmful constituents and the rate of degradation.

(F) The degree to which the constituent or any degradation product of the constituent bioaccumulates in ecosystems.

(G) The plausible types of improper management to which the waste could be subjected.

(H) The quantities of the waste generated at individual generation sites or on a regional or national basis.

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

(J) Action taken by other governmental agencies or regulatory programs based on the health or environmental hazard posed by the waste or waste constituent.

(K) Such other factors as may be appropriate.

(iii) 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.

(g) *Characteristics of hazardous waste.*

(1) *General.*

(i) A solid waste is a hazardous waste if it exhibits any of the characteristics identified in this subsection unless it is excluded as a hazardous waste in subsection (c).

(ii) A hazardous waste, identified by a characteristic in this subsection but not listed as a hazardous waste in subsection (h), is assigned the Hazardous Waste Number of the respective characteristic as set forth in this subsection. This number shall be used in complying with the notification requirements and certain recordkeeping and reporting requirements under §§ 75.262 — 75.267.

(iii) For the purposes of this subsection (g), the Department will consider as representative a sample obtained using any of the applicable sampling methods specified in Appendix I or an equivalent method approved by the Department.

(2) *Characteristic of ignitability.*

(i) A solid waste exhibits the characteristic of ignitability if a representative sample of the waste has any of the following properties:

(A) It is a liquid with a flash point less than 60°C (140°F), as determined by a Pensky-Martens Closed Cup Tester, using the test method specified in ASTM Standard D-93-79, 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 test method approved by the Department. An aqueous solution containing less than 24 percent alcohol by volume is excluded from this definition.

(B) 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.

(C) It is an ignitable compressed gas as defined in 49 C.F.R. § 173.300 and as determined by the test methods described in that regulation or equivalent test methods approved by the Department.

(D) It is an oxidizer as defined in 49 C.F.R. § 173.151.

(ii) A solid waste that exhibits the characteristic of ignitability, but is not listed as a hazardous waste in subsection (h), has the Hazardous Waste Number of D001.

(3) *Characteristic of corrosivity.*

(i) A solid waste exhibits the characteristic of corrosivity if a representative sample of the waste has either of the following properties:

(A) It is aqueous and has a pH less than or equal to two 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" (also described in "Methods for Analysis of Water and Wastes" EPA 600/4-79-020, March 1979), or an equivalent test method approved by the Department.

(B) 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 approved by the Department.

(ii) A solid waste that exhibits the characteristic of corrosivity, but is not listed as a hazardous waste in subsection (h) has the Hazardous Waste Number of D002.

(4) *Characteristic of reactivity.*

(i) A solid waste exhibits the characteristic of reactivity if a representative sample of the waste has any of the following properties:

(A) It is normally unstable and readily undergoes violent change without detonating.

(B) It reacts violently with water.

(C) It forms potentially explosive mixtures with water.

(D) 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.

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

(F) It is capable of detonation or explosive reaction if it is subjected to a strong initiating source or if heated under confinement.

(G) It is readily capable of detonation, explosive decomposition, or reaction at standard temperature and pressure.

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

(ii) A solid waste that exhibits the characteristic of reactivity, but is not listed as a hazardous waste in subsection (h) has the Hazardous Waste Number of D003.

(5) *Characteristic of EP toxicity.*

(i) A solid waste exhibits the characteristic of EP toxicity if, using the test methods described in Appendix II or equivalent methods approved by the Department, 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 as determined by the test procedure described in Appendix II, the waste itself, after filtering, is considered to be the extract for the purposes of this subsection (g).

(ii) A solid waste that exhibits the characteristic of EP toxicity, but is not listed as a hazardous waste in subsection (h) has the Hazardous Waste Number specified in Table I which corresponds to the toxic contaminant causing it to be hazardous.

Table 1

Maximum Concentration of Contaminants for Characteristic of EP Toxicity

Hazardous Waste No.	*Contaminant*	*Maximum Concentration (milligrams per liter)*
D004	Arsenic	5.0
D005	Barium	100.0
D006	Cadmium	1.0
D007	Chromium	5.0
D008	Lead	5.0
D009	Mercury	0.2
D010	Selenium	1.0
D011	Silver	5.0
D012	Endrin (1,2,3,4,10,10-hexachloro-1, 7-epoxy-1, 4,4a,5,6,7,8,8a-octahydro-1, 4-endo, endo-5, 8-dimethano naphthalene)	0.02
D013	Lindane (1,2,3,4,5,6-hexachlorocyclohexane, gamma isomer)	0.4
D014	Methoxychlor (1,1,1-Trichloro-2, 2-bis [p-methoxyphenyl] ethane)	10.0
D015	Toxaphene ($C_{10}H_{10}Cl_8$, Technical chlorinated camphene, 67-69 percent chlorine)	0.5
D016	2,4-D, (2,4-Dichlorophenoxyacetic acid)	10.0
D017	2,4,5-TP, (Silvex), (2,4,5-Trichlorophenoxypropionic acid)	1.0

(h) *Lists of hazardous wastes.* Lists of hazardous wastes shall conform with the following:

(1) *General.* Hazardous wastes shall be:

(i) A solid waste is a hazardous waste if it is listed in this subsection (h) unless it has been exempted under § 75.260 (relating to definitions and requests for determinations).

(ii) The basis for listing the classes or types of wastes listed in this subsection is indicated by 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(s) that cause the waste to be listed as an EP Toxic Waste (E) or Toxic Waste (T) in paragraphs (2) and (3) of this subsection.

(iii) Each hazardous waste listed in this subsection (h) is assigned a Hazardous Waste Number which precedes the name of the waste. This number must be used in complying with the notification requirements and certain recordkeeping and reporting requirements under §§ 75.262 — 75.267.

(2) *List of hazardous waste from nonspecific sources.*

Industry and Hazardous Waste No.	*Hazardous Waste*	*Hazard Code*
Generic:		
F001	The following spent halogenated solvents used in degreasing: tetrachloroethylene, trichloroethylene, methylene chloride, 1,1,1-trichloroethane, carbon tetrachloride, and chlorinated fluorocarbons; and sludges from the recovery of these solvents in degreasing operations.	(T)
F002	The following spent halogenated solvents: tetrachloroethylene, methylene chloride, trichloroethylene, 1,1,1-trichloroethane, chlorobenzene, 1,1,2-trichloro-1,2,2-trifluoroethane, orthodichlorobenzene, 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, pyridine and the still bottoms from the recovery of these solvents.	(I,T)
F006	Wastewater treatment sludges from electroplating operations except from the following processes: (1) sulfuric acid anodizing of aluminum; (2) tin plating on carbon steel; (3) zinc plating (segregated basis) on carbon steel; (4) aluminum or zinc-aluminum plating on carbon steel; (5) cleaning/stripping associated with tin, zinc and aluminum plating on carbon steel; and (6) chemical etching and milling of aluminum.	(T)
F007	Spent cyanide plating bath solutions from electroplating operations (except for precious metals electroplating spent cyanide plating bath solutions which are never discarded).	(R,T)

Industry and Hazardous Waste No.	*Hazardous Waste*	*Hazard Code*
F008	Plating bath sludges from the bottom of plating baths from electroplating operations where cyanides are used in the process (except for precious metals electroplating plating bath sludges which are never discarded).	(R,T)
F009	Spent stripping and cleaning bath solutions from electroplating operations where cyanides are used in the process (except for precious metals electroplating spent stripping and cleaning bath solutions which are never discarded).	(R,T)
F010	Quenching bath sludge from oil baths from metal heat treating operations where cyanides are used in the process (except for precious metals heat-treating quenching bath sludges).	(R,T)
F011	Spent cyanide solutions from salt bath pot cleaning from metal heat treating operations (except for precious metals heat treating spent cyanide solutions from salt bath pot cleaning which are never discarded).	(R,T)
F012	Quenching wastewater treatment sludges from metal heat treating operations where cyanides are used in the process (except for precious metals heat treating quenching wastewater treatment sludges which are never discarded).	(T)
F019	Wastewater treatment sludges from the chemical conversion coating of aluminum.	(T)

(3) *List of hazardous waste from specific sources.*

Industry and Hazardous Waste	*Hazardous Waste*	*Hazardous Code*
Wood Preservation		
K001	Bottom sediment sludge from the treatment of wastewaters from wood preserving processes that use creosote and/or pentachlorophenol	(T)
Inorganic Pigments		
K002	Wastewater treatment sludge from the production of chrome yellow and orange pigments	(T)
K003	Wastewater treatment sludge from the production of molybdate organic 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 fractionation in ethyl chloride production	(T)
K019	Heavy ends from the distillation of ethylene dichloride in ethylene dichloride production	(T)
K020	Heavy ends from the distillation of vinyl chloride in vinyl chloride monomer production	(T)
K021	Aqueous spent antimony catalyst waste from fluoromethanes production	(T)
K022	Distillation bottom tars from the production of phenol/acetone from cumene	(T)
K023	Distillation light ends from the production of phthalic anhydride from naphthalene	(T)
K024	Distillation bottoms from the production of phthalic anhydride from naphthalene	(T)
K093	Distillation light ends from the production of phthalic anhydride from ortho-xylene	(T)
K094	Distillation bottoms from the production of phthalic anhydride from ortho-xylene	(T)
K025	Distillation bottoms from the production of nitrobenzene by the nitration of benzene	(T)
K026	Stripping still tails from the production of methyl ethyl pyridines	(T)
K027	Centrifuge and distillation residue from toluene diisocyanate production	(R,T)

Industry and Hazardous Waste No.	Hazardous Waste	Hazard Code
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 of 1,1,1-trichloroethane	(T)
K030	Column bottoms or heavy ends from the combined production of trichloroethylene and perchloroethylene	(T)
K083	Distillation bottoms from aniline production	(T)
K103	Process residues from aniline extraction from the production of aniline	(T)
K104	Combined wastewater streams generated from nitrobenzene/aniline production	(T)
K085	Distillation or fractionation column bottoms from the production of chlorobenzenes	(T)
K105	Separated aqueous stream from the reactor product washing step in the production of chlorobenzenes	(T)
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 chlordane	(T)
K033	Wastewater and scrub water from the chlorination of cyclopentadiene in the production of chlordane	(T)
K034	Filter solids from the filtration of hexachlorocyclopentadiene in the production of chlordane	(T)
K097	Vacuum stripper discharge from the chlordane chlorinator in the production of chlordane	(T)
K035	Wastewater treatment sludges generated in the production of creosote	(T)
K036	Still bottoms from toluene reclamation distillation in the production of disulfoton	(T)
K037	Wastewater treatment sludges from the production of disulfoton	(T)
K038	Wastewater from the washing and stripping of phorate production	(T)
K039	Filter cake from the filtration of diethylphosphorodithioic acid in the production of phorate	(T)
K040	Wastewater treatment sludge from the production of phorate	(T)
K041	Wastewater treatment sludge from the production of toxaphene	(T)
K098	Untreated process wastewater from the production of toxaphene	(T)
K042	Heavy ends or distillation residues from the distillation of tetrachlorobenzene in the production of 2,4,5-T	(T)
K043	2,6-Dichlorophenol waste from the production of 2,4-D	(T)
K099	Untreated wastewater from the production of 2,4-D	(T)
Explosives		
K044	Wastewater treatment sludges from the manufacturing and processing of explosives	(R)
K045	Spent carbon from the treatment of wastewater containing explosives	(R)
K046	Wastewater treatment sludges from the manufacturing, formulation and loading of lead-based initiating compounds	(T)
K047	Pink/red water from TNT operations	(R)
Petroleum Refining		
K048	Dissolved air flotation (DAF) float from the petroleum refining industry	(T)
K049	Slop oil emulsion solids from the petroleum refining industry	(T)
K050	Heat exchanger bundle cleaning sludge from the petroleum refining industry	(T)
K051	API separator sludge from the petroleum refining industry	(T)
K052	Tank bottoms (leaded) from the petroleum refining industry	(T)

Iron and Steel		
K061	Emission control dust/sludge from the electric furnace production of steel, however not emission control dust/sludge from steel foundry operations	(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 containing chromium and lead	(T)
Coking:		
K060	Ammonia still lime sludge from coking operations	(T)
K087	Decanter tank tar sludge from coking operations	(T)

(4) The following containers and commercial chemical products, off-specification species, and spill residues thereof are hazardous wastes if and when they are discarded or intended to be discarded:

(i) Any commercial chemical product or manufacturing chemical intermediate having a generic name listed in subparagraphs (v) or (vi) and any off-specification commercial chemical product or manufacturing chemical intermediate which, if it met specifications, would have a generic name listed in subparagraphs (v) or (vi).

(ii) Any container or an inner liner removed from a container that has held any hazardous waste or any commercial chemical product or manufacturing chemical intermediate having a generic name listed in subparagraph (vi), or any off-specification commercial chemical product or manufacturing chemical intermediate which it if met specifications would have a generic name listed in subparagraph (vi) or any residue or contaminated soil, water or other debris resulting from the cleanup of a spill into or on any land or water of any off-specification chemical product or manufacturing chemical intermediate which, if it met specifications, would have the generic name listed in subparagraph (vi), except a waste that is a compressed gas that is identified in paragraph (4)(vi). Any such waste identified in this subparagraph (ii) is not a hazardous waste if:

(A) all wastes have been removed that can be removed using the practices commonly employed to remove materials from that type of container, such as, pouring, pumping, and aspirating; and

(B) no more than 2.5 centimeters (one inch) of residue remain on the bottom of the container or inner liner; or

(C) it is any empty container that has held a hazardous waste that is a compressed gas. A container is deemed to be empty when the pressure in the container approaches atmospheric pressure.

(iii) Any container or inner liner removed from a container that has held any commercial chemical product or manufacturing chemical intermediate having a generic name listed in subparagraph (v), or any off specification commercial chemical product or manufacturing chemical intermediate which, if it met specifications, would have a generic name listed in subparagraph (v), or any residue or contaminated soil, water, or other debris resulting from the clean-up of a spill into or on any land or water of any commercial chemical product or manufacturing chemical intermediate having the generic name listed in subparagraph (v), or of any off-specification chemical product and manufacturing chemical intermediate which, if it met specification, would have the generic name listed in subparagraph (v), except a waste that is a compressed gas that is identified in paragraph (4)(v) unless:

(A) The container or inner liner has been triple-rinsed using a solvent capable of removing the commercial product or manufacturing chemical intermediate.

(B) 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.

(C) 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.

(D) It is an empty container that has held a hazardous waste that is a compressed gas. A container is deemed to be empty when the pressure in the container approaches atmospheric pressure.

(iv) 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 a gen-

eric name listed in subparagraphs (v) or (vi). 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. A mixture consisting solely of these listed pure commercial grade chemicals, listed technical grade chemicals, or formulations in which the listed generic chemical is the sole active ingredient shall also be considered a hazardous waste. Such a mixture shall, as applicable, have the hazardous waste number assigned to the largest acute hazardous waste fraction in subparagraph (v), or that assigned to the largest toxic waste fraction in subparagraph (vi). If the mixture consists of both listed acute hazardous and toxic fractions, the hazardous waste number of the largest acute hazardous fraction shall be used. It does not refer to a material, such as a manufacturing process waste, that contains any of the substances listed in subparagraphs (v) or (vi). Where a manufacturing process waste is deemed to be a hazardous waste because it contains a substance listed in subparagraphs (v) or (vi) such waste will be listed in either subsection (h)(2) or (h)(3) or will be identified as a hazardous waste by the characteristics set forth in subsection (g).

(v) The commercial chemical products, manufacturing chemical intermediates, or off-specification commercial chemical products or manufacturing chemical intermediates which, if they met specifications, would have a generic name listed in this subparagraph, that are referred to in subparagraphs (i) — (iv) are identified as acute hazardous wastes (H) and are subject to the small quantity exclusion defined in subsection (d)(1) and (2) (criteria, identification and listing of hazardous waste). For convenience of the regulated community the primary hazardous properties of these materials have been identified by the letters T (toxic) and R (reactive). Absence of a letter indicates that the compound is only listed as acute hazardous. 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
P002	1-Acetyl-2-thiourea
P003	Acrolein
P070	Aldicarb
P004	Aldrin
P005	Allyl alcohol
P006	Aluminum phosphide (R,T)
P007	5-(Aminomethyl) 3-isoxazolol
P008	4-Aminopyridine
P009	Ammonium picrate (R)
P119	Ammonium vanadate
P010	Arsenic acid
P012	Arsenic (III) oxide
P011	Arsenic (V) oxide
P011	Arsenic pentoxide
P012	Arsenic trioxide
P038	Arsine, diethyl-
P054	Aziridine
P013	Barium cyanide
P024	Benzenamine, 4-chloro-
P077	Benzenamine, 4-nitro-
P028	Benzene, (chloromethyl)-
P042	1,2-Benzenediol, 4-[1-hydroxy-2-(methylamino) ethyl]-
P014	Benzenethiol
P028	Benzyl chloride
P015	Beryllium dust
P016	Bis (chloromethyl) ether
P017	Bromoacetone
P018	Brucine
P021	Calcium cyanide
P123	Camphene, octachloro-
P103	Carbamimidoselenoic acid
P022	Carbon bisulfide
P022	Carbon disulfide
P095	Carbonyl chloride
P033	Chlorine cyanide
P023	Chloroacetaldehyde
P024	p-Chloroaniline
P026	1-(o-Chlorophenyl) thiourea
P027	3-Chloropropionitrile

Hazardous Waste No.	*Substance*
P029	Copper cyanides
P030	Cyanides (soluble cyanide salts), not elsewhere specified
P031	Cyanogen
P033	Cyanogen chloride
P036	Dichlorophenylarsine
P037	Dieldrin
P038	Diethylarsine
P039	0,0-Diethyl S-[2-(ethylthio) ethyl] phosphoro-dithioate
P041	Diethyl-p-nitrophenyl phosphate
P040	0,0-Diethyl 0-pyrazinyl phosphorothioate
P043	Diisopropyl fluorophosphate
P044	Dimethoate
P045	3,3-Dimethyl-1-(methylthio)-2-butanone, 0-[(methyl-amino) carbonyl] oxime
P071	0,0 Dimethyl 0-p-nitrophenyl phosphorothioate
P082	Dimethylnitrosamine
P046	alpha, alpha-Dimethylphenethylamine
P047	4, 6-Dinitro-o-cresol and salts
P034	4, 6-Dinitrol-o-cyclohexylphenol
P048	2, 4-Dinitrophenol
P020	Dinoseb
P085	Diphosphoramide, octamethyl-
P039	Disulfoton
P049	2, 4-Dithiobiuret
P109	Dithiopyrophosphoric acid, tetraethyl ester
P050	Endosulfan
P088	Endothall
P051	Endrin
P042	Epinephrine
P046	Ethanamine, 1, 1-dimethyl-2-phenyl-
P084	Ethenamine, N-methyl-N-nitroso-
P101	Ethyl cyanide
P054	Ethylenimine
P097	Famphur
P056	Fluorine
P057	Fluoroacetamide
P058	Fluoroacetic acid, sodium salt
P065	Fulminic acid, mercury (II) salt (R,T)
P059	Heptachlor
P051	1,2,3,4,10,10-Hexachloro-6,7-epoxy-1,4,4a,5,6,7,8,8a-octahydro-endo-endo-1,4:5,8-dimethanonaphthalene
P037	1,2,3,4,10,10-Hexachloro-6,7-epoxy-1,4,4a,5,6,7,8,8a-octahydro-endo, exo-1,4:5,8-dimethanonaphthalene
P060	1,2,3,4,10,10-Hexachloro-1,4,4a,5,8,8a-hexahydro-1,4:5,8-endo, endo-dimethanonaphthalene
P004	1,2,3,4,10,10-Hexachloro-1,4,4a,5,8,8a-hexahydro-1,4:5,8-endo, exo-dimethanonaphthalene
P060	Hexachlorohexahydro-endo, endo-dimethanonaphthalene
P062	Hexaethyl tetraphosphate
P116	Hydrazinecarbothioamide
P068	Hydrazine, methyl-
P063	Hydrocyanic acid
P063	Hydrogen cyanide
P096	Hydrogen phosphide
P064	Isocyanic acid, methyl ester
P007	3(2H)-Isoxazolone, 5-(aminomethyl)-
P092	Mercury, (acetato-0) phenyl-
P065	Mercury fulminate (R,T)
P016	Methane, oxybis (chloro-)
P112	Methane, tetranitro-(R)
P118	Methanethiol, trichloro-
P059	4,7-Methano-1H-indene, 1,4,5,6,7,8,8-heptachloro-3a,4,7,7a-tetrahydro-
P066	Methomyl
P067	2-Methylaziridine
P068	Methyl hydrazine
P064	Methyl isocyanate
P069	2-Methyllactonitrile
P071	Methyl parathion
P072	alpha-Naphthylthiourea
P073	Nickel carbonyl
P074	Nickel cyanide
P074	Nickel (II) cyanide

Hazardous Waste No.	*Substance*
P073	Nickel tetracarbonyl
P075	Nicotine and salts
P076	Nitric oxide
P077	p-Nitroaniline
P078	Nitrogen dioxide
P076	Nitrogen (II) oxide
P078	Nitrogen (IV) oxide
P081	Nitroglycerine (R)
P082	N-Nitrosodimethylamine
P084	N-Nitrosomethylvinylamine
P050	5-Norbornene-2,3-dimethanol, 1,4,5,6,7,7-hexachloro, cyclic sulfite
P085	Octamethylpyrophosphoramide
P087	Osmium oxide
P087	Osmium tetroxide
P088	7-Oxabicyclo [2.2.1] heptane-2,3-dicarboxylic acid
P089	Parathion
P034	Phenol, 2-cyclohexyl-4,6-dinitro-
P048	Phenol, 2,4-dinitro-
P047	Phenol, 2,4-dinitro-6-methyl-, and salts
P020	Phenol, 2,4-dinitro-6-(1-methylpropyl)-
P009	Phenol, 2,4,6-trinitro-, ammonium salt (R)
P036	Phenyl dichloroarsine
P092	Phenylmercuric acetate
P093	N-Phenylthiourea
P094	Phorate
P095	Phosgene
P096	Phosphine
P041	Phosphoric acid, diethyl p-nitrophenyl ester
P044	Phosphorodithioic acid, 0,0-dimethyl S-[2-(methylamino)-2-oxoethyl] ester
P043	Phosphorofluoridic acid, bis(1-methylethyl) ester
P094	Phosphorothioic acid, 0,0-diethyl S-(ethylthio) methyl ester
P089	Phosphorothioic acid, 0,0-diethyl 0-(p-nitriphenyl) ester
P040	Phosphorothioic acid, 0,0-diethyl 0-pyrazinyl ester
P097	Phosphorothioic acid, 0,0-dimethyl 0-[p-((dimethylamino)-sulfonyl) phenyl] ester
P110	Plumbane, tetraethyl-
P098	Potassium cyanide
P099	Potassium silver cyanide
P070	Propanal, 2-methyl-2-(methylthio)-, 0-[(methylamino) carbonyl] oxime
P101	Propanenitrile
P027	Propanenitrile, 3-chloro-
P069	Propanenitrile, 2-hydroxy-2-methyl-
P081	1,2,3-Propanetriol, trinitrate (R)
P017	2-Propanone, 1-bromo-
P102	Propargyl alcohol
P003	2-Propenal
P005	2-Propen-1-ol
P067	1,2-Propylenimine
P102	2-Propyn-1-ol
P008	4-Pyridinamine
P075	Pyridine, (S)-3-(1-methyl-2-pyrrolidinyl)-, and salts
P111	Pyrophosphoric acid, tetraethyl ester
P103	Selenourea
P104	Silver cyanide
P105	Sodium azide
P106	Sodium cyanide
P107	Strontium sulfide
P108	Strychnidin-10-one, and salts
P018	Strychnidin-10-one, 2,3-dimethoxy-
P108	Strychnine and salts
P115	Sulfuric acid, thallium(I) salt
P109	Tetraethyldithiopyrophosphate
P110	Tetraethyl lead
P111	Tetraethylpyrophosphate
P112	Tetranitromethane (R)
P062	Tetraphosphoric acid, hexaethyl ester
P113	Thallic oxide
P113	Thallium (III) oxide

Hazardous Waste No.	*Substance*
P114	Thallium (I) selenide
P115	Thallium (I) sulfate
P045	Thiofanox
P049	Thioimidodicarbonic diamide
P014	Thiophenol
P116	Thiosemicarbazide
P026	Thiourea, (2-chlorophenyl)-
P072	Thiourea, 1-naphthalenyl-
P093	Thiourea, phenyl-
P123	Toxaphene
P118	Trichloromethanethiol
P119	Vanadic acid, ammonium salt
P120	Vandium pentoxide
P120	Vandium (V) oxide
P001	Warfarin
P121	Zinc cyanide
P122	Zinc phosphide (R,T)

*An omission of a trade name does not imply that the omitted material is not hazardous. The material is hazardous if it is listed under its generic name.

(vi) The commercial chemical products, manufacturing chemical intermediates, or off-specification commercial chemical products or manufacturing chemical intermediates, which if they met specifications would have a generic name listed in this subparagraph, that are referred to in subparagraphs (i), (ii), and (iv) of this paragraph are identified as toxic wastes (T) unless otherwise designated and are subject to the small quantity exclusion in subsection (d)(1) and (2). 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 hazardous waste numbers are:

U001	Acetaldehyde (I)
U034	Acetaldehyde, trichloro-
U187	Acetamide, N-(4-ethoxyphenyl)-
U005	Acetamide, N-9H-fluoren-2-yl-
U112	Acetic acid, ethyl ester (I)
U144	Acetic acid, lead salt
U214	Acetic acid, thallium (I) salt
U002	Acetone (I)
U003	Acetonitrile (I,T)
U004	Acetophenone
U005	2-Acetylaminofluorene
U006	Acetyl chloride (C,R,T)
U007	Acrylamide
U008	Acrylic acid (I)
U009	Acrylonitrile
U150	Alanine, 3-[p-bis (2-chloroethyl) aminol phenyl-, L-
U011	Amitrole
U012	Aniline (I,T)
U014	Auramine
U015	Azaserine
U010	Azirino (2',3':3, 4) pyrrolo (1, 2-a) indole-4, 7-dione, 6-amino-8-[((aminocarbonyl) oxy) methyl]-1, 1a,2,8,8a,8b-hexahydro-8a-methoxy-5-methyl-,
U157	Benz[j]aceanthrylene, 1,2-dihydro-3-methyl-
U016	Benz[c]acridine
U016	3,4-Benzacridine
U017	Benzal chloride
U018	Benz[a]anthracene
U018	1,2-Benzanthracene
U094	1,2-Benzanthracene, 7,12-dimethyl-
U012	Benzenamine (I,T)
U014	Benzenamine, 4,4'-carbonimidoylbis(N,N-dimethyl-
U049	Benzenamine, 4-chloro-2-methyl
U093	Benzenamine, N,N-dimethyl-4-(phenylazo)-
U158	Benzenamine, 4,4'-methylenebis(2-chloro-
U222	Benzenamine, 2-methyl-,hydrochloride
U181	Benzenamine, 2-methyl-5-nitro
U019	Benzene (I,T)
U038	Benzeneacetic acid, 4-chloro-alpha-(4-chlorphenyl)-alpha-hydroxy, ethyl ester
U030	Benzene, 1-bromo-4-phenoxy-
U037	Benzene, chloro-

Hazardous Waste No.	*Substance*
U190	1,2-Benzenedicarboxylic acid anhydride
U028	1,2-Benzenedicarboxylic acid, [bis(2-ethyl-hexyl)] ester
U069	1,2-Benzenedicarboxylic acid, dibutyl ester
U088	1,2-Benzenedicarboxylic acid, diethyl ester
U102	1,2-Benzenedicarboxylic acid, dimethyl ester
U107	1,2-Benzenedicarboxylic acid, di-n-octyl ester
U070	Benzene, 1,2-dichloro-
U071	Benzene, 1,3-dichloro-
U072	Benzene, 1,4-dichloro-
U017	Benzene, (dichloromethyl)-
U223	Benzene, 1,3-diisocyanatomethyl- (R,T)
U239	Benzene, dimethyl- (I,T)
U201	1,3-Benzenediol
U127	Benzene, hexachloro-
U056	Benzene, hexahydro- (I)
U188	Benzene, hydroxy-
U220	Benzene, methyl-
U105	Benzene, 1-methyl-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, pentachloronitro-
U020	Benzenesulfonic acid chloride (C,R)
U020	Benzenesulfonyl chloride (C,R)
U207	Benzene, 1,2,4,5-tetrachloro-
U023	Benzene, (trichloromethyl)- (C,R,T)
U234	Benzene, 1,3,5-trinitro- (R,T)
U021	Benzidine
U202	1,2-Benzisothiazolin-3-one, 1,1-dioxide, and salts
U120	Benzo[j,k]fluorene
U022	Benzo[a]pyrene
U022	3,4-Benzopyrene
U197	p-Benzoquinone
U023	Benzotrichloride (C,R,T)
U050	1,2-Benzphenanthrene
U085	2,2'-Bioxirane (I,T)
U021	(1,1'-Biphenyl)-4-4'-diamine
U073	(1,1'-Biphenyl)-4,4'-diamine, 3,3'-dichloro-
U091	(1,1'Biphenyl)-4,4'-diamine, 3,3'-dimethoxy-
U095	(1,1'-Biphenyl)-4,4'diamine, 3,3'-dimethyl-
U024	Bis(2-chloroethoxy) methane
U027	Bis(2-chloroisopropyl) ether
U244	Bis(dimethylthiocarbamoyl) disulfide
U028	Bis(2-ethylhexyl) phthalate
U246	Bromine cyanide
U225	Bromoform
U030	4-Bromophenyl phenyl ether
U128	1,3-Butadiene, 1,1,2,3,4,4-hexachloro-
U172	1-Butanamine, N-butyl-N-nitroso-
U035	Butanoic acid, 4-[bis(2-chloroethyl)amino]benzene-
U031	1-Butanol (I)
U159	2-Butanone (I,T)
U160	2-Butanone peroxide (R,T)
U053	2-Butenal
U074	2-Butene, 1,4-dichloro- (I,T)
U031	n-Butyl 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-
U129	Carbamide, thio-

Hazardous Waste No.	Substance
U097	Carbamoyl chloride, dimethyl-
U215	Carbonic acid, dithallium (I) salt
U156	Carbonochloridic acid, methyl ester (I,T)
U033	Carbon oxyfluoride (R,T)
U211	Carbon tetrachloride
U033	Carbonyl fluoride (R,T)
U034	Chloral
U035	Chlorambucil
U036	Chlordane, technical
U026	Chlornaphazine
U037	Chlorobenzene
U039	4-Chloro-m-cresol
U041	1-Chloro-2,3-epoxypropane
U042	2-Chloroethyl vinyl ether
U044	Chloroform
U046	Chloromethyl methyl ether
U047	beta-Chloronaphthalene
U048	o-Chlorophenol
U049	4-Chloro-o-toluidine, hydrochloride
U032	Chromic acid, calcium salt
U050	Chrysene
U051	Creosote
U052	Cresols
U052	Cresylic acid
U053	Crotonaldehyde
U055	Cumene (I)
U246	Cyanogen bromide
U197	1,4-Cyclohexadienedione
U056	Cyclohexane (I)
U057	Cyclohexanone (I)
U130	1,3-Cyclopentadiene, 1,2,3,4,5,5-hexachloro-
U058	Cyclophosphamide
U240	2,4-D, salts and esters
U059	Daunomycin
U060	DDD
U061	DDT
U142	Decachlorooctahydro-1,3,4-metheno-2H-cyclobuta[c,d]-pentalen-2-one
U062	Diallate
U133	Diamine (R,T)
U221	Diaminotoluene
U063	Dibenz[a,h]anthracene
U063	1,2:5,6-Dibenzanthracene
U064	1,2:7,8-Dibenzopyrene
U064	Dibenz[a,i]pyrene
U066	1,2-Dibromo-3-chloropropane
U069	Dibutyl phthalate
U062	S-(2,3-Dichloroallyl) diisopropylthiocarbamate
U070	o-Dichlorobenzene
U071	m-Dichlorobenzene
U072	p-Dichlorobenzene
U073	3,3'-Dichlorobenzidine
U074	1,4-Dichloro-2-butene (I,T)
U075	Dichlorodifluoromethane
U192	3,5-Dichloro-N-(1,1-dimethyl-2-propynyl) benzamide
U060	Dichloro diphenyl dichloroethane
U061	Dichloro diphenyl trichloroethane
U078	1,1-Dichloroethylene
U079	1,2-Dichloroethylene
U025	Dichloroethyl ether
U081	2,4-Dichlorophenol
U082	2,6-Dichlorophenol
U240	2,4-Dichlorophenoxyacetic acid, salts and esters
U083	1,2-Dichloropropane
U084	1,3-Dichloropropene
U085	1,2:3,4-Diepoxybutane (I,T)
U108	1,4-Diethylene dioxide
U086	N,N-Diethylhydrazine

Hazardous Waste No.	*Substance*
U087	0,0-Diethyl-S-methyl-dithiosphosphate
U088	Diethyl phthalate
U089	Diethylstilbestrol
U148	1,2-Dihydro-3,6-pyridizinedione
U090	Dihydrosafrole
U091	3,3'-Dimethoxybenzidine
U092	Dimethylamine (I)
U093	Dimethylaminoazobenzene
U094	7,12-Dimethylbenz[a]anthracene
U095	3,3'-Dimethylbenzidine
U096	alpha,alpha-Dimethylbenzylhydroperoxide (R)
U097	Dimethylcarbamoyl chloride
U098	1,1-Dimethylhydrazine
U099	1,2-Dimethylhydrazine
U101	2,4-Dimethylphenol
U102	Dimethyl phthalate
U103	Dimethyl sulfate
U105	2,4-Dinitrotoluene
U106	2,6-Dinitrotoluene
U107	Di-n-octyl phthalate
U108	1,4-Dioxane
U109	1,2-Diphenylhydrazine
U110	Dipropylamine (I)
U111	Di-n-propylnitrosamine
U001	Ethanal (I)
U174	Ethanamine, N-ethyl-N-nitroso-
U067	Ethane, 1,2-dibromo-
U076	Ethane, 1,1-dichloro-
U077	Ethane, 1,2-dichloro-
U114	1,2-Ethanediylbiscarbamodithioic acid
U131	Ethane, 1,1,1,2,2,2-hexachloro-
U024	Ethane, 1,1'-[methylenebis(oxy)]bis[2-chloro-
U003	Ethanenitrile (I,T)
U117	Ethane, 1,1'-oxybis' (I)
U025	Ethane, 1,1'-oxybis[2-chloro-
U184	Ethane, pentachloro-
U208	Ethane, 1,1,1,2-tetrachloro-
U209	Ethane, 1,1,2,2-tetrachloro-
U247	Ethane, 1,1,1-trichloro-2,2-bis(p-methoxyphenyl)
U218	Ethanethioamide
U227	Ethane, 1,1,2-trichloro-
U043	Ethene, chloro-
U042	Ethene, 2-chloroethoxy-
U078	Ethene, 1,1-dichloro-
U079	Ethene, trans-1,1-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) salts and esters
U067	Ethylene dibromide
U077	Ethylene dichloride
U115	Ethylene oxide (I,T)
U116	Ethyl thiourea
U117	Ethyl ether (I)
U076	Ethylidene dichloride
U118	Ethyl methacrylate
U119	Ethyl methanesulfonate
U139	Ferric dextran
U120	Fluoranthene
U122	Formaldehyde
U123	Formic acid (C,T)
U124	Furan (I)

Hazardous Waste No.	Substance
U125	2-Furancarboxaldehyde (I)
U147	2,5-Furandione
U213	Furan, tetrahydro- (I)
U125	Furfural (I)
U124	Furfuran (I)
U206	D-Glucopyranose, 2-deoxy-2(3-methyl-3-nitrosoureido)-
U126	Glycidylaldehyde
U163	Guanidine, N-nitroso-N-methyl-N'-nitro-
U127	Hexachlorobenzene
U128	Hexachlorobutadiene
U129	Hexachlorocyclohexane (gamma isomer)
U130	Hexachlorocyclopentadiene
U131	Hexachloroethane
U132	Hexachlorophene
U243	Hexachloropropene
U133	Hydrazine (R,T)
U086	Hydrazine, 1,2-diethyl-
U098	Hydrazine, 1,1-dimethyl-
U099	Hydrazine, 1,2-dimethyl-
U109	Hydrazine, 1,2-diphenyl-
U134	Hydrofluoric acid (C,T)
U134	Hydrogen fluoride (C,T)
U135	Hydrogen sulfide
U096	Hydroperoxide, 1-methyl-1-phenylethyl- (R)
U136	Hydroxydimethylarsine oxide
U116	2-Imidazolidinethione
U137	Indeno[1,2,3-cd]pyrene
U139	Iron dextran
U140	Isobutyl alcohol (I,T)
U141	Isosafrole
U142	Kepone
U143	Lasiocarpine
U144	Lead acetate
U145	Lead phosphate
U146	Lead subacetate
U129	Lindane
U147	Maleic anhydride
U148	Maleic hydrazide
U149	Malononitrile
U150	Melphalan
U151	Mercury
U152	Methacrylonitrile (I,T)
U092	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	Methanesulfonic acid, ethyl ester
U211	Methane, tetrachloro-
U121	Methane, trichlorofluoro-
U153	Methanethiol (I,T)
U225	Methane, tribromo-
U044	Methane, trichloro-
U121	Methane, trichlorofluoro-
U123	Methanoic acid (C,T)
U036	4,7-Methanoindan, 1, 2, 4, 5, 6, 7, 8, 8-octachloro 3a, 4, 7, 7a-tetrahydro-
U154	Methanol (I)
U155	Methapyrilene
U247	Methoxychlor
U154	Methyl alcohol (I)
U029	Methyl bromide
U186	1-Methylbutadiene (I)
U045	Methyl chloride (I,T)
U056	Methyl chlorocarbonate (I,T)

Hazardous Waste No.	*Substance*
U226	Methylchloroform
U157	3-Methylcholanthrene
U158	4,4'-Methylenebis (2-chloroaniline)
U132	2,2'-Methylenebis (3,4,6-trichlorophenol)
U068	Methylene bromide
U080	Methylene chloride
U122	Methylene oxide
U159	Methyl ethyl ketone (I,T)
U160	Methyl ethyl ketone peroxide (R,T)
U138	Methyl iodide
U161	Methyl isobutyl ketone (I)
U162	Methyl methacrylate (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-2,3,6-trideoxy-alpha-L-lyxo-hexopyranosyl)oxyl]-7,8,9,10-tetrahydro-6,8,11-trihydroxy-1-methoxy-
U165	Naphthalene
U047	Naphthalene, 2-chloro-
U166	1,4-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-Naphthoquinone
U167	1-Naphthylamine
U168	2-Naphthylamine
U167	alpha-Naphthylamine
U168	beta-Naphthylamine
U026	2-Naphthylamine, N,N-bis(2-chloroethyl)-
U169	Nitrobenzene (I,T)
U170	p-Nitrophenol
U171	2-Nitropropane (I)
U172	N-Nitrosodi-n-butylamine
U173	N-Nitrosodiethanolamine
U174	N-Nitrosodiethylamine
U111	N-Nitrosodi-n-propylamine
U176	N-Nitroso-N-ethylurea
U177	N-Nitroso-N-methylurea
U178	N-Nitroso-N-methylurethane
U179	N-Nitrosopiperidine
U180	N-Nitrosopyrrolidine
U181	5-Nitro-o-toluidine
U193	1,2-Oxathiolane, 2,2-dioxide
U058	2H-1,3,2-Oxazaphosphorine, 2-[bis(2-chloroethyl)amino] tetrahydro-, 2-oxide
U115	Oxirane (I,T)
U041	Oxirane, 2-(chloromethyl)-
U182	Paraldehyde
U183	Pentachlorobenzene
U184	Pentachloroethane
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, 0,0-diethyl S-methyl ester

Hazardous Waste No.	*Substance*
U189	Phosphorus 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-Propanal, 2,3-epoxy-
U140	1-Propanol, 2-methyl- (I,T)
U002	2-Propanone (I)
U007	2-Propenamide
U084	Propene, 1,3-dichloro-
U243	1-Propene, 1,1,2,3,3,3-hexachloro-
U009	2-Propenenitrile
U152	2-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-trichlorophenoxy)-
U194	n-Propylamine (I,T)
U083	Propylene dichloride
U196	Pyridine
U155	Pyridine, 2-[(2-dimethylamino)ethyl]-2-thenylamino-
U179	Pyridine, hexahydro-N-nitroso-
U191	Pyridine, 2-methyl-
U164	4(1H)-Pyrimidinone, 2,3-dihydro-6methyl-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

Hazardous Waste No.	*Substance*
U011	1H-1,2,4-Triazol-3-amine
U226	1,1,1-Trichloroethane
U227	1,1,2-Trichloroethane
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, 2,4,6-trimethyl-
U235	Tris(2,3-dibromopropyl) phosphate
U236	Trypan blue
U237	Uracil, 5[bis(2-chloroethyl)amino]-
U237	Uracil mustard
U043	Vinyl chloride
U239	Xylene (I)
U200	Yohimban-16-carboxylic acid, 11,17-dimethoxy-18-[(3,4,5-trimethoxy-benzoyl)oxy]-,methyl ester,

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 Department to be representative of the waste.

Extremely viscous liquid — ASTM Standard D140-70

Crushed or powdered material — ASTM Standard D346-75

Soil or rock-like material — ASTM Standard D420-69

Soil-like material — ASTM Standard D1452-65

Fly Ash-like material — ASTM Standard D2234-76 (ASTM Standards are available from ASTM, 1916 Race St., Philadelphia, Pa. 19103)

Containerized liquid wastes — "COLIWASA" described in "Test Methods for the Evaluation of Solid Waste, Physical/Chemical Methods," U. S. Environmental Protection Agency, Office of Solid Waste, Washington, D. C. 20460. (Copies may be obtained from Solid Waste Information, U. S. Environmental Protection Agency, 26 West St. Clair Street, Cincinnati, Ohio 45268)

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

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

Appendix II. EP Toxicity Test Procedure

A. Extraction Procedures (EP)

1. A representative sample of the waste to be tested (minimum size 100 grams) shall be obtained using the methods specified in Appendix I or any other equivalent methods approved by the Department capable of yielding a representative sample. (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.)

2. The sample shall be separated into its component liquid and solid phases using the methods described in "Separation Procedure" below. If the solid residue obtained using this method totals less than 0.5% of the original weight of the waste, the residue can be discarded and the operator shall consider the liquid phase as the extract and proceed immediately to Step 8. The percent solids is determined by drying the filter pad at 80°C until it reaches constant weight and then calculating the percent solids using the following equation:

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

3. The solid material obtained from the Separation Procedure shall 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^2, or passes through a 9.5 mm (0.375 inch) standard sieve, the operator shall proceed to Step 4. If the surface area is smaller or the particle size larger than specified above, the solid material shall 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 shall 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 shall 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 shall be decreased to 5.0 ± 0.2 by adding 0.5 N acetic acid. If the pH is equal to or less than 5.0, no acetic acid shall be added. The pH of the solution shall be monitored as described below during the course of the extraction and if the pH rises above 5.2, 0.5 N acetic acid shall 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 shall be agitated for 24 hours and maintained at 20°-40°C (68°-104°F) during this time. It is recommended that the operator monitor and adjust the pH during the course of the extraction with a device

such as the Type 45-A pH Controller manufactured by Chemtrix, Inc., Hillsboro, Oregon 97123, or its equivalent, in conjunction with a metering pump and reservoir of 0.5 N acetic acid. If such a system is not available, the following manual procedure shall be employed.

a. A pH meter shall be calibrated in accordance with the manufacturer's specifications.

b. The pH of the solution shall be checked and, if necessary, 0.5 N acetic acid shall be manually added to the extractor until the pH reaches 5.0 ± 0.2. The pH of the solution shall be adjusted at 15, 30, 60 minute intervals, moving to the next longer interval if the pH does not have to be adjusted more than 0.5 pH units.

c. The adjustment procedure shall 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 acetic acid (4 ml per gram of solids) has not been added, the pH shall be adjusted to 5.0 ± 0.2 and the extraction continued for an additional four hours, during which the pH shall be adjusted at one hour intervals.

6. At the end of the 24 hour extraction period, deionized water shall be added to the extractor in an amount determined by the following equation:

V = (20)(W) — 16(W) — A, where
V = ml deionized water to be added,
W = weight in grams of solid charged, to extractor
A = ml of 0.5 N acetic acid added during extraction.

7. The material in the extractor shall be separated into its component liquid and solid phases as described under "Separation Procedure."

8. The liquids resulting from Steps 2 and 7 shall be combined. This combined liquid (or the waste itself if it has less than 0.5 percent solids, as noted in Step 2) is the extract and shall be analyzed for the presence of any of the contaminants specified in Table I of subsection (g)(5) using the Analytical Procedures designated below.

Separation Procedure

Equipment: A filter holder, designed for filtration media having a nominal pore size of 0.45 microns and capable of applying a 5.3 kg/cm (75 psi) hydrostatic pressure to the solution being filtered shall be used. For mixtures containing nonabsorptive solids, where separation can be affected without imposing a 5.3 kg/cm pressure differential, vacuum filters employing a 0.45 micron filter media can be used. (For further guidance on filtration equipment or procedures see "Test Methods for Evaluating Solid Waste, Physical/Chemical Methods.") The "Separation Procedure" is designed to separate the "free" liquid portion of the waste sample from any solid matter having a particle size larger than 0.45 micron. The pressure filtration described above is employed to speed the filtration process without altering the nature of the separation. If liquid does not separate during filtration, the sample can be centrifuged. Any liquid separated during centrifugation shall be filtered through the 0.45 micron filter prior to being mixed with any liquid obtained from the initial filtration. Any material that will not pass through the filter after centrifugation shall be considered a solid and be extracted.

Procedure:

(i) Following manufacturer's directions, the filter unit shall be assembled with a filter bed consisting of a 0.45 micron filter membrane. For difficult or slow to filter mixtures a prefilter bed consisting of the following prefilters in increasing pore size (0.65 micron membrane, fine glass fiber prefilter, and coarse glass fiber prefilter) can be used.

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

(iii) The reservoir shall be slowly pressurized until liquid begins to flow from the filtrate outlet at which point the pressure in the filter shall be immediately lowered to 10-15 psig. Filtration shall be continued until liquid flow ceases.

(iv) The pressure shall be increased stepwise in ten psi increments to 75 psig and filtration continued until flow ceases or the pressuring gas begins to exit from the filtrate outlet.

(v) The filter unit shall 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 shall be stored at 4°C for subsequent use in Step 8.

B. Structural Integrity Procedure

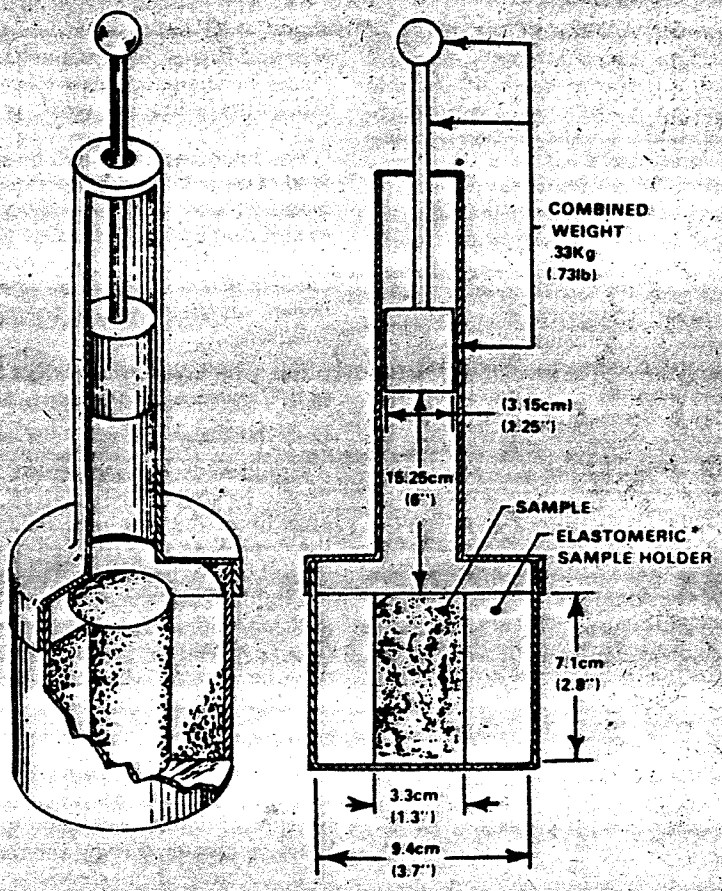
Equipment: A Structural Integrity Tester having a 3.18 cm (1.25 in.) diameter hammer weighing 0.33 kg (0.73 lbs.) and having a free fall of 15.24 cm (6 in.) shall be used. This device is available from the Associated Design and Manufacturing Company, Alexandria, VA, 22314, as Part No. 125, or it may be fabricated to meet the specifications shown in Figure 1.

Procedure:

1. The sample holder shall be filled with the material to be tested. If the sample of waste is a large monolithic block, a portion having the dimensions of a 3.3 cm (1.3 in.) diameter x 7.1 cm (2.8 in.) cylinder shall be cut from the block. For a fixated waste, samples may be cast 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 shall be placed into the Structural Integrity Tester, then the hammer shall be raised to its maximum height and dropped. This shall be repeated 15 times.

3. The material shall be removed from the sample holder, weighed, and transferred to the extraction apparatus for extraction.



*ELASTOMERIC SAMPLE HOLDER FABRICATED OF MATERIAL FIRM ENOUGH TO SUPPORT THE SAMPLE

Figure 1

COMPACTION TESTER

Analytical Procedures for Analyzing Extract Contaminants

The test methods for analyzing the extract are as follows:

1. For arsenic; barium; cadium; chromium; lead; mercury; selenium; silver; Endrin; Lindane; Methoxychlor; Toxaphene; 2,4-D; 2,4,5-TP Silvex: in "Test Methods for the Evaluation of Solid Waste Physical/Chemical Methods" (SW 846).

For all analyses, the methods of standard addition shall be used for the quantification of species concentration. This method is described in "Test Methods for the Evaluation of Solid Waste Physical/Chemical Methods" (SW 846).

Appendix III. Chemical Analyses Test Methods

The following Tables A, B and C specify the appropriate analytical procedures, described in "Test Methods for Evaluating Solid Waste" (SW-846), which shall be used in determining whether the waste in question contains a given toxic constituent. Table A identifies the analytical class and the approved measurement techniques for each organic chemical listed in Appendix VII. Table B identifies the corresponding methods for the inorganic species. Table C identifies the specific sample preparation and measurement instrument introduction techniques which may be suitable for both the organic and inorganic species as well as the matrices of concern.

Prior to final selection of the analytical methods, the operator shall consult the specific method descriptions in SW-846 for additional guidance on which of the approved methods shall be employed for a specific waste analysis situation.

TABLE A

ANALYTICAL CHARACTERISTICS OF ORGANIC CHEMICALS

Compound	Sample Handling Class/Fraction	Non-GC Methods	Conventional GC/MS	Conventional GC	Conventional Detector
Acetronitrile	Volatile		8.24	8.03	NSD
Acrolein	Volatile		8.24	8.03	NSD
Acrylamide	Volatile		8.24	8.01	FID
Acrylonitrile	Volatile		8.24	8.03	NSD
Benzene	Volatile		8.24	8.02	PID
Benz(a)anthracene	Extractable/BN	8.10(HPLC)	8.25	8.10	FID
Benzo(a)pyrene	Extractable/BN	8.10(HPLC)	8.25	8.10	FID
Benzotrichloride	Extractable/BN		8.25	8.12	ECD
Benzyl chloride	Volatile or		8.24	8.01	HSD
	Extractable BN		8.25	8.12	ECD
Benz(b)flouranthene	Extractable/BN	8.10 (HPCL)	8.25	8.10	FID
Bis(2-chloroethoxymethane)	Volatile		8.24	8.01	HSD
Bis(2-chloroethyl)ether	Volatile		8.24	8.01	HSD
Bis(2-chloroisiopropyl)ether	Volatile		8.24	8.01	HSD
Carbon disulfide	Volatile		8.24	8.01	HSD
Carbon tetrachloride	Volatile		8.24	8.01	HSD

Compound	Sample Handling Class/Fraction	Non-GC Methods	Conventional GC/MS	Conventional GC	Conventional Detector
Chlordane	Extractable/BN		8.25	8.08	HSD
Chlorinated dibenzodioxins	Extractable/BN		8.25	8.13	ECD
Chlorinated biphenyls	Extractable/BN		8.25	8.08	HSD
Chloroacetaldehyde	Volatile		8.24	8.01	HSD
Chlorobenzene	Volatile		8.24	8.01	HSD
				8.02	PID
Chloroform	Volatile		8.24	8.01	HSD
Chloromethane	Volatile		8.24	8.01	HSD
2-Chlorophenol	Extractable/BN		8.25	8.04	FID,ECD
Chrysene	Extractable/BN	8.10(HPCL).	8.25	8.10	FID
Creosote	Extractable/BN		8.25[1]	8.10	ECD
Cresol(s)	Extractable/A		8.25	8.04	FID,ECD
Cresylic acid(s)	Extractable/A		8.25	8.04	FID,ECD
Dichlorobenzene(s)	Extractable/BN		8.25	8.01	HSD
				8.02	PID
				8.12	ECD
Dichloroethane(s)	Volatile		8.24	8.01	HSD
Dichloromethane	Volatile		8.24	8.01	HSD
Dichlorophenoxy-acetic acid	Extractable/A		8.25	8.40	HSD
Dichloropropanol	Extractable/BN		8.25	8.12	ECD
2,4-Dimethylphenol	Extractable/A		8.25	8.04	FID,ECD
Dinitrobenzene	Extractable/BN		8.25	8.09	FID,ECD
4,6-Dinotro-o-cresol	Extractable/A		8.25	8.04	FID,ECD
2,4-Dinitrotoluene	Extractable/BN		8.25	8.09	FID,ECD
Endrin	Extractable/P		8.25	8.08	HSD
Ethyl Ether	Volatile		8.24	8.01	FID
				8.02	FID
Formaldehyde	Volatile		8.24	8.01	FID
Formic Acid	Extractable/BN		8.25	8.06	FID
Heptachlor	Extractable/P		8.25	8.06	HSD
Hexachlorobenzene	Extractable/BN		8.25	8.12	ECD
Hexachlorobutadiene	Extractable/BN		8.25	8.12	ECD
Hexachloroethane	Extractable/BN		8.25	8.12	ECD
Hexachlorocyclopentadiene	Extractable/BN		8.25	8.12	ECD
Lindane	Extractable/P		8.25	8.08	HSD
Maelic anhydride	Extractable/BN		8.25	8.06	ECD,FID
Methanol	Volatile		8.24	8.01	FID
Methomyl	Extractable/BN	8.32(HPCL).			
Methyl ethyl ketone	Volatile		8.25	8.01	FID
				8.02	FID
Methyl isobutyl ketone	Volatile		8.25	8.01	FID
				8.02	FID
Naphthalene	Extractable/BN		8.25	8.10	FID
Naphthoquinone	Extractable/BN		8.25	8.06	ECD,FID
				8.09	FID
Nitrobenzene	Extractable/BN		8.25	8.09	ECD,FID
4-Nitrophenol	Extractable/A		8.24	8.04	ECD,FID
Paraldehyde (trimer of acetaldehyde)	Volatile		8.24	8.01	FID
Pentachlorophenol	Extractable/A		8.25	8.04	ECD
Phenol	Extractable/A		8.25	8.04	ECD,FID
Phorate	Extractable/BN			8.22	FPD
Phosphorodithioic acid esters	Extractable/BN			8.06	ECD,FID
				8.09	ECD,FID
Phthalic anhydride	Extractable/BN		8.25	8.06	ECD,FID
				8.09	ECD,FID
2-Picoline	Extractable/BN		8.25	8.06	ECD,FID
				8.09	ECD,FID
Pyridine	Extractable/BN		8.25	8.06	ECD,FID
				8.09	ECD,FID
Tetrachlorobenzene(s)	Extractable/BN		8.25	8.12	ECD
Tetrachloroethane(s)	Volatile		8.24	8.01	HSD
Tetrachloroethene	Volatile		8.24	8.01	HSD
Tetrachlorophenol	Extractable/A		8.24	8.04	ECD
Toluene	Volatile		8.24	8.02	PID
Toluenediamine	Extractable/BN		8.25		
Toluene diisocyanate(s)	Extractable/nonaqueous		8.25	8.06	FID

Compound	Sample Handling Class/Fraction	Non-GC Methods	Conventional GC/MS	GC	Detector
Toxaphene	Extractable/P		8.25	8.08	HSD
Trichloroethane	Volatile		8.24	8.01	HSD
Trichloroethene(s)	Volatile		8.24	8.01	HSD

[1]Analyze for phenanthrene and carbazole; if these are present in a ratio between 1.4:1 and 5:1, creosote should be considered present.

Compound	Sample Handling Class/Fraction	Non-GC Methods	Conventional GC/MS	GC	Detector
Trichlorofluoromethane	Volatile		8.24	8.01	HSD
Trichlorophenol(s)	Extractable/A		8.25	8.04	HSD
2,4,5-TP(Silvex)	Extractable/A		8.25	8.40	HSD
Trichloropropane	Volatile		8.24	8.01	HSD
Vinyl chloride	Volatile		8.24	8.01	HSD
Vinylidene chloride	Volatile		8.24	8.01	HSD
Xylene	Volatile		8.24	8.02	PID

ECD=Electron capture detector; FID=Flame ionization detector; FPD=Flame photometric detector; HSD=Halide specific detector; HPLC=High pressure liquid chromatography; NSD=Nitrogen specific detector; PID=Photoionization detector.

TABLE B

ANALYTICAL CHARACTERISTICS OF INORGANIC SPECIES

Species	Sample Handling Class	Measurement Techniques	Method Number
Antimony	Digestion	Atomic absorption-furnace/flame	8.50
Arsenic	Hydride	Atomic absorption-flame	8.51
Barium	Digestion	Atomic absorption-furnace/flame	8.52
Cadium	Digestion	Atomic absorption-furnace/flame	8.53
Chromium	Digestion	Atomic absorption-furnace/flame	8.54
Cyanides	Hydrolysis	Absorption spectroscopy	8.55
Lead	Digestion	Atomic absorption-furnace/flame	8.56
Mercury	Cold Vapor	Atomic absorption	8.57
Nickel	Digestion	Atomic absorption-furnace/flame	8.58
Selenium	Hydride digestion	Atomic absorption-furnace/flame	8.59
Silver	Digestion	Atomic absorption-furnace/flame	8.60

TABLE C

SAMPLE PREPARATION/SAMPLE INTRODUCTION TECHNIQUES

Sample Handling Class	Physical Characteristics of Waste: Fluid	Paste	Solid
Volatile	Purge and Trap or Direct Injection	Purge and Trap or Headspace	Headspace
Semivolatile and Nonvolatile	Direct Injection Shake Out	Shake Out	Shake Out, Soxhlet or Sonication
Inorganic	Direct Injection, Digestion or Hydride	Digestion or Hydride	Digestion or Hydride

For purpose of this table, fluid refers to readily pourable liquids, which may or may not contain suspended particles. Pastelike materials, while fluid in the sense of flowability can be thought of as being thixotropic or plastic in nature, such as paints. Solid materials are those wastes which can be handled without a container (that is can be piled up without appreciable sagging).

Procedure and methods number(s).
Digestion — See appropriate procedure for element of interest.
Direct injection — 8.80
Headspace — 8.82
Hydride — See appropriate procedure for element of interest.
Purge & Trap — 8.83
Shake Out — 8.84
Sonication — 8.85
Soxhlet — 8.86

Appendix VII. Basis for Listing Hazardous Waste

Hazardous Waste No.	*Hazardous Constituents for Which Listed*
F001	tetrachloroethylene, methylene chloride, trichloroethylene, 1,1,1-trichloroethane, chlorinated fluorocarbons, carbon tetrachloride
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, chomium, nickel, cyanide (complexed)
F007	cyanide (salts)
F008	cyanide (salts)
F009	cyanide (salts)
F010	cyanide (salts)
F011	cyanide (salts)
F012	cyanide (complexed)
F019	chromium, cyanide (complexed)
K001	pentachlorophenol, phenol, 2-chlorophenol, p-chloro-m-cresol, 2,4-dimethylphenyl, 2,4-dinitrophenol, trichlorophenols, tetrachlorophenols, 2,4-dinitrophenol, creosote, chrysene, naphthalene, fluoranthene, benzo(b)fluoranthene, benzo(a)pyrene, indeno(1,2,3-cd)pyrene, benz(a) anthracene, dibenz(a)anthracene, acenaphthalene
K002	chromium, lead
K003	chromium, lead
K004	chromium
K005	chromium, lead
K006	chromium
K007	cyanide (complexed), chromium
K008	chromium
K009	chloroform, formaldehyde, methylene chloride, methyl chloride, paraldehyde, formic acid
K010	chloroform, formaldehyde, methylene chloride, methyl chloride, paraldehyde, formic acid, chloroacetaldehyde
K011	acrylonitrile, acetonitrile, hydrocyanic acid
K013	hydrocyanic acid, acrylonitrile, acetonitrile
K014	acetonitrile, acrylamide
K015	benzyl chloride, chlorobenzene, toluene, benzotrichloride
K016	hexachlorobenzene, hexachlorobutadiene, carbon tetrachloride, hexachloroethane, perchloroethylene
K017	epichlorohydrin, chloroethers [bis (chloromethyl) ether and bis (2-chloroethyl) ethers], trichloropropane, dichloropropanols
K018	1,2-dichloroethane, trichloroethylene, hexachlorobutadiene, hexachlorobenzene
K019	ethylene dichloride, 1,1,1-trichloroethane, 1,1,2-trichloroethane, tetrachloroethanes (1,1,2,2-tetrachloroethane and 1,1,1,2-tetrachloroethane), trichloroethylene, tetrachloroethylene, carbon tetrachloride, chloroform, vinyl chloride, vinylidene chloride
K020	ethylene dichloride, 1,1,1-trichloroethane, 1,1,2 trichloroethane, tetrachloroethanes (1,1,2,2-tetrachloroethane and 1,1,1,2-tetrachloroethane) trichloroethylene; tetrachloroethylene, carbon tetrachloride, chloroform, vinyl chloride, vinylidene chloride
K021	antimony, carbon tetrachloride, chloroform
K022	phenol, tars (polycyclic aromatic hydrocarbons)
K023	phthalic anhydride, maleic anhydride
K024	phthalic anhydride, 1,4-naphthoquinone
K025	meta-dinitrobenzene, 2,4-dinitrotoluene
K026	paraldehyde, pyridines, 2-picoline
K027	toluene diisocyanate, toluene-2,4-diamine

Hazardous Waste No.	*Hazardous Constituents for Which Listed*
K028	1,1,1-trichloroethane, vinyl chloride
K029	1,2-dichloroethane, 1,1,1-trichloroethane, vinyl chloride, vinylidene chloride, chloroform
K030	hexachlorobenzene, hexachlorobutadiene, hexachloroethane, 1,1,1,2-tetrachloroethane, 1,1,2,2-tetrachloroethane, ethylene dichloride
K031	arsenic
K032	hexachlorocyclopentadiene
K033	hexachlorocyclopentadiene
K034	hexachlorocyclopentadiene
K035	creosote, benzo(a)pyrene, chrysene, naphthalene, fluoranthene, benzo(b)fluoranthene, indeno(1,2,3-cd)pyrene, benzo(a) anthracene, dibenzo(a) anthracene, acenaphthalene.
K036	toluene, phosphorodithioic and phosphorothioic acid esters
K037	toluene, phosphorodithioic and phosphorothioic acid esters
K038	phorate, formaldehyde, phosphorodithioic and phosphorothioic acid esters
K039	phosphorodithioic and phosphorothioic acid esters
K040	phorate, formaldehyde, phosphorodithioic and phosphorothioic acid esters
K041	toxaphene
K042	hexachlorobenzene; ortho-dichlorobenzene
K043	2,4-dichlorophenol, 2,6-dichlorophenol, 2,4,6-trichlorophenol
K044	N. A.
K045	N. A.
K046	Lead
K047	N. A.
K048	chromium, lead
K049	chromium, lead
K050	chromium
K051	chromium, lead
K052	lead
K060	cyanide, napthalene, phenolic compounds, arsenic
K061	lead, cadmium, hexavalent chromium
K062	chromium, lead
K069	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, chromium
K087	phenol, naphthalene
K093	phthalic anhydride, maleic anhydride
K094	phthalic anhydride
K095	1,1,2-trichloroethane, 1,1,1,2-tetrachloroethane, 1,1,2,2-tetrachloroethane
K096	1,2-dichloroethane, 1,1,1-trichloroethane, 1,1,2-trichloroethane
K097	Chlordane, heptachlor
K098	Toxaphene
K099	2,4-dichlorophenol, 2,4,6-trichlorphenol
K100	chromium, lead, cadmium
K101	arsenic

Hazardous Waste No.	*Hazardous Constituents for Which Listed.*
K102	arsenic
K103	aniline, nitrobenzene, phenylenediamine
K104	aniline, benzene, diphenylamine, nitrobenzene, phenylenediamine
K105	benzene, monochlorobenzene, dichlorobenzenes, 2,4,6-trichlorophenol
K106	mercury

Appendix VIII. Hazardous Constituents

Acetonitrile (Ethanenitrile)
Acetophenone (Ethanone, 1-phenyl)
3-(alpha-Acetonylbenzyl)-4-hydroxycoumarin and salts (Warfarin)
2-Acetylaminofluorene (Acetamide, N-(9H-fluoren-2-yl)-)
Acetyl chloride (Ethanoyl chloride)
1-Acetyl-2-thiourea (Acetamide, N-(aminothioxomethyl)-)
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-methylcarbamate 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-methy-)
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,-monohydrochloride)
Azaserine (L-Serine, diazoacetate (ester))
Barium and compounds, N.O.S.*
Barium cyanide
Benz[c]acridine (3,4-Benzacridine)
Benz[a]anthracene (1,2-Benzanthracene)
Benzene (Cyclohexatriene)
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)
Benzo[a]pyrene (3,4-Benzopyrene)
p-Benzoquinone (1,4-Cyclohexadienedione)
Benzotrichloride (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 (Chlornaphazine)
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, 1,2,4,5,6,7,8,8-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 (Benzenacetic acid, 4-chloro-alpha-(4-chlorophenyl)-alpha-hydroxy-, ethyl ester)
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-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)
Cyasin (beta-D-Glucopyranoside, (methyl-O,N,N-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)-)
DDD (Dichlorodiphenyldichloroethane) (Ethane, 1,1-dichloro-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-)
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)
Diethylstilbestrol (4,4'-Stilbenediol, alpha, alpha-diethyl)
Dihydrosafrole (Benzene, 1,2-methylenedioxy-4-propyl-)
3,4-Dihydroxy-alpha-(methylamino)methyl benzyl alcohol (1,2-Benzenediol, 4-(1-hydroxy-2-(methylamino)ethyl]-)
Diisopropylfluorophosphate (DFP) (Phosphorofluoridic 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 (Ethanamine, 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.* (Benezene, 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-Ethanediylbiscarbamodithioic 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 (Benzo[j,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-)
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 fluroide)
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, 2-methyl-, 7-[(2,3-dihydroxy-2-(1-methoxyethyl)-3-methyl-1-oxyobutoxy)methyl]-2,3,5,7a-tetrahydro-1H-pyrrolizin-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)
Melphalan (Alanine, 3-[p(bis(2-chloroethyl)amino)phenyl], 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)oxy]thio-,methyl ester)
Methoxychlor (Ethane, 1,1,1-trichloro-2,2'-bis(p-methoxyphenyl)-)
2-Methylaziridine (1,2-Propylenimine)
3-Methylcholanthrene (Benz(j)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-Methyllactonitrile (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-Napthoquinone (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-)
Nitrobenzine (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'-(nitrosoimino)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-)
N-Nitroso-N-methylurethane (Carbamic acid, methylnitroso-, ethyl ester)
N-Nitrosomethylvinylamine (Ethenamine, N-methyl-N-nitroso-)
N-Nitrosomorpholine (Morpholine,N-nitroso-)
N-Nitrosonornicotine (Nornicotine, 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, pentachlor-)
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-Benzoisothiazolin 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 (Carbamimidoseleno.c 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 (Ethane, 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 selenide
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-)
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) (Propionoic 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)amino]-)
Vanadic acid, ammonium salt (ammonium vanadate)
Vanadium pentoxide (Vanadium (V) oxide)
Vinyl chloride (Ethene, chloro-)
Zinc cyanide
Zinc phosphide

*The abbreviation N.O.S. signifies those members of the general class "not otherwise specified" by name in this listing.

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§ 75.262. Generators of hazardous waste.

(a) *Scope.*

(1) This section establishes standards for a generator of hazardous waste identified in § 75.261 (relating to criteria, identification, and listing of hazardous wastes) who is located within this Commonwealth. Any other generator whose hazardous waste is designated for treatment, storage or disposal within the Commonwealth shall be subject to all the requirements of this section except subsections (g), (l), (m), and (n). Small quantity generators identified in § 75.261(d) (relating to criteria, identification and listing of hazardous waste) are subject only to the requirements of subsection (b).

(2) A generator who treats, stores, or disposes of hazardous waste at a permitted on-site facility or an on-site facility being treated as having been issued a permit shall comply with applicable requirements of §§ 75.264 and 75.265 (relating to new hazardous waste management facilities and interim status for hazardous waste management facilities and permit program for new and existing hazardous waste management facilities) and with the following in this section:

(i) Subsection (b) (relating to hazardous waste determination).

(ii) Subsection (c) (relating to identification numbers).

(iii) Subsection (g) (relating to accumulation).

(iv) Subsection (h) (relating to recordkeeping).

(v) Subsection (i)(2) (relating to quarterly reporting).

(vi) Subsection (k) (relating to additional reporting).

(vii) Subsection (l) (relating to hazardous waste disposal plan).

(viii) Subsection (m) (relating to hazardous waste discharges or spills).

(3) A farmer who generates waste pesticides which are hazardous wastes and who complies with all of the requirements of subsection (n) is not required to comply with §§ 75.264 or 75.265 (relating to new hazardous waste management facilities and interim status standards and permit pro-

gram for new and existing hazardous waste management facilities) with respect to such pesticides.

(b) *Hazardous waste determination.*

(1) A person or municipality who generates a solid waste as defined in Article I of this act (35 P. S. §§ 6018.101 — 6018.108) shall determine if that waste is a hazardous waste using the following procedure:

(i) He shall first determine if the waste is excluded from regulation under § 75.261(c) and (d) (relating to criteria, identification and listing of hazardous waste).

(ii) He shall then determine if the waste is listed as a hazardous waste in § 75.261(h) (relating to criteria, identification and listing of hazardous waste).

(iii) If the waste is not listed, he shall determine whether the waste is identified in § 75.261(g) (relating to criteria, identification and listing of hazardous waste) by either:

(A) testing the waste according to the methods set forth in § 75.261 (relating to criteria, identification and listing of hazardous waste) or according to an equivalent method approved by the Department; or

(B) applying knowledge of the hazard characteristic of the waste in light of the materials or the processes used.

(iv) He shall determine if any spill or accidental discharge is subject to the reporting requirements of subsection (m) and shall comply with the requirements of subsection (m) except subsection (m)(5) for any such spill or accidental discharge.

(2) If a waste is listed as a hazardous waste in § 75.261(h) (relating to criteria, identification and listing of hazardous waste), a generator's waste can be declared nonhazardous if he can demonstrate to the Department in accordance with § 75.260(b) (relating to definitions and requests for determinations) that the waste from his particular facility or operation is not a hazardous waste.

(3) If the waste is determined to be nonhazardous or is excluded under § 75.261(d) (relating to criteria, identification and listing of hazardous waste) generators shall retain copies of the evaluations performed and shall nevertheless repeat the necessary evaluations or testing when there is a significant change in their raw materials or operations which may alter the test results. Copies of such evaluations shall be retained for five years and furnished to the Department upon request.

(4) Generators of hazardous waste excluded under § 75.261(d) (relating to criteria, identification and listing of hazardous waste) shall nonetheless retain for a period of five years records of quantities, descriptions, and dispositions of such wastes, and shall furnish such records to the Department upon request.

(5) A determination that a waste is not hazardous under subsection (b)(l)(iii) and (2) does not preclude the Department, using the characteristics and testing methods set forth in § 75.261 (relating to criteria, identification and listing of hazardous waste) from determining the waste to be hazardous.

(c) *Identification numbers.*

(1) A generator shall not treat, store, dispose of, transport or offer for transport a shipment of hazardous waste without having received an identification number from the Department.

(2) A generator who has not received an identification number may obtain one by applying to the Department using the notification form. Upon receiving the request, the Department will assign an identification number to the generator.

(3) An identification number received as a result of notification to EPA pursuant to section 3010 of the Resource Conservation and Recovery Act (42 U.S.C. § 6930) shall be deemed to satisfy the requirements of this section when furnished to the Department upon request.

(4) A generator shall offer a shipment of hazardous waste only to a licensed transporter or hazardous waste management facility that has received an identification number.

(d) *Authorization.*

(1) A generator, before designating a hazardous waste shipment for off-site treatment, storage, or disposal within the Commonwealth, shall contact the hazardous waste management facility and obtain a copy of a written authorization from the hazardous waste management facility.

(2) Such an authorization shall indicate that the facility is permitted to accept such waste, is capable, has capacity and is willing to accept the waste.

(3) Only one such authorization shall be necessary for each waste stream.

(e) *Manifest.*

(1) General requirements for a manifest shall consist of the following:

(i) A generator who transports or offers for transportation a shipment of hazardous waste to an off-site treatment, storage, or disposal facility shall complete a manifest before the waste is transported off-site.

(ii) For all hazardous waste shipments designated for off-site treatment, storage, or disposal within this Commonwealth, the generator shall use the manifest forms provided by the Department and shall use the manifest forms according to the instructions specified on the manifest.

(iii) For all hazardous waste shipments generated in this Commonwealth and designated for treatment, storage, or disposal outside this Commonwealth, the generator shall use the EPA authorized disposer state manifest form or format, or a manifest form meeting the minimum EPA requirements.

(iv) A generator shall designate on the manifest one facility which is permitted to manage the waste described on the manifest.

(v) The Department manifest shall require the following information as a minimum:

(A) A unique manifest document number.

(B) The names, site addresses, telephone numbers and identification numbers of the generator, transporters, and treatment, storage, or disposal facility.

(C) The proper United States Department of Transportation shipping name, United States Department of Transportation hazard class, and U. N. number of the waste as outlined in the United States Department of Transportation 49 C.F.R. §§ 172.101, 172.202 and 172.203.

(D) The physical form (solid, liquid, or gas), the total quantity of each hazardous waste by units of weight or volume, and the type and number of containers.

(E) A certificate equivalent to the following: "This is to certify that the above named materials are properly classified, described, packaged, marked and labelled and are in proper condition for transportation according to the applicable regulations of the Department of Transportation, United States EPA, and the State. The wastes described were consigned to the transporter named. The treatment, storage, or disposal (TSD) facility can and will accept the shipment, and has a valid

permit to do so. I certify that the foregoing is true and correct to the best of my knowledge."

(2) The hazardous waste manifest shall consist of six copies, with copies 1, 2, and 3 detaching into two parts, A and B. The manifest form shall be completed and routed as follows, except that manifests for bulk shipments transported by rail or water shall be completed and routed according to the scheme set forth in subsection (e)(7).

(i) The generator shall complete Part A of all copies of the manifest. The generator shall instruct the initial transporter's authorized representative to sign, date, and certify the receipt of the shipment.

(ii) For shipments of hazardous waste generated within the Commonwealth of Pennsylvania and to be disposed of within the Commonwealth, the generator shall retain a complete Copy 2 of the manifest and Part A of Copy 3 for his records.

(iii) In the case of an interstate shipment of hazardous waste, the generator shall detach Part A of Copies 1, 2, and 3, distribute Part A, Copy 1 to the disposer state, Part A, Copy 2 to the generator state, and retain Part A, Copy 3 for his records.

(iv) The transporter's authorized representative shall carry the remaining copies of the manifest along with the shipment.

(v) Upon delivery of the shipment to the designated treatment, storage, or disposal facility, or to transporter number two, transporter number one shall sign and date and certify delivery of the shipment, obtain the signature, date of receipt of shipment, and certification of the treatment, storage, or disposal facility's authorized representative or the authorized representative of transporter number two and detach and retain Copy 5 of the manifest.

(vi) Upon delivery of the shipment to the designated treatment, storage, or disposal facility by transporter number two, transporter number two shall sign and date and certify the delivery of shipment, obtain the signature, date of receipt of shipment, and certification of the treatment, storage, or disposal facility's authorized representative and detach and retain Copy 6 of the manifest.

(vii) For shipments within the Commonwealth of Pennsylvania, the treatment, storage, or disposal facility's authorized representative shall retain complete Copies 1 and 4 of the manifest and return Part B of Copy 3 of the manifest.

(viii) In the case of the interstate shipment of hazardous waste, the treatment, storage, or disposal facility's authorized representative shall detach and distribute Part B of Copies 1, 2 and 3 of the manifest in the following manner:

(A) Treatment, storage, or disposal facility's authorized representative shall forward Part B of Copy 1 of the manifest to the state in which the designated treatment, storage, or disposal facility is located.

(B) Treatment, storage, or disposal facility's authorized representative shall forward Part B of Copy 2 of the manifest to the state in which the installation generating the hazardous waste is located and shall return Part B of Copy 3 of the manifest to the generator within 24 hours after the delivery of the shipment. The treatment, storage, or disposal facility shall retain Copy 4 for its records.

(3) Each manifest form shall record a maximum of two transporters. If more than two transporters are to be utilized, the generator shall complete additional manifest forms and reference the first manifest document number on such additional manifest forms.

(4) If more than four hazardous wastes from the same generator are to be shipped in the same shipment, the generator shall complete additional manifests for each group of four or less hazardous wastes.

(5) Copies of the manifest retained by the generator and the treatment, storage, or disposal facility shall be furnished to the Department upon request.

(6) If the transporter is unable to deliver the hazardous waste to the designated facility, the generator shall prepare a new manifest designating another facility which is permitted to handle the waste described in the manifest or instruct the transporter to return the waste to the generator.

(7) For bulk shipment of hazardous waste designated for treatment, storage, or disposal within this Commonwealth solely by railroad or water, the manifest shall be completed and routed as follows:

(i) The generator shall complete Part A of all copies of the manifest. The generator shall instruct the initial transporter's authorized representative to sign and date and certify the receipt of the shipment.

(ii) For shipments of hazardous waste generated within the Commonwealth of Pennsylvania and to be disposed of within the Commonwealth of Pennsylvania, the generator shall retain a complete Copy 2 of the manifest and Part A of Copy 3 for his records.

(iii) In the case of an interstate shipment of hazardous waste, the generator shall detach Part A of copies 1, 2 and 3, distribute Part A of Copy 1 to the disposer state, Part A of Copy 2 to the generator state, and retain Part A of Copy 3.

(iv) The generator or the initial transporter delivering a shipment of hazardous waste to the rail or water transporter shall obtain the signature and date and certification of the rail or water transporter on the manifest and forward the remaining copies of the manifest, except those for additional transporters, to the designated treatment, storage, or disposal facility. Each transporter other than the rail or water transporter shall retain his copy of the manifest for his records.

(v) The rail or water transporter shall carry along with the shipment either his copy of the manifest or the shipping paper containing all the information required on the manifest in subsection (e)(l)(v) except the identification numbers, generator's certification, and signatures.

(vi) The delivering rail or water transporter shall obtain the signature, date of receipt of shipment, and certification of the authorized representative of the treatment, storage, or disposal facility on either the manifest or the shipping paper.

(vii) The designated treatment, storage, or disposal facility's authorized representative shall sign and date and certify the acceptance of the shipment on the manifest forwarded by the generator or initial transporter and shall obtain the signature, date of delivery of shipment, and certification of the rail or water transporter.

(viii) For shipments within the Commonwealth of Pennsylvania, the treatment, storage, or disposal facility's authorized representative shall retain completed Copies 1 and 4 of the manifest and return Part B of Copy 3 to the generator.

(ix) In the case of the interstate shipment of hazardous waste, the treatment, storage, or disposal facility's authorized representative shall detach and distribute Part B of Copies 1, 2, and 3 of the manifest in the following manner:

(A) Treatment, storage, or disposal facility's authorized representative shall forward Part B of Copy 1 of the manifest to the state in which the designated treatment, storage, or disposal facility is located.

(B) Treatment, storage, or disposal facility's authorized representative

shall forward Part B of Copy 2 of the manifest to the state in which the installation generating the hazardous waste is located, and shall return Part B of Copy 3 of the manifest to the generator within 24 hours after the delivery of the shipment. The treatment, storage, and disposal facility shall retain Copy 4 for its records.

(f) *Pretransport requirements, packing, labeling, marking, and placarding.*

(1) Before transporting or offering a shipment of hazardous waste for transportation off-site, a generator shall perform the following:

(i) place the hazardous waste in containers or packages meeting United States Department of Transportation requirements under 49 C.F.R. Parts 173, 178, and 179;

(ii) label and mark each container or package in accordance with United States Department of Transportation requirements under 49 C.F.R. Part 172; and

(iii) permanently mark each container of 110 gallons or less according to United States Department of Transportation requirements under 49 C.F.R. § 172.304 with the following:

"HAZARDOUS WASTE — PENNSYLVANIA AND FEDERAL LAWS PROHIBIT IMPROPER DISPOSAL." If found contact the nearest police, public safety authority, the U. S. EPA at 215-597-9898, or the PA Department of Environmental Resources at 717-787-4343, if found within the Commonwealth of Pennsylvania.

Generator's Name _____
Generator's Address _____
Manifest Document Number _____
Waste Description _____
U. N. Number _____

(2) Before transporting hazardous waste or offering hazardous waste for transportation off-site, a generator shall placard or offer the initial transporter the appropriate placards according to United States Department of Transportation requirements under 49 C.F.R. Part 172, Subpart F.

(g) *Accumulation.*

(1) A generator may accumulate hazardous waste on-site without a permit for 90 days or less, provided that:

(i) All such waste is shipped off-site or treated or disposed of on-site within 90 days or less.

(ii) The waste is placed in containers which meet all United States Department of Transportation packaging, marking, and labeling requirements in subsection (f), or in tanks, provided that the generator complies with all the requirements of § 75.265(r) (relating to tanks), excluding the requirement for Waste Analysis and Trial Test.

(iii) All containers are managed in accordance with § 75.265(q) (relating to use and management of containers).

(iv) On each container, each date on which any hazardous waste was placed in that container shall be clearly marked and visible for inspection.

(v) The generator complies with the requirements of § 75.265(h) (relating to preparedness and prevention), § 75.265(i) (relating to contingency plan and emergency procedures) and § 75.265(f) (relating to personnel training).

(2) A generator who accumulates hazardous waste for more than 90 days is an operator of a storage facility and is subject to the requirements of §§ 75.264 and 75.265 (relating to new hazardous waste management facilities and interim status for hazardous waste management facilities and permit program for new and existing hazardous waste management facilities) and the permit requirements of § 75.265 (interim status for hazardous waste management facilities and permit program for new and existing hazardous waste management facilities.

(h) *Recordkeeping.*

(1) A generator shall retain a copy of each manifest signed in accordance with subsection (e) for 20 years or until he receives a signed copy from the designated facility which received the waste. This signed copy shall be retained at the building, property, premises, or place where hazardous waste is generated or at a location approved by the Department as a record for at least 20 years from the date on which the waste was accepted by the initial transporter.

(2) A generator shall retain a copy of each quarterly report and exception report for a period of at least 20 years from the due date of the report.

(3) A generator shall retain records of any test results, waste analyses, or other determinations made in accordance with subsection (b) for at least 20 years from the date the waste was last sent for on-site or off-site treatment, storage, or disposal. The generator shall furnish these records to the Department upon request.

(4) The periods of retention referred to in this subsection shall be extended automatically during the course of any enforcement action regarding the regulated activity or as requested by the Department.

(i) *Quarterly report.*

(1) A generator who ships hazardous waste off-site shall submit quarterly reports:

(i) To the Department on a form designated by the Department. The form shall contain as a minimum the following information.

(A) The name, identification number, mailing address, and the location of the generator.

(B) The name and telephone number of generator's contact person.

(C) The identification number and hazardous waste transporter (HWT) license number of each transporter.

(D) The name, identification number, and address of each HWM facility.

(E) The description, Department of Transportation hazard class and hazardous waste number of the hazardous waste.

(F) The amounts and units of measure of each hazardous waste in a shipment.

(G) The manifest document number for each hazardous waste.

(H) Signature and certification of the generator's authorized representative.

(I) The information required by clauses (C), (D), (E), (F) and (G) shall be provided for each shipment of hazardous waste and each waste stream within the shipment.

(ii) To the Department not later than the last day of the following month for the quarter: January through March due on or before April 30; April through June due on or before July 31; July through September due on or before October 31; October through December due on or before January 31.

(2) A generator who treats, stores, or disposes of only his own hazardous waste at an on-site facility shall not submit quarterly reports to the Department. He shall, however, maintain records of hazardous waste treatment, storage, and disposal activity pursuant to §§ 75.264(k) (new hazardous waste management facilities) or 75.265(k) (relating to interim status for hazardous waste management facilities and permit program for new and existing hazardous waste management facilities) as applicable. These records shall be kept on a form specified by the Department, and shall be maintained for the life of the facility as a part of its

operating record. These records shall be made available to the Department upon request.

(j) *Exception reporting.*

(1) A generator who does not receive a copy of the manifest with the handwritten signature of the owner or operator of the designated facility within 35 days of the date the waste was accepted by the initial transporter or within seven days of the date of estimated arrival at the hazardous waste facility, whichever is less, shall contact the transporter or the owner or operator or authorized representative of the designated hazardous waste management facility, or both, to determine the status of the hazardous waste shipment and then notify the Department within 24 hours, by telephone, of the status of the shipment.

(2) A generator shall notify by telephone and submit an exception report to the Department, if he has not received a copy of the manifest with the handwritten signature of the owner, operator, or authorized representative of the designated hazardous waste management facility within 45 days of the date the waste was accepted by the initial transporter or within 14 days of the date the waste was expected to arrive at the hazardous waste facility, whichever is less. The exception report shall include the following:

(i) A legible copy of the manifest for which the generator does not have confirmation of delivery.

(ii) A cover letter signed by the generator or his authorized representative explaining the efforts taken to locate the hazardous waste and the results of those efforts.

(k) *Additional reporting.* The Department may require generators to furnish additional reports concerning the quantities and disposition of waste identified or listed in § 75.261 (relating to criteria, identification and listing of hazardous waste).

(l) *Hazardous waste disposal plan.* If required by the Department, a hazardous waste generator after January 1, 1981 shall, submit to the Department for its approval a plan relating to the disposal of such hazardous waste at either an on-site or off-site treatment or disposal facility.

(1) This plan shall evaluate the viability of all alternatives to landfill disposal such as treatment, incineration, recycling, use, reuse, and reclamation.

(2) If a generator is considering landfill disposal, this plan shall evaluate the technical and economic feasibility of alternatives to landfill disposal, such as treatment, incineration, recycling, use, reuse, and reclamation.

(3) This plan shall be submitted to the Department within 180 days after the generator receives written notice from the Department to prepare the plan.

(m) *Hazardous waste discharges or spills.*

(1) Spills and discharges which are in amounts less than the reportable quantities, which do not result in discharges into surface water or ground water, and which are managed according to an approved contingency plan need not be reported. The reportable quantities of the hazardous wastes spilled or discharged on-site are set forth below in Table 1. For any waste with more than one hazard code, the most stringent reportable quantity shall apply. Any discharges or spills into surface water or ground water shall be reported regardless of quantity spilled or discharged.

TABLE 1

		Hazard Codes		
Physical Form	*Unit*	*H*	*T*	*I, C, R, and E*
Liquids*	Gal	5	5	10
Solid	Lbs	10	100	1000

*Liquids are flowable substances which contain less than 20% solids by dry weight. Flowable refers to flow in the sense of pourable as liquid.

In the event of a discharge or spill equal to or greater than the reportable quantity of hazardous waste, the generator shall take appropriate immediate action to protect the health and safety of the public and the environment and immediately notify the Department by telephone at 717-787-4343 with the following information:

(i) Name of the person reporting the spill.

(ii) Name and identification number of generator.

(iii) Phone number where person reporting the spill can be reached.

(iv) Date, time, and location of the spill.

(v) Brief description of the incident.

(vi) For each waste involved in the spill:

(A) The shipping name, hazard class, and U. N. number

(B) The estimated quantity of waste spilled.

(vii) The extent of contamination of land, water, or air, if known.

(2) If a discharge or spill of hazardous waste occurs during onsite unloading, loading, storage, or plant operation, and a departmental official acting within the scope of his official responsibilities determines that immediate removal of the waste is necessary to protect the health and safety of the public and the environment, that official may authorize in writing the removal of the waste by transporters who do not have identification numbers or licenses and without the preparation of a manifest.

(3) A generator shall clean up any hazardous waste discharge or spill that occurs during on-site unloading, loading, storage, or plant operation, and take such action as may be required or approved by the Department so that the discharge or spill no longer presents a hazard to the health and safety of the public or the environment.

(4) In addition, the generator shall file a written report on any reportable hazardous waste discharge or spill with the Department within 15 days after the incident, and supply the Department with any other information it may require or request that pertains to the discharge. The report on the hazardous waste spill or discharge shall be entitled, "Hazardous Waste Spill Report" and shall contain the following information:

(i) the name, address, and identification number of the generator and the date, time, and location of the incident;

(ii) a brief description of the circumstances causing the incident;

(iii) a description of each of the hazardous wastes involved in the incident including the estimated quantity spilled by weight or volume;

(iv) a legible copy of the manifest document, if applicable;

(v) a description of any contamination of land, water, or air that has occurred due to the incident; and

(vi) a description of what actions the generator intends to take to prevent a similar occurrence in the future.

(5) All generators of hazardous waste shall be responsible for developing and implementing a contingency

plan approved by the Department for effective action to minimize and abate discharges or spills of hazardous wastes from an incident resulting from the generator's activities on or adjacent to the generator's property. Such contingency plan shall require compliance with §§ 75.264 and 75.265 (relating to new hazardous waste management facilities and permit program for new and existing hazardous waste management facilities) be developed in accordance with Department guidelines for contingency plans, and be submitted to the Department for approval as the Department prescribes.

(n) *Farmers.* A farmer disposing of waste pesticides from his own use which are hazardous wastes is not required to comply with this section and §§ 75.264 and 75.265 (relating to new hazardous waste management facilities and permit program for new and existing hazardous waste management facilities) for those wastes provided he triple rinses each emptied pesticide container in accordance with § 75.261(h)(4)(iii) (criteria, identification, and listing of hazardous waste), and disposes of the pesticide residues on his own farm in a manner consistent with the disposal instructions on the pesticide label.

(o) *International shipments.*

(1) Any generator who exports hazardous waste to a foreign country from this Commonwealth or imports hazardous waste from a foreign country into this Commonwealth shall comply with the requirements of this section and with the special requirements of this subsection.

(2) When shipping hazardous waste outside the United States, the generator shall:

(i) Notify the Department and the EPA Administrator in writing four weeks before the initial shipment of hazardous waste to each country in each calendar year:

(A) The waste shall be identified by its EPA identification number and its Department of Transportation shipping description.

(B) The name and address of the foreign consignee shall be included in this notice.

(C) These notices shall be sent to Office of International Activities (A-106), United States Environmental Protection Agency, Washington, D. C. 20460.

(ii) Require that the foreign consignee confirm the delivery of the waste in the foreign country. A copy of the manifest signed by the foreign consignee may be used for this purpose.

(iii) Meet the requirements under subsection (e) for the manifest, except that:

(A) In place of the name, address, and EPA identification number of the designated facility, the name and address of the foreign consignee shall be used.

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

(3) A generator shall file an exception report, if:

(i) he has not received a copy of the manifest, signed by the transporter stating the date and place of departure from the United States within 45 days from the date it was accepted by the initial transporter; or

(ii) within 90 days from the date the waste was accepted by the initial transporter, the generator has not received written confirmation from the foreign consignee that the hazardous waste was received.

(4) When importing hazardous waste, a person or municipality shall meet all manifest requirements of subsection (e) except the following:

(i) 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.

(ii) In place of the generator's signature on the certification statement, the United States importer or his agent shall sign and date the certification and obtain the signature of the initial transporter.

§ 75.263. Transporters of hazardous waste.

(a) *Scope.*

(1) This section shall apply to any person or municipality who transports hazardous wastes which are generated, stored, treated, or disposed of within the Commonwealth.

(2) This section does not apply to on-site transportation of hazardous waste by generators or on-site transportation by owners or operators of permitted hazardous waste management facilities.

(3) A transporter of hazardous waste shall comply with the requirements of § 75.262 (relating to generators of hazardous waste) if he transports hazardous waste into the Commonwealth from a foreign country.

(b) *Identification number.*

(1) Except as otherwise provided in subsection (g), a transporter shall not transport hazardous waste without having received an identification number from the Department.

(2) A transporter who has not received an identification number may obtain one by applying to the Department using the notification form. Upon receiving the request the Department will assign an identification number to the transporter.

(3) A transporter shall not accept a shipment of hazardous waste from a generator who has not received an identification number, except as otherwise provided in § 75.261(d) and (e) (relating to criteria, identification and listing of hazardous waste), and subsection (g).

(4) An identification number received as a result of notification to EPA pursuant to section 3010 of the RCRA (42 U.S.C. § 6930) shall be deemed to satisfy the requirements of this section when furnished to the Department upon request.

(c) *Licensing.*

(1) Except as otherwise provided in paragraph (2) or subsection (g), no person or municipality shall transport any hazardous waste within the Commonwealth after the effective date of this section without first obtaining a license from the Department.

(2) A person or municipality who has been transporting hazardous waste within the Commonwealth on the effective date of the promulgation or revision of § 75.261 (relating to criteria, identification, and listing of hazardous waste) who files a notification form as required by § 75.267 (relating to notification of hazardous waste activities), and submits a license application as required by this section within 90 days of the effective date of this section or in case of revision of § 75.261 (relating to criteria, identification and listing of hazardous waste) within 90 days of the effective date of such revision shall be treated as having been issued a license until such time as a final Department action on such application is made. In no instance shall such person or municipality continue to transport hazardous waste without obtaining a license from the Department on or before July 7, 1982.

(3) A person or municipality desiring to obtain a license to transport hazardous waste within the Commonwealth shall perform the following:

(i) Comply with § 75.267 (relating to notification of hazardous waste activities) requiring notification.

(ii) File a hazardous waste trans-

porter license application with the Department. Such application shall be on a form provided by the Department and shall be completed as required by the instructions supplied with such form.

(iii) Deposit with the Department a collateral bond which is conditional upon compliance by the licensee with all of the requirements of the act, the rules and regulations promulgated thereunder, the terms and conditions of the license, and any Department order issued to the licensee. The amount, duration, form, conditions and terms of the bond shall conform to the requirements of subsection (i).

(iv) Submit a certificate issued by an insurance company authorized to do business in this Commonwealth certifying that the applicant has a public liability insurance policy in force covering the applicant's transportation of hazardous wastes. The amount, duration, form, conditions and terms of this insurance shall conform to the requirements of subsection (i).

(v) Supply the Department with any additional information it may require.

(4) Upon receiving the application and the information required in subsection (c)(3) the Department will evaluate the application for a license and any other relevant information and issue or deny the license. If a license is denied, the Department will advise the applicant of the reasons for denial in writing.

(5) A license granted or renewed under this section shall be valid for a period of two years unless the Department determines that circumstances justify issuing a license for a period of less than two years. The expiration date shall be set forth on the license.

(6) The Department may at any time place such terms and conditions upon a license granted or renewed under subsection (c) as it deems necessary to protect the public health and safety and the environment.

(7) A license to transport hazardous waste shall be nontransferable and nonassignable and shall only be used by the licensee and his employes.

(8) The Department may revoke or suspend a license in whole or in part for any of the following reasons:

(i) violation of any applicable requirement of the act or a regulation promulgated pursuant to the act;

(ii) aiding or abetting the violation of any provisions of the act or a regulation promulgated pursuant to the act;

(iii) misrepresentation of a fact either in the application for the license or renewal or in information required or requested by the Department;

(iv) failure to comply with the terms or conditions placed upon the license or renewal;

(v) failure to comply with any order issued by the Department; or

(vi) failure to maintain the required bond amount and insurance.

(9) The application for license shall be accompanied by a check for $200 payable to the "Commonwealth of Pennsylvania."

(d) *Manifest.*

(1) General requirements for a manifest shall consist of the following:

(i) A generator who transports or offers for transportation a shipment of hazardous waste to an off-site treatment, storage, or disposal facility shall complete a manifest before the waste is transported off-site.

(ii) For all hazardous waste shipments designated for off-site treatment, storage, or disposal within this Commonwealth, the generator shall use the manifest form provided by the Department and shall distribute the manifest form according to the instructions specified on the manifest.

(iii) For all hazardous waste shipments generated in this Commonwealth and designated for treatment, storage, or disposal outside this Commonwealth, the generator shall use the EPA authorized disposer state manifest form or format, or a manifest form meeting the minimum EPA requirements.

(iv) A generator shall designate on the manifest one facility which is permitted to manage the waste described on the manifest.

(v) The Department manifest will require the following information as a minimum:

(A) A unique manifest document number.

(B) The names, site addresses, telephone numbers, and identification numbers of the generator, transporter, and treatment, storage, or disposal facility.

(C) The proper United States Department of Transportation shipping name, United States Department of Transportation hazard class, and UN number of the waste in accordance with regulations of the United States Department of Transportation under 49 C.F.R. §§ 172.101, 172.202, and 172.203.

(D) The physical form — solid, liquid, or gas — the total quantity of each hazardous waste by units of weight or volume, and the type and number of containers.

(E) A certification equivalent to the following: "This is to certify that the above named materials are properly classified, described, packaged, marked, and labelled and are in proper condition for transportation according to the applicable regulations of the U.S. Department of Transportation, U.S. EPA, and the State. The wastes described were consigned to the transporter named. The treatment, storage, or disposal (TSD) facility can and will accept the shipment, and has a valid permit to do so. I certify that the foregoing is true and correct to the best of my knowledge."

(2) The hazardous waste manifest shall consist of six copies, with copies 1, 2 and 3 detaching into two parts, A and B. The manifest form shall be completed and routed as follows, except that manifests for bulk shipments transported by rail or water shall be completed and routed according to the scheme set forth in subsection (d)(11).

(i) The generator shall complete Part A of all copies of the manifest. The generator shall instruct the initial transporter's authorized representative to sign, date, and certify the receipt of the shipment.

(ii) For shipments of hazardous waste generated within the Commonwealth of Pennsylvania and to be disposed of within the Commonwealth of Pennsylvania, the generator shall retain a complete Copy 2 of the manifest and Part A of Copy 3 for his records.

(iii) In the case of an interstate shipment of a hazardous waste, the generator shall detach Part A of copies 1, 2, and 3, distribute Part A, Copy 1 to the disposer state, Part A, Copy 2 to the generator state, and retain Part A Copy 3 for his records.

(iv) The transporter's authorized representative shall carry the remaining copies of the manifest along with the shipment.

(v) Upon delivery of the shipment to the designated treatment, storage, or disposal facility, or to transporter number two, transporter number one shall sign and date and certify delivery of the shipment, obtain the signature, date of receipt of shipment, and certification of the treatment, storage, or disposal facility's authorized representative or the authorized representative of transporter number two and detach and retain Copy 5 of the manifest.

(vi) Upon delivery of the shipment to the designated treatment, storage,

or disposal facility by transporter number two, transporter number two shall sign and date and certify the delivery of shipment, obtain the signature, date of receipt of shipment, and certification of the treatment, storage, and disposal facility's authorized representative and detach and retain Copy 6 of the manifest.

(vii) For shipments within the Commonwealth of Pennsylvania, the treatment, storage, or disposal facility's authorized representative shall retain complete copies 1 and 4 of the manifest and return Part B of Copy 3 to the generator.

(viii) In the case of the interstate shipment of hazardous waste, the treatment, storage, or disposal facility's authorized representative shall detach and distribute Part B of copies 1, 2, and 3 of the manifest in the following manner:

(a) Treatment, storage, or disposal facility's authorized representative shall forward Part B of Copy 1 of the manifest to the state in which the designated treatment, storage, or disposal facility is located.

(b) Treatment, storage, or disposal facility's authorized representative shall forward Part B of Copy 2 of the manifest to the state in which the installation generating the hazardous waste is located and shall return Part B of Copy 3 of the manifest to the generator within 24 hours after the delivery of the shipment. The treatment, storage, or disposal facility shall retain Copy 4 for its records.

(3) Each manifest form shall record a maximum of two transporters. If more than two transporters are to be utilized, the generator shall complete additional manifest forms and reference the first manifest document number on such additional manifest forms.

(4) If more than four hazardous wastes from the same generator are to be shipped in the same shipment, the generator shall complete additional manifests for each group of four or less hazardous wastes.

(5) Copies of the manifest retained by the generator and the treatment, storage, or disposal facility shall be furnished to the Department upon request.

(6) Except as otherwise provided in § 75.261(d) and (e) (relating to criteria, identification and listing of hazardous waste), and subsection (g) a transporter shall not accept a shipment of hazardous waste from a generator or another transporter unless the shipment is accompanied by a completed manifest.

(7) A transporter shall not accept or transport a shipment of hazardous waste:

(i) which is in containers or packaging which is leaking or appears to be leaking, damaged, or otherwise not in compliance with § 75.262 (relating to generators of hazardous waste);

(ii) which is not labeled, marked, and placarded in accordance with § 75.262 (relating to generators of hazardous waste); and

(iii) Unless the number and type of containers to be transported are as stated on the manifest.

(8) Except as otherwise provided in § 75.261(d)(7) (relating to criteria, identification and listing of hazardous waste), hazardous waste shipments shall be transported only to:

(i) the hazardous waste storage, treatment, or disposal facility which the generator has designated on the manifest as a facility permitted by the Department to manage such waste or as a facility not within this Commonwealth which is authorized to manage such waste by a State or Federal government; or

(ii) the next designated transporter.

(9) A transporter of hazardous waste shall ensure the following are performed:

(i) The number of copies of the manifest required by subsection (d) accompany the shipment of hazardous waste at all times.

(ii) The shipment complies with all applicable United States Department of Transportation requirements and Pennsylvania Department of Transportation regulations.

(iii) Delivery of the entire quantity of hazardous waste which he has accepted from a generator or a transporter.

(10) If the hazardous waste cannot be delivered in accordance with subsection (d)(2) and (11) the transporter shall contact the generator for further instruction.

(11) For bulk shipment of hazardous waste designated for treatment, storage, or disposal within this Commonwealth solely by railroad or water, the manifest shall be completed and routed as follows:

(i) The generator shall complete Part A of all copies of the manifest. The generator shall instruct the initial transporter's authorized representative to sign and date and certify the receipt of the shipment.

(ii) For shipments of hazardous waste generated within the Commonwealth of Pennsylvania and to be disposed of within the Commonwealth of Pennsylvania, the generator shall retain a complete Copy 2 of the manifest and Part A of Copy 3 for his records.

(iii) In the case of an interstate shipment of hazardous waste, the generator shall detach Part A of copies 1, 2, and 3, distribute Part A of Copy 1 to the disposer state, Part A of Copy 2 to the generator state, and retain Part A of Copy 3.

(iv) The generator or the initial transporter delivering a shipment of hazardous waste to the rail or water transporter shall obtain the signature and date and certification of the rail or water transporter on the manifest and forward the remaining copies of the manifest, except those for additional transporters, to the designated treatment, storage, or disposal facility. Each transporter other than the rail or water transporter shall retain his copy of the manifest for his records.

(v) The rail or water transporter shall carry along with the shipment either his copy of the manifest or the shipping paper containing all the information required on the manifest in subsection (d)(1)(v) except the identification numbers, generator's certification, and signatures.

(vi) The delivering rail or water transporter shall obtain the signature, date of receipt of shipment, and certification of the authorized representative of the treatment, storage, or disposal facility on either the manifest or the shipping paper.

(vii) The designated treatment, storage, or disposal facility's authorized representative shall sign and date and certify the acceptance of the shipment on the manifest forwarded by the generator or initial transporter and shall obtain the signature, date of delivery of shipment, and certification of the rail or water transporter.

(viii) For shipments within the Commonwealth of Pennsylvania, the treatment, storage, or disposal facility's authorized representative shall retain completed copies 1 and 4 of the manifest and return Part B of Copy 3 to the generator.

(ix) In the case of the interstate shipment of hazardous waste, the treatment, storage, or disposal facility's authorized representative shall detach and distribute Part B of copies 1, 2, and 3 of the manifest in the following manner:

(A) Treatment, storage, or disposal facility's authorized representative

shall forward Part B of Copy 1 of the manifest to the state in which the designated treatment, storage, or disposal facility is located.

(B) Treatment, storage, or disposal facility's authorized representative shall forward Part B of Copy 2 of the manifest to the state in which the installation generating the hazardous waste is located, and shall return Part B of Copy 3 of the manifest to the generator within 24 hours after the delivery of the shipment. The treatment, storage, or disposal facility shall retain Copy 4 for its records.

(e) *Blending, mixing, treating, or storing of hazardous waste by transporters.*

(1) If a transporter blends or mixes hazardous waste of different United States Department of Transportation shipping descriptions, he shall comply with § 75.262 (relating to generators of hazardous waste).

(2) If a transporter stores hazardous waste in a manner other than normal in-transit storage or alters the composition of hazardous waste, he shall comply with all applicable requirements of §§ 75.264 and 75.265 (relating to new hazardous waste management facilities).

(f) *Recordkeeping.*

(1) A transporter of hazardous waste shall retain a copy of the manifest signed by the generator, the transporter himself, and the receiving transporter or the owner or operator of the designated hazardous waste management facility for a period of 20 years from the date the hazardous waste was accepted by the initial transporter.

(2) For shipments delivered to the designated hazardous waste management facility in bulk by rail or water, each rail or water transporter shall retain a copy of a shipping paper containing all the information required in subsection (d)(9) for a period of 20 years.

(3) The periods of retention referred to in this subsection shall be extended automatically during the course of any enforcement action regarding the regulated activity or as requested by the Department.

(g) *Hazardous waste discharge or spills.*

(1) In the event of any discharge or spill of hazardous waste during transportation, the transporter shall take appropriate immediate action to protect the health and safety of the public and the environment and shall immediately notify the Department by telephone at 717-787-4343 and the National Response Center at 800-424-8802 with the following information:

(i) Name of the person reporting the spill.

(ii) Name, address, and identification number of the transporter.

(iii) Phone number where the person reporting the spill can be reached.

(iv) Date, time, and location of the spill.

(v) Mode of transportation and type of transport vehicle.

(vi) Brief description of the incident.

(vii) For each waste involved in the spill:

(A) the name and identification number of the generator of the waste;

(B) shipping name, hazard class, and U. N. number of the waste; and

(C) estimated quantity of the waste spilled.

(viii) Shipping name, hazard class, and U. N. number of any other material carried.

(2) In the event of a discharge or spill of hazardous waste during transportation, the transporter shall immediately notify the affected municipality of the occurrence and nature of the discharge or spill.

(3) If a discharge or spill of hazardous waste occurs during transportation and a departmental official acting within the scope of his official responsibilities determines that immediate removal of the waste is necessary to protect the health and safety of the public or the environment, that official may authorize in writing the removal of the waste by transporters who do not have identification numbers or licenses and without the preparation of a manifest.

(4) A transporter shall clean up any hazardous waste discharge or spill that occurs during transportation or take such action as may be required or approved by the Department so that the discharge or spill no longer presents a hazard to the health and safety of the public or to the environment.

(5) Report in writing as required by 49 C.F.R. § 171.16 to the Chief, Information System Division, Transportation Programs Bureau, Department of Transportation, Washington, D.C., 20590, sending a copy of the report to the Department, and a copy to the generator.

(6) A transporter of hazardous waste shall develop and implement a contingency plan for effective action to minimize and abate discharges or spills of hazardous wastes from an incident while transporting hazardous wastes. The transporter shall develop such plan in accordance with the Department's guidelines for contingency plans and shall submit such plan to the Department as the Department prescribes for its approval.

(h) *Safety.*

(1) A transporter of hazardous waste shall provide adequate personnel training to ensure all transport activities are conducted safely and in compliance with all applicable laws and regulations.

(2) The transporter shall have and maintain at least, but not limited to, the following safety equipment for use during cleanup of spills in the vehicle, loading and unloading of hazardous wastes, and to initially arrest incidents until emergency personnel arrive:

(i) Proper protective clothing and equipment to enable personnel associated with the transportation to work safely with the hazardous wastes that are accepted by the transporter.

(ii) One eyewash apparatus per vehicle which is readily available in case of emergency.

(iii) First-aid supplies.

(iv) If transporting acute hazardous waste, a suitable means of communication, such as a two-way radio for summoning aid in an emergency.

(3) Equipment used to handle hazardous waste including, but not limited to, storage containers, processing equipment, trucks and loaders that are contaminated with hazardous waste shall be decontaminated prior to being serviced or used for any purpose other than transportation of compatible hazardous waste and prior to being serviced or used for transportation of nonhazardous waste, unless such wastes are compatible and are transported to a hazardous waste treatment, storage, or disposal facility. Contaminated wash water, waste solutions, or residues generated from washing or decontaminating equipment shall be collected and disposed of as a hazardous waste in compliance with all applicable laws and regulations.

(4) A transporter, when handling liquid hazardous wastes shall have sufficient absorbent mats and material in the vehicle to absorb not less than 5.0% of the volume of liquids which is being transported in containers of 110 gallons or less.

(i) *Bonding and insurance requirements.*

(1) A collateral bond means an indemnity agreement in a certain sum

payable to the Department executed by the licensee and which is supported by the deposit with the Department of cash, negotiable bonds of the United States of America, the Commonwealth of Pennsylvania, the Pennsylvania Turnpike Commission, the General State Authority, the State Public School Building Authority, or any Commonwealth municipality, or an irrevocable letter of credit of any bank organized or authorized to transact business in the United States.

(2) No new, revised, or renewed license to transport hazardous waste shall be issued by the Department before the applicant for such a license has filed a collateral bond payable to the Department on a form provided by the Department, and such bond has been approved by the Department.

(3) The amount of the bond shall be $10,000 at a minimum and be in an amount sufficient to assure that the licensee shall faithfully perform all of the requirements of the act, the rules and regulations promulgated thereunder, the terms and conditions of the license, and any Department order issued to the licensee.

(4) Liability under the bond shall continue at a minimum for the duration of the license, any renewal thereof, and for a period of one year after expiration, termination, revocation, or surrender of the license. The one-year extended period of liability shall include, and shall be automatically extended for, such additional time during which administrative or legal proceedings are pending involving a violation by the transporter of the act, rules and regulations promulgated thereunder, the terms or conditions of a license, or a Department order.

(5) The Department may require additional bond amounts at any time if the methods of transporting wastes change, the kinds of wastes transported change, or the Department determines such additional bond amounts are necessary to guarantee compliance with the act, the rules and regulations, the terms and conditions of the license, or any Department order.

(6) Collateral bonds shall be subject to the following conditions:

(i) The Department will obtain possession of and keep in custody all collateral deposited by the licensee until authorized for release as provided in this subsection.

(ii) The Department will value collateral at their current market value.

(iii) Collateral shall be in the name of the licensee, not in the name of third parties, and shall be pledged and assigned to the Department free and clear of claims.

(7) Letters of credit shall be subject to the following conditions:

(i) The letter may only be issued by a bank organized or authorized to do business in the United States.

(ii) Letters of credit shall be irrevocable. The Department may accept a letter of credit which is irrevocable for a term of three years if:

(A) the letter of credit is automatically renewable for additional terms, unless the bank gives at least 90 days prior written notice to the Department of its intent to terminate the credit at the end of the current term; and

(B) the Department has the right to draw upon the credit before the end of its term and convert it into a cash collateral bond, if the licensee fails to replace such letter of credit with other acceptable collateral within 30 days of the bank's notice to terminate the credit.

(iii) The letter of credit shall be payable to the Department in part or in full upon demand of the Department in the case of a forfeiture or the failure of the operator to replace the letter of credit as provided in this section.

(iv) The Department will not accept letters of credit from a bank for a licensee in excess of 10% of the bank's capital surplus account as shown on a balance sheet certified by a Certified Public Accountant.

(v) All letters of credit shall be subject to the Uniform Customs and Practice for Documentary Credits, International Chamber of Commerce Publication No. 290, including amendments and successor publications.

(vi) Letters of credit shall provide that the bank will give prompt notice to the licensee and the Department of a notice received or action filed alleging the insolvency or bankruptcy of the bank, or alleging any violations of regulatory requirements which could result in suspension or revocation of the bank's charter or license to do business.

(vii) Upon the incapacity of a bank by reason of bankruptcy, insolvency, or suspension or revocation of its charter or license, the licensee shall be deemed to be without collateral bond coverage in violation of subsection (c)(3)(iii). The Department will issue a notice of violation against a licensee who is without bond coverage. The notice shall specify a reasonable period to replace bond coverage, not to exceed 90 days.

(8) Bonds which are not declared forfeit in accordance with subsection (i)(9) shall be released to the licensee one year after expiration, termination, revocation, or surrender of the license.

(9) The Department will declare forfeit all the bond if the Department finds that the licensee has violated any of the requirements of the act, the rules and regulations promulgated thereunder, the terms and conditions of a license, or a Department order issued to the licensee, and if the Department also finds that the licensee has failed to remedy promptly such violation.

(10) The licensee shall submit at the time of license application and renewal thereof, a certificate from an insurance company licensed to do business in this Commonwealth, certifying that the licensee has a public liability insurance policy in force covering the licensee's transportation of hazardous wastes. The certificate shall provide for personal injury and property damage protection including coverage for the cost of cleaning up a hazardous waste spill and consequential damages resulting from such spill and the efforts to clean it up, in an amount adequate to compensate all persons injured and property damaged. Minimum insurance coverage for personal injury and property damage shall be $1,000,000. The insurance policy shall be maintained in full force during the term of the license and renewals thereof. The insurance policy shall include a rider requiring that the insurer give the Department written notice of any substantive changes in the policy including termination or failure to renew.

(11) All remedies provided in law for violation of the act, the rules and regulations adopted thereunder or the conditions of the license, are expressly preserved. Nothing in this section shall be construed as an exclusive penalty or remedy for such violations of law. No action taken pursuant to this section shall waive or impair any other remedy or penalty provided in law.

§ 75.264. New and existing hazardous waste management facilities applying for a permit.

(a) *Scope.*

(1) Except as provided in paragraph (4), this section establishes acceptable minimum standards for new hazardous waste management facilities as defined in § 75.261 (relating to criteria, identification, and listing of hazardous

waste) and for existing hazardous waste management facilities subject to the requirements of § 75.265(z) (relating to hazardous waste management permit program).

(2) The standards of this section apply to any person or municipality who treats, stores, or disposes of hazardous waste unless otherwise specified in this section or 75.261(d) or (e) (relating to criteria, identification, and listing of hazardous waste).

(3) The requirements of this section do not apply to the following:

(i) The owner or operator of a POTW which treats, stores, or disposes of hazardous waste, if the Permit by Rule provision in § 75.265(z)(14) (relating to interim status for hazardous waste management facilities and permit program for new and existing hazardous waste management facilities) is complied with.

(ii) A person or municipality who owns or operates a facility permitted by the Department to manage municipal or residual solid waste, if the only hazardous waste the facility treats, stores, or disposes of is excluded from regulation under § 75.261(d) (relating to criteria, identification, and listing of hazardous waste) provided that:

(A) the facility receives written approval to accept such wastes from the Department in compliance with subsection (c); and

(B) the total hazardous waste received at the facility during any quarter is less than 1.0% by weight of the total amount of non-hazardous wastes managed at the facility during the previous quarter.

(iii) The owner or operator of a facility which treats or stores hazardous waste, if such treatment or storage meets the criteria in § 75.261(e)(1) (relating to criteria, identification, and listing of hazardous waste) except to the extent that § 75.261(e)(2) (relating to criteria, identification, and listing of hazardous waste) provides otherwise.

(iv) A generator accumulating waste on-site for 90 days or less in compliance with § 75.262(g) (relating to generators of hazardous waste).

(v) A farmer disposing of waste pesticides from his own use in compliance with § 75.262(n) (relating to generators of hazardous waste).

(vi) The owner or operator of a totally enclosed treatment facility as defined in § 75.260(a) (relating to definitions and requests for determinations).

(vii) A person or municipality with respect to those activities which are carried out to immediately contain or treat a spill of hazardous waste constituents or hazardous waste or material which, when spilled, becomes a hazardous waste, except that, with respect to such activities, the appropriate requirements of subsection (h) and (i) are applicable to owners and operators of treatment, storage, and disposal facilities otherwise subject to this section. This paragraph only applies to activities taken in immediate response to a spill. After the immediate response activities are completed, the applicable regulations of this title apply fully to the management of any spill residue or debris which is a hazardous waste under § 75.261 (criteria, identification, and listing of hazardous waste).

(viii) The owner or operator of a captive elementary neutralization unit or a captive wastewater treatment unit which treats or stores hazardous waste if the permit by rule provision of § 75.265(z)(17) (interim status for hazardous waste management facilities and permit program for new and existing hazardous waste management facilities) is complied with.

(4) With respect to the specific requirements of § 75.264(v) (relating to new hazardous waste management facilities), the Department may, upon written application from any person who is subject to that section, grant a variance from one or more specific provisions of that section, consistent with this paragraph. Any application for a variance shall:

(i) identify the specific provisions of that section from which a variance is sought; and

(ii) demonstrate that suspension of the identified provisions will, on the basis of conditions unique and peculiar to the applicant's particular situation, result in a level of protection of the environment and public health equivalent to that which would have resulted from compliance with the suspended provisions.

In granting any variance, the Department may impose specific conditions reasonably necessary to assure that the subject activity will result in a level of protection of the environment and public health equivalent to that which would have resulted from compliance with the suspended provisions. Any variance granted under this section shall be no less stringent than the requirements of the Federal Resource Conservation and Recovery Act of 1976, P. L. 94-580, as amended, and regulations adopted pursuant thereto.

(b) *Identification numbers.*

(1) A person or municipality who owns or operates a hazardous waste management facility shall not accept hazardous waste for treatment, storage or disposal without having recieved an identification number from the Department and shall not accept hazardous waste from any transporter who has not received an identification number and license except as otherwise provided.

(2) An owner or operator of a hazardous waste management facility who has not received an identification number may obtain one by applying to the Department using the notification form. Upon receiving the request, the Department will assign an identification number to the owner or operator.

(3) An identification number received as a result of notification to EPA pursuant to section 3010 of the Resource Conservation and Recovery Act (42 U.S.C. § 6930) shall be deemed to satisfy the requirements of this section when furnished to the Department upon request.

(c) *General requirements for hazardous waste management approvals and analysis.*

(1) Before an owner or operator treats, stores, or disposes of a specific hazardous waste from a specific generator for the first time, he shall submit to the Department for approval, on a form provided by the Department, a report which the owner or operator shall retain for 20 years, and which shall include the following information: a detailed chemical and physical analysis of the waste, a description of the waste and the process generating the waste, name and address of the HWM facility, description of the HWM facility's treatment, storage, and disposal methods, results of liner compatibility testing, an assessment of the impact of the waste on the HWM facility, and any other information which the Department may prescribe in order for the Department to determine whether the waste will be treated, stored, or disposed of in accordance with this section. The chemical and physical analysis of the waste shall be repeated under any of the following circumstances:

(i) when necessary to ensure that it is accurate and up-to-date;

(ii) when the owner or operator is notified, or has reason to believe, that the process or operation generating the hazardous waste has changed; and

(iii) for off-site facilities or on-site facilities receiving waste from off-site sources, when the results of the inspection or analysis, or both, of each hazardous waste indicates that the waste received at the facility does not match

the description of the waste on the accompanying manifest or shipping paper.

(2) The owner or operator of an off-site facility or an on-site facility receiving hazardous waste from off-site sources shall inspect and, if necessary, analyze each hazardous waste received at the facility to determine whether it matches the identity of the waste specified on the accompanying manifest or shipping paper.

(3) The owner or operator shall develop and follow a written waste analysis plan which shall be submitted to the Department for approval at such time in the application process as the Department may prescribe. The plan shall be retained at the facility. At a minimum, the plan shall specify all of the following:

(i) the parameters for which each hazardous waste will be analyzed and the rationale for the selection of these parameters;

(ii) the test methods which will be used to test for these parameters;

(iii) the sampling methods which will be used to obtain a representative sample of the waste to be analyzed. A representative sample may be obtained using either:

(A) one of the sampling methods described in Appendix I of § 75.261 (relating to criteria, identification and listing of hazardous waste); or

(B) an equivalent sampling method approved by the Department.

(iv) the frequency with which the initial analysis of the waste will be reviewed or repeated to ensure that the analysis is accurate and up-to-date;

(v) for off-site facilities or on-site facilities receiving wastes from off-site sources, the waste analyses that the hazardous waste generators supply in accordance with the requirements of this subsection;

(vi) where applicable, the testing procedures which will be used to meet the additional waste analysis requirements for the following hazardous waste management methods: tanks, surface impoundments, waste piles, land treatment, landfills, incineration, thermal treatment, and chemical, physical, and biological treatment; and

(vii) for off-site facilities or on-site facilities receiving hazardous waste from off-site sources, the procedures which will be used to determine the identity of each hazardous waste managed at the facility and the sampling method which will be used to obtain a representative sample of the waste to be identified, if the identification method includes sampling.

(viii) where applicable, the methods which will be used to meet the additional waste analysis requirements for specific waste management methods as specified in § 75.264(g) (relating to general requirements for ignitable, reactive or incompatible waste).

(4) The owner or operator of a facility utilizing a liner shall conduct an evaluation of the liner compatibility with the hazardous waste before accepting such a waste for emplacement in a waste pile, surface impoundment, or landfill unless the approval to accept such waste is granted in the facility's permit. The evaluation procedure shall meet the approval of the Department prior to its commencement. The evaluation of the liner shall consist of testing the liner in the presence of the waste for a minimum of 30 days or as otherwise approved by the Department. In lieu of actual testing, existing published or documented data on the hazardous waste or waste generated from similar processes proving the liner compatibility may be substituted if approved by the Department. The results of the evaluation of the liner compatibility shall be furnished to the Department for approval of the waste before acceptance by the facility.

(d) *Security.*

(1) The owner or operator shall prevent unknowing entry, and minimize the possibility for unauthorized entry by persons or livestock onto the active portions of the facility, unless he can successfully demonstrate to the Department at the time of application that:

(i) physical contact with the waste, structures, or equipment within the active portion of the facility will not injure unknowing or unauthorized persons or livestock which may enter the active portion of a facility; and

(ii) disturbance of the waste or equipment by the unknowing or unauthorized entry of persons or livestock onto the active portion of a facility, will not cause a violation of the requirements of this section.

(2) Unless the owner or operator has demonstrated successfully under subsection (d)(1) of this section, a facility shall have:

(i) a 24-hour surveillance system which continuously monitors and controls entry onto the active portion of the facility; or

(ii) an artificial barrier which completely surrounds the active portion of the facility, and a means to control entry, at all times, through the gates or other entrances to the active portion of the facility. A natural barrier may be substituted if approved by the Department.

(iii) The requirements of paragraph (2)(i) and (ii) shall be considered satisfied if the facility within which the active portion is located has a surveillance system or a barrier and a means to control entry in accordance with requirements of paragraph (2)(i) and (ii).

(3) Unless the owner or operator has successfully demonstrated under subsection (d)(1), a sign with the legend, "Danger-Unauthorized Personnel Keep Out" shall be posted at each entrance to the active portion of a facility, and at other locations, in sufficient numbers to be seen from any approach to the active portion. The lettering shall be a minimum of four inches in height and of a color contrasting with its background. Existing signs with other legends may be used provided that the legend on the sign indicates that only authorized personnel are allowed to enter the active portion and entry onto the active portion can be dangerous.

(e) *General inspection and construction inspection requirements.*

(1) The owner or operator shall inspect his facility for malfunctions and deterioration, operator errors, and discharges which may cause or lead to an emission or discharge of hazardous waste constituents to the environment or a threat to human health. The owner or operator shall conduct these inspections often enough to identify problems in time to correct them before they harm human health or the environment.

(2) The owner or operator shall develop and follow a written schedule for inspecting all monitoring equipment, safety and emergency equipment, security devices, and operating and structural equipment that are important to preventing, detecting, or responding to environmental or human health hazards.

(i) The schedule shall be retained at the facility.

(ii) The schedule shall identify the types of problems which are to be looked for during the inspection.

(3) The frequency of the 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 malfunc-

tion or any operator error goes undetected between inspections. Areas subject to spills, such as loading and unloading areas, shall be inspected daily when in use. The inspection schedule shall be submitted with Part B of the permit application of § 75.265 (relating to interim status for hazardous waste management facilities and permit program for new and existing hazardous waste management facilities). At a minimum, the inspection schedule shall include the terms and frequencies of inspections required under subsections (d) and (q) — (y).

(4) The owner or operator shall remedy any deterioration or malfunction of equipment or structures which the inspection reveals on a schedule that ensures the problem does not lead to an environmental or human health hazard. Where a hazard is imminent or has already occurred, remedial action shall be taken immediately.

(5) The owner or operator shall record inspections in an inspection log or summary. He shall keep these records for the operating life of the facility at a location approved by the Department. At a minimum, these records shall include the date and time of the inspection, the name of the inspector, a notation of the observations made, and the date and nature of any repairs or other remedial actions. These records shall be furnished to the Department upon request.

(6) A schedule for construction of a HWM facility shall be submitted to the Department for approval. At a minimum, the schedule shall provide for Department inspection and approval of each phase of construction.

(f) *Personnel training.*

(1) Facility personnel shall successfully complete a program of classroom instruction or on-the-job training that teaches them to perform their duties in a way that ensures the facility's compliance with this section. The owner or operator shall ensure that this program includes at a minimum all the elements required under this subsection. This training program shall be outlined and submitted to the Department for approval at such time in the application process as the Department may prescribe.

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

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

(i) procedures for using, inspecting, repairing, and replacing facility emergency and monitoring equipment;

(ii) key parameters for automatic waste feed cut-off systems;

(iii) communications or alarm systems;

(iv) response to fires or explosions;

(v) response to ground-water contamination incidents; and

(vi) shutdown of operations.

(4) Facility personnel shall successfully complete the program required in subsection (f)(1) within six months after the effective date of this chapter or six months after the date of their employment or assignment to a facility, or to a new position at a facility, whichever is later. Employes hired after the effective date of these regulations shall not work in unsupervised positions until they have completed the training requirements of subsection (f)(1).

(5) Facility personnel shall participate in an annual review and evaluation of the elements of the initial training required in subsection (f)(1).

(6) The owner or operator shall maintain the following documents and records at the facility, which shall be furnished to the Department upon request:

(i) The job title for each position at the facility related to hazardous waste management, and the name of the employe holding each position.

(ii) A written job description for each position listed under paragraph (6)(i). This description may be consistent in its degree of specificity with descriptions for other similar positions in the same company, location, or bargaining unit, but shall include the requisite skill, education, or other qualifications, and duties of facility personnel assigned to each position.

(iii) A written description of the type and amount of both introductory and continuing training that will be given to each person filling a position listed under paragraph (6)(i).

(iv) Records that document that the training or job experience required under this subsection has been given to and completed by facility personnel.

(7) Training records on current personnel shall be retained until closure of the facility. Training records on former employes shall be retained for the operating life of the facility. Personnel training records may accompany personnel transferred within the same company

(g) *General requirements for ignitable, reactive, or incompatible wastes.*

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

(2) Where specifically required by other subsections of this section, the owner or operator of a facility that treats, stores, or disposes of ignitable or reactive waste, or mixes incompatible wastes or incompatible wastes and other materials, shall take precautions to prevent reactions which:

(i) Generate uncontrolled extreme heat or pressure, fire or explosion, or violent reactions.

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

(iii) Produce uncontrolled flammable fumes or gases in sufficient quantities to pose a risk of fire or explosion.

(iv) Damage the structural integrity of the device or facility.

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

(3) When required to comply with paragraphs (1) or (2), the owner or operator shall document such compliance. This documentation may be based on references to published scientific or engineering literature, data from trial tests — such as, bench scale or pilot scale tests — waste analyses, or the results of the treatment of similar wastes by similar treatment processes and under similar operating conditions.

(h) *Preparedness and prevention.*

(1) Facilities shall be designed, constructed, maintained, and operated to minimize the possibility of a fire, explosion, or release of hazardous waste or hazardous waste constituents to air, soil, surface water, or ground water which could threaten human health or the environment.

(2) All facilities shall be equipped with the following, unless it can be demonstrated to the Department that none of the hazards posed by waste handled at the facility could require a particular kind of equipment specified in this subsection:

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

(ii) 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.

(iii) Portable fire extinguishers, fire control equipment including special extinguishing equipment, such as that using foam, inert gas, or dry chemicals, spill control equipment, and decontamination equipment.

(iv) Water at adequate volume and pressure to supply either water hose streams, foam producing equipment, automatic sprinklers, or water spray systems.

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

(4) Whenever hazardous waste is being poured, mixed, spread, or otherwise handled, all personnel involved in the operation shall have immediate access to an on-site internal alarm or emergency communication device either directly or through visual or voice contact with another employe unless such a device is not required under paragraph (2).

(5) An employe working alone on the premises while the facility is operating shall have immediate access to a device, such as a telephone, immediately available at the scene of operation, or a hand-held two-way radio, capable of summoning external emergency assistance, unless the Department has determined that such a device is not required under paragraph (2).

(6) 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 facility operation in an emergency, unless it can be demonstrated to the Department that aisle space is not needed for any of these purposes.

(7) The owner or operator shall attempt to make the following arrangements, as appropriate for the type of waste handled at his facility and the potential need for services as follows:

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

(ii) Where more than one police and fire department might respond to an emergency, agreements designating primary emergency authority to a specific police and a specific fire department, and agreements with others to provide support to the primary emergency authority.

(iii) Agreements with State and local emergency response teams, emergency response contractors, and equipment suppliers.

(iv) Arrangements to familiarize local hospitals with the properties of hazardous waste handled at the facility and the types of injuries or illnesses which could result from fire, explosion, or a discharge at the facility.

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

(i) *Preparedness, Prevention and Contingency (PPC) Plan and emergency procedures.*

(1) Each owner or operator shall be responsible for developing and implementing a Preparedness, Prevention, and Contingency (PPC) Plan for effective action to minimize and abate hazards to human health and the environment from fire, explosion, emission or discharge of hazardous waste or hazardous waste constituents to air, soil, surface water, or ground water.

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

(3) The contingency plan shall describe the actions facility personnel shall take to comply with paragraphs (1), (2), and (12) — (21) in response to fire, explosion, emission or discharge of hazardous waste or hazardous waste constituents to air, soil, surface water, or ground water.

(4) The contingency plan and all revisions and amendments thereof, shall be prepared and implemented in accordance with the Department guidelines for contingency plans and submitted to the Department for approval at such time in the application process as the Department prescribes.

(5) 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 pursuant to subsection (h).

(6) The plan shall list names, addresses, and phone numbers — office and home — for all persons qualified to act as emergency coordinator, and this list shall be kept up-to-date. Where more than one person is listed, one shall be named as primary emergency coordinator and others shall be listed in the order in which they will assume responsibility as alternates.

(7) The plan shall include a list of all required emergency equipment at the facility. The 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) The plan shall include an evacuation plan for facility personnel where there is a possibility that evacuation could be necessary. The plan shall describe signals to be used to begin evacuation, evacuation routes, and alternate evacuation routes, in cases where the primary routes could be blocked by fire or emissions or discharges of hazardous waste.

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

(i) maintained at the facility; and

(ii) submitted to all local police departments, fire departments, hospitals, and emergency response teams that may be called upon to provide emergency services.

(10) The contingency plan shall be reviewed, and immediately amended, if necessary, whenever:

(i) the facility permit is revised;

(ii) the plan fails in an emergency;

(iii) the facility changes in its design, construction, operation, mainte-

nance, or other circumstances, in a manner that materially increases the potential for fire, explosion, emission or discharge of hazardous waste or hazardous waste constituents, or changes the response necessary in an emergency;

(iv) the list of emergency coordinators changes; or

(v) the list of emergency equipment changes.

(11) At all times, there shall be at least one employe either on the facility premises or on call with the responsibility for coordinating all emergency response measures. This emergency coordinator shall be thoroughly familiar with all aspects of the facility's contingency plan, all operations and activities at the facility, the location and characteristics of waste handled, the location of all records within the facility, and the facility layout. In addition, this person shall have the authority to commit the resources needed to carry out the contingency plan.

(12) Whenever there is an imminent or actual emergency situation, the emergency coordinator shall immediately:

(i) activate facility alarms or communication systems, where applicable, to notify all facility personnel; and

(ii) notify local agencies with designated response roles if their help is needed.

(13) Whenever there is a fire, explosion, emission, or discharge, the emergency coordinator shall immediately identify the character, exact source, amount, and areal extent of any released materials. He may do this by observation or review of facility records or manifests and, if necessary, by chemical analysis.

(14) Concurrently, the emergency coordinator shall assess possible hazards to human health or the environment that may result from the fire, explosion, emission, or discharge. This assessment shall consider both direct and indirect effects of the fire, explosion, or discharge.

(15) If the emergency coordinator determines that the facility has had a fire, explosion, emission, or discharge which could threaten human health or the environment outside the facility, he shall report his findings as follows:

(i) if his assessment indicates that evacuation of local areas may be advisable, he shall immediately notify appropriate local authorities. He shall be available to help appropriate officials decide whether local areas should be evacuated; and

(ii) he shall immediately notify the Department by telephone at 717-787-4343 and the National Response Center at 800-424-8802. The report shall include the following:

(A) Name of the person reporting the incident.

(B) Name, address, and identification number of facility.

(C) Phone number where the person reporting the spill can be reached.

(D) Date, time, and location of the incident.

(E) A brief description of the incident including type of incident, nature of hazardous material involvement and possible hazards to human health or the environment.

(F) The extent of injuries, if any.

(G) For each waste involved in the incident, the shipping name, hazard class and U. N. number of the waste, and quantity of the waste involved.

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

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

(18) Immediately after an emergency, the emergency coordinator shall, with Department approval, provide for treating, storing, or disposing of recovered waste, contaminated soil or surface water, or other material that results from a fire, explosion, or discharge at the facility.

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

(i) no waste that may be incompatible with the emitted or discharged material is treated, stored, or disposed of until cleanup procedures are completed; and

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

(20) The owner or operator shall notify the Department and the appropriate State or local authorities, that the facility is in compliance with paragraph (19) before operations are resumed in the affected areas of the facility.

(21) 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 15 days after the incident, he shall submit a written report on the incident to the Department. The report shall include the following:

(i) Name, address, and telephone number of the owner or operator.

(ii) Name, address, and telephone number of the facility.

(iii) Date, time, and type of incident.

(iv) Kinds and quantities of materials involved.

(v) The extent of injuries, if any.

(vi) An assessment of actual or potential hazards to human health or the environment, where this is applicable.

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

(j) *Manifest system and discrepancy reporting.*

(1) Requirements in this subsection apply to owners and operators of off-site facilities and on-site facilities receiving hazardous waste from off-site sources, except as otherwise provided in § 75.264(a).

(2) General requirements for a manifest shall consist of the following:

(i) A generator who transports or offers for transportation a shipment of hazardous waste to an off-site treatment, storage, or disposal facility shall complete a manifest before the waste is transported off-site.

(ii) For all hazardous waste shipments designated for off-site treatment, storage, or disposal within this Commonwealth, the generator shall use the manifest form provided by the Department and shall distribute the manifest form according to the instructions specified on the manifest.

(iii) For all hazardous waste shipments generated in this Commonwealth and designated for treatment, storage, or disposal outside this Commonwealth, the generator shall use the EPA-authorized disposer state manifest form or format, or a manifest form meeting the minimum EPA requirements.

(iv) A generator shall designate on the manifest one facility which is permitted to manage the waste described on the manifest.

(v) The Department manifest shall require the following information as a minimum:

(A) A unique manifest document number.

(B) The names, site addresses, telephone numbers and identification numbers of the generator, transporter and treatment, storage, or disposal facility.

(C) The proper United States Department of Transportation shipping name, United States Department of Transportation hazard class, and UN number of the waste in accordance with regulations of the United States Department of Transportation under 49 C.F.R. §§ 172.101, 172.202, and 172.203.

(D) The physical form — solid, liquid, or gas — the total quantity of each hazardous waste by units of weight or volume, and the type and number of containers.

(E) A certification equivalent to the following: "This is to certify that the above named materials are properly classified, described, packaged, marked, and labeled and are in proper condition for transportation according to the applicable regulations of the Department of Transportation, U. S. EPA, and the State. The wastes described were consigned to the transporter named. The treatment, storage, or disposal (TSD) facility can and will accept the shipment, and has a valid permit to do so. I certify that the foregoing is true and correct to the best of my knowledge."

(3) The hazardous waste manifest shall consist of six copies, with copies 1, 2 and 3 detaching into two parts, A and B. The manifest form shall be completed and routed as follows, except that manifests for bulk shipments transported by rail or water shall be completed and routed according to the scheme set forth in paragraph (j)(9).

(i) The generator shall complete Part A of all copies of the manifest. The generator shall instruct the initial transporter's authorized representative to sign, date, and certify the receipt of the shipment.

(ii) For shipments of hazardous waste generated within the Commonwealth of Pennsylvania and to be disposed of within the Commonwealth of Pennsylvania, the generator shall retain a complete Copy 2 of the manifest and Part A of Copy 3 for his records.

(iii) In the case of an interstate shipment of hazardous waste, the generator shall detach Part A of copies 1, 2, and 3, distribute Part A, Copy 1 to the disposer state, Part A, Copy 2 to the generator state, and retain Part A, Copy 3 for his records.

(iv) The transporter's authorized representative shall carry the remaining copies of the manifest along with the shipment.

(v) Upon delivery of the shipment to the designated treatment, storage, or disposal facility, or to transporter number two, transporter number one shall sign and date and certify delivery of the shipment, obtain the signature, date of receipt of shipment, and certification of the treatment, storage, or disposal facility's authorized representative or the authorized representative of transporter number two and detach and retain Copy 5 of the manifest.

(vi) Upon delivery of the shipment to the designated treatment, storage, or disposal facility by transporter number two, transporter number two shall sign and date and certify the delivery of shipment, obtain the signature, date of receipt of shipment, and certification of the treatment, storage, or disposal facility's authorized representative and detach and retain Copy 6 of the manifest.

(vii) For shipments within the Commonwealth of Pennsylvania, the treatment, storage, or disposal facility's authorized representative shall retain complete copies 1 and 4 of the manifest and return Part B of Copy 3 to the generator within 24 hours after delivery of the shipment.

(viii) In the case of the interstate shipment of hazardous waste, the treatment, storage, or disposal facility's authorized representative shall detach and distribute Part B of copies 1, 2, and 3 of the manifest in the following manner:

(A) Treatment, storage, or disposal facility's authorized representative shall forward Part B of Copy 1 of the manifest to the state in which the designated treatment, storage, or disposal facility is located.

(B) Treatment, storage, or disposal facility's authorized representative shall forward Part B of Copy 2 of the manifest to the state in which the installation generating the hazardous waste is located and shall return Part B of Copy 3 of the manifest to the generator within 24 hours after the delivery of the shipment. The treatment storage, or disposal facility shall retain Copy 4 for its records.

(4) Each manifest form shall record a maximum of two transporters. If more than two transporters are to be utilized, the generator shall complete additional manifest forms and reference the first manifest document number on such additional manifest forms.

(5) If more than four hazardous wastes from the same generator are to be shipped in the same shipment, the generator shall complete additional manifests for each group of four or less hazardous wastes.

(6) Copies of the manifest retained by the generator and the treatment, storage, or disposal facility shall be furnished to the Department upon request.

(7) Note any significant discrepancies in the manifest as defined in subsection (j)(10) relating to manifest discrepancies, on each copy of the manifest.

(8) Retain at the facility a copy of each manifest for at least 20 years from the date of delivery.

(9) For bulk shipment of hazardous waste designated for treatment, storage, or disposal within this Commonwealth solely by railroad or water, the manifest shall be completed and routed as follows:

(i) The generator shall complete Part A of all copies of the manifest. The generator shall instruct the initial transporter's authorized representative to sign and date and certify the receipt of the shipment.

(ii) For shipments of hazardous waste generated within the Commonwealth of Pennsylvania and to be disposed of within the Commonwealth of Pennsylvania, the generator shall retain a complete Copy 2 of the manifest and Part A of Copy 3 for his records.

(iii) In the case of an interstate shipment of hazardous waste, the generator shall detach Part A of copies 1, 2, and 3, distribute Part A of Copy 1 to the disposer state, Part A of Copy 2 to the generator state, and retain Part A of Copy 3.

(iv) The generator or the initial transporter delivering a shipment of hazardous waste to the rail or water transporter shall obtain the signature and date and certification of the rail or water transporter on the manifest and forward the remaining copies of the manifest, except those for additional transporters, to the designated treatment, storage, or disposal facility. Each transporter, other than the rail or water transporter, shall retain his copy of the manifest for his records. The rail or water transporter may retain a copy at their discretion.

(v) The rail or water transporter shall carry along with the shipment either his copy of the manifest or the shipping paper containing all the information required on the manifest in § 75.263(d)(1)(v) (relating to transporters of hazardous waste) except the identification numbers, generator's certification, and signatures.

(vi) The delivering rail or water transporter shall obtain the signature, date of receipt of shipment, and certification of the authorized representative of the treatment, storage, or disposal facility on either the manifest or the shipping paper.

(vii) The designated treatment, storage, or disposal facility's authorized representative shall sign and date and certify the acceptance of the shipment on the manifest forwarded by the generator or initial transporter and shall obtain the signature and date and certification of the rail or water transporter.

(viii) For shipments within the Commonwealth of Pennsylvania, the treatment, storage, or disposal facility's authorized representative shall retain completed copies 1 and 4 of the manifest and return Part B of Copy 3 to the generator.

(ix) In the case of the interstate shipment of hazardous waste, the treatment, storage, or disposal facility's authorized representative shall detach and distribute Part B of Copies 1, 2, and 3 of the manifest in the following manner:

(A) Treatment, storage, or disposal facility's authorized representative shall forward Part B of Copy 1 of the manifest to the state in which the designated treatment, storage, or disposal facility is located.

(B) Treatment, storage, or disposal facility's authorized representative shall forward Part B of Copy 2 of the manifest to the state in which the installation generating the hazardous waste is located, and shall return Part B of Copy 3 of the manifest to the generator within 24 hours after the delivery of the shipment. The treatment, storage, or disposal facility shall retain Copy 4 for its records.

(10) 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.

(i) Significant discrepancies in quantity are:

(A) for bulk waste, variations greater than 2.0% in weight; and

(B) for batch waste, any variation in piece count, such as a discrepancy of one drum in a truckload.

(ii) 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, or differences in physical form, color, odor, and the like.

(11) Upon discovering a significant discrepancy, the owner or operator shall reconcile the discrepancy with the waste generator or transporter before the waste is stored, treated, or disposed at the HWM facility. If the discrepancy is not resolved within three days after receiving the waste, the owner or operator shall immediately notify the Department by telephone and a letter describing the discrepancy and attempts to reconcile it, enclosing a copy of the manifest or shipping paper at issue.

(k) Operating Record.

(1) The owner or operator of an on-site or off-site facility shall keep a written operating record at his facility.

(2) The following information shall be recorded, as it becomes available, and be maintained in the operating record until closure of the facility:

(i) A description and the quantity of each hazardous waste received, and the methods and dates of its treatment, storage, or disposal at the facility as required by Appendix I. The quarterly report form may be used to record this information.

(ii) The location of each hazardous waste within the facility and the quantity at each location. For disposal facilities, the location and quantity of each hazardous waste shall be recorded on a map or diagram of each cell or disposal area. For all facilities, this information shall include cross-references to specific manifest document numbers, if the waste was accompanied by a manifest.

(iii) Records and results of waste analyses and trial tests performed as specified in subsections (c) and (g).

(iv) Summary reports and details of all incidents that require implementing the contingency plan as specified in subsection (i)(21).

(v) Records and results of inspections as required by § 75.262(d) (relating to generators of hazardous waste).

(vi) For off-site facilities or on-site facilities receiving waste from off-site sources, notices to generators as specified in 75.262(d) (relating to generators of hazardous waste).

(vii) All closure cost estimates under subsection (p) and, for disposal facilities, all post-closure cost estimates under subsection (p).

(l) *Availability, retention, and disposition of records.*

(1) All records, including plans, required under this section shall be furnished to the Department upon request, and be made available at all times for inspection by the Department.

(2) The retention period for records required under this section shall be extended automatically during the course of any enforcement action regarding the facility or as requested by the Department.

(3) A copy of records of waste disposal locations and quantities under subsection (k)(2)(ii) shall be submitted to the Department and the local land authority upon closure of the facility or as otherwise prescribed by the Department.

(4) Reports, plans, and other documents retained at the facility which require Department approval shall be the most recently approved version of the reports, plans, or other documents.

(m) *Quarterly facility report and additional reports.*

(1) Except as otherwise provided by paragraph (3), the owner or operator of an on-site or off-site facility shall submit quarterly reports:

(i) To the Department on a form designated by the Department. The form shall contain as a minimum the following information:

(A) The name, identification number, mailing address, and location of the facility.

(B) The name and telephone number of the facility's contact person.

(C) The identification number and hazardous waste transporter (HWT) license number of each transporter.

(D) The name, identification number, and address of each generator.

(E) The description, Department of Transportation hazard class, and hazardous waste number of the hazardous waste.

(F) The amount and units of measure of each hazardous waste in a shipment.

(G) The manifest document number for each hazardous waste shipment.

(H) Signature and certification of the facility's authorized representative.

(I) The information required by

clauses (C) — (G) shall be provided for each shipment of hazardous waste and each waste stream within the shipment.

(J) The most recent closure cost estimate under 75.264(p) of this title and for disposal facilities, the most recent post-closure cost estimate under subsection (p).

(ii) No later than the last day of the following month for the quarters: January through March due on or before April 30; April through June due on or before July 31; July through September due on or before October 31; October through December due on or before January 31.

(2) The owner or operator of an on-site or off-site facility shall also report to the Department:

(i) any emission, discharge, fire, or explosion as required in subsection (i)(21); and

(ii) facility closure certification as required in subsection (o)(9).

(3) Captive facilities shall not submit quarterly reports to the Department. They shall, however, maintain records of hazardous waste treatment, storage, and disposal activity pursuant to subsection (k) on a form specified by the Department. This form shall be maintained for the life of the facility as a part of its operating record. These records shall be made available to the Department upon request.

(n) *Ground-Water Monitoring.*

(1) The owner or operator of a landfill or land treatment facility or surface impoundment which is used to manage hazardous waste shall implement a ground-water monitoring program as required in this subsection capable of determining the facility's impact on the quality of any ground-water system which the facility has the potential for affecting, or as otherwise required in writing by the Department.

(2) The owner or operator shall install, operate, and maintain a ground-water monitoring system to detect the entry of any hazardous waste or hazardous waste constituents or decomposition byproducts into the ground-water system. This ground-water monitoring program shall be conducted during the active life of the facility, and during the post-closure care period.

(3) The owner or operator shall have an approved outline for a ground-water quality assessment program for the site. The outline shall describe a more comprehensive ground-water monitoring program capable of:

(i) Determining which hazardous waste or hazardous waste constituents or decomposition byproducts have entered the ground water.

(ii) Determining the rate and extent of migration of hazardous waste or hazardous waste constituents or decomposition byproducts in the ground water.

(iii) Determining the concentrations of hazardous waste or hazardous waste constituents or decomposition byproducts in the ground water.

(4) A ground-water monitoring system shall be capable of yielding ground-water samples for analysis at all times and shall consist of:

(i) Monitoring wells — at least one — installed hydraulically upgradient — that is, in the direction of increasing static head — from the limit of the waste management area. Their number, locations, and depth shall be sufficient to yield ground-water samples that are:

(A) representative of background ground-water quality; and

(B) Not affected by the facility.

(ii) Monitoring wells — at least three — installed hydraulically downgradient — that is, in the direction of decreasing static head — at or close to the perimeter of the waste management area. Their number, locations, and depths shall ensure that they immediately detect any statistically significant amounts of hazardous waste or hazardous waste constituents or decomposition byproducts that migrate from the waste management area to the ground water.

(iii) The locations of the monitoring wells shall be approved in writing by the Department prior to construction.

(5) Separate monitoring systems for each waste management component of a facility are not required provided that provisions for sampling upgradient and downgradient ground-water quality will detect any discharge from the waste management area.

(i) In the case of a facility consisting of only one land disposal component, the waste management area is described by the waste boundary (perimeter).

(ii) In the case of a facility consisting of more than one component, the waste management area is described by an imaginary boundary line which circumscribes the several waste management components.

(6) All monitoring wells shall be cased in a manner that maintains the integrity of the monitoring well borehole. This casing shall be screened or perforated, and packed with gravel or sand where necessary, to enable sample collection at all depths where appropriate aquifer flow zones exist. The annular space above the sampling depth shall be sealed with a suitable material to prevent contamination of samples and the ground water.

(7) All monitoring wells shall be protected from damage by heavy equipment in the normal operations of the facility and from vandals. The protective installation shall include:

(i) A length of steel casing several inches larger in diameter and height than the monitoring well and at least ten feet in length, installed around the monitoring well casing. The height of this protective steel casing shall be at least one foot above final grade and several inches above the monitoring well casing. This length of protective steel casing shall be grouted and placed into the ground to a depth of at least three feet and have a cement collar to hold it firmly in position. The steel casing shall be painted a highly visible color and be numbered.

(ii) The monitoring well casing shall have a cap which will allow the well to be locked and secured from acts of vandalism.

(8) The owner or operator shall obtain and analyze samples from the installed ground water monitoring system. The owner or operator shall develop and submit to the Department for written approval a ground water sampling and analysis plan, which shall be retained at the facility and followed. The plan shall include procedures and techniques for:

(i) Sample collection.

(ii) Sample preservation and shipment.

(iii) Analytical procedures.

(iv) Chain of custody control.

(9) The owner or operator at a minimum shall determine the concentration or value of the following parameters in ground-water samples obtained from the monitoring wells.

(i) pH

(ii) Total Organic Carbon

(iii) Total Organic Halogen

(iv) Specific Conductance

(v) Additional parameters as required by the Department in writing or by permit.

(10) For all monitoring wells, the owner or operator shall establish initial background concentrations or values of all parameters specified in subsection (n)(9) quarterly for one year

and submit this data to the Department.

(11) For each of the parameters specified in subsection (n)(9), establish initial background concentrations or values for each well. At least four replicate measurements shall be obtained for each sample and the initial background arithmetic mean and variance shall be determined by pooling the replicate measurements for the respective parameter concentrations or values in samples obtained from each well during the first year.

(12) After the first year, all monitoring wells shall be sampled and the samples analyzed at least quarterly for the parameters in subsection (n)(9)(i) — (iv) and any others specified by the Department pursuant to subsection (n)(9)(v). These additional parameters shall be analyzed at a frequency specified by the Department pursuant to subsection (n)(9)(v).

(13) The elevation of the ground water surface at each monitoring well shall be determined each time a sample is obtained and shall be sent to the Department with the quarterly report required under subsection (m). All ground water elevation measurements shall be recorded as a distance measurement from the reference elevation of the well head, and with respect to mean sea level based on U.S.G.S. or USC & GS datum.

(14) For each parameter specified in subsection (n)(9), the owner or operator shall calculate the arithmetic mean and variance, based on at least four replicate measurements on each sample, for each well monitored after the first year and compare these results with its initial background arithmetic mean. The comparison shall consider individually each of the wells in the monitoring system, and shall use the Student's t-test at the 0.01 level of significance to determine statistically significant changes from the initial background concentrations or values or a suitable statistical comparison other than the Student's t-test to determine unanticipated changes from initial background concentrations or values.

(15) If comparisons made under subsection (n)(14) for upgradient wells show a significant change, the owner or operator shall determine whether the facility has caused the significant change. If the facility is found to have caused the change, then the owner or operator shall submit to the Department for review a specific plan based on the outline required under subsection (n)(3) for a ground-water quality assessment program.

(16) If the comparisons for downgradient wells made under subsection (n)(14) indicate a significant change, the owner or operator shall:

(i) Notify the Department within 7 days that the facility may be affecting the ground water quality, and

(ii) Within thirty days or as otherwise approved in writing by the Department after the notification required under subsection (16)(i), the owner or operator shall develop and submit to the Department for review a specific plan, based on the outline required under subsection (n)(3) for a ground-water quality assessment program at the facility.

(iii) The plan required under subparagraph (ii) shall at a minimum specify:

(A) The number, location, size, casing type, and depth of wells, borings or pits to be used.

(B) Sampling and analytical methods to be used for those hazardous wastes or hazardous waste constituents in the facility.

(C) Evaluation procedures, including any use of previously gathered ground-water quality information to be used.

(D) A schedule of implementation.

(iv) The owner or operator shall implement the ground-water quality assessment program and at a minimum, determine:

(A) The rate and extent of migration of the hazardous waste or hazardous waste constituents or decomposition byproducts in the ground water; and

(B) The concentrations of the hazardous waste or hazardous waste constituents or decomposition byproducts in the ground water.

(v) The owner or operator shall make his determination under subsection (n)(16)(iv) as soon as technically feasible and, within 15 days after that determination, submit to the Department a written report containing an assessment of the ground-water quality.

(vi) If the ground-water quality assessment report determines that hazardous waste or hazardous waste constituents or decomposition byproducts have entered the ground water, then he shall submit to the Department a plan for the abatement of any groundwater contamination. This plan shall be submitted to the Department within 30 days after the submission of the ground-water quality assessment report.

(vii) If the ground-water quality assessment report determines that no hazardous waste or hazardous waste constituents or decomposition byproducts have entered the ground water, then he shall:

(A) Notify the Department of any proposed modifications to the facility's ground-water monitoring program; and

(B) Reinstate the original or an approved modified ground-water monitoring program for the facility.

(17) At least annually by January 31, the owner or operator shall evaluate the data on ground water elevations obtained under subsection (n)(13) to determine whether the requirements under paragraph (4) for locating the monitoring wells continues to be satisfied. If the evaluation shows that paragraph (4) is no longer satisfied or the Department determines that paragraph (4) is no longer satisfied, the owner or operator shall immediately modify the number, location, or depth of the monitoring wells to bring the ground-water monitoring system into compliance with this requirement. These changes shall be approved in writing by the Department before any construction begins.

(18) The owner or operator shall keep records of all analyses and evaluations of ground-water quality and surface elevations required in accordance with this subsection (n).

(19) The owner or operator shall report the following information in writing to the Department.

(i) During the first year when initial background concentrations are being established for the facility: concentrations or values of the parameters listed in (n)(9), for each ground-water monitoring well within 15 days after completing each quarterly analysis.

(ii) Quarterly after the first year: concentrations or values of the parameters in subsection (n)(9)(i) — (iv) and any required under subsection (n)(9)(v) for each ground-water monitoring well, along with the required evaluations for these parameters under subsection (n)(14).

(iii) Annually: concentrations or values of those parameters for each well which are specified by the facility's permit.

(o) *Closure and post-closure.* Closure and post-closure shall conform with the following:

(1) Except as otherwise provided in subsection (a)(2) — (9) apply to owners and operators of all hazardous waste management facilities, and paragraphs (10) — (21) shall also apply to

owners and operators of all disposal facilities except incinerators.

(2) The owner or operator shall close the facility in a manner that:

(i) Minimizes the need for further maintenance; and

(ii) Controls, minimizes, or eliminates to the extent necessary to prevent threats to human health and the environment, post-closure escape of hazardous waste, hazardous waste constituents, leachate, contaminated rainfall, or waste decomposition products to the ground water or surface waters or to the atmosphere.

(3) The owner or operator of a hazardous waste management facility shall have a written closure plan. The plan shall be submitted with the permit application for approval in writing by the Department. A copy of the approved plan and all revisions to the plan shall be retained at the facility until closure is completed and certified in accordance with paragraph (9). The plan shall 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 shall include, at least:

(i) a description of how and when the facility will be partially closed, if applicable, and ultimately closed. The description shall identify the maximum extent of the operation which will not be closed during the life of the facility, and how the requirements of paragraphs (2), (6), (7), (8), and (9), and the applicable closure requirements of subsection (q), (r), (s), (t), (u), (v), (w), (x), and (y) will be met;

(ii) an estimate of the maximum inventory of wastes in storage and in treatment at any time during the life of the facility;

(iii) a description of the steps needed to decontaminate facility equipment during closure; and

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

(4) The owner or operator may amend his closure plan at any time during the active life of the facility. The active life of the facility is that period during which wastes are periodically received. The owner or operator shall 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. These closure plan amendments shall be submitted to the Department prior to the actual change in plans or design. When the owner or operator requests a permit modification to authorize a change in operating plans or facility design, he shall request a modification of the closure plan at the same time if necessary, or as required in writing by the Department to effectuate the purpose of this section.

(5) The owner or operator shall notify the Department in writing at least 180 days prior to the date he expects the final volume of waste. If the facility's permit is terminated, or if the facility is otherwise ordered by judicial decree or compliance order to cease receiving wastes or to close, then the requirement of this paragraph does not apply. However, the owner or operator shall close the facility in accordance with the deadlines established in paragraphs (6) and (7).

(6) Within 90 days after receiving the final volume of hazardous wastes, the owner or operator shall remove from the site, or dispose of on-site, all hazardous waste in accordance with the approved closure plan. The Department may approve a longer period if the owner or operator demonstrates that:

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

(A) the facility has the capacity to receive additional wastes;

(B) there is a reasonable likelihood that a person other than the owner or operator will recommence operation of the site; and

(C) closure of the facility would be incompatible with continued operation of the site;

(ii) He has taken and will continue to take all steps to prevent threats to human health and the environment.

(7) The owner or operator shall complete closure activities in accordance with the approved closure plan and within 180 days after receiving the final volume of wastes. The Department may approve a longer closure period if the owner or operator demonstrates that:

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

(A) the facility has the capacity to receive additional wastes;

(B) there is reasonable likelihood that a person other than the owner or operator will recommence operation of the site; and

(C) closure of the facility would be incompatible with continued operation of the site; and

(ii) He has taken and will continue to take all steps to prevent threats to human health and the environment from the unclosed but inactive facility. Under paragraphs (6)(i)(A) and (7)(i)(A), if operation of the site is recommenced, the Department may defer completion of closure activities until the new operation is terminated. Such deferral shall be in writing.

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

(9) When closure is completed, the owner or operator shall submit to the Department 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.

(10) Post-closure care shall continue for 30 years after the date of completing closure and shall consist of at least the following:

(i) Ground-water monitoring and reporting as applicable.

(ii) Maintenance of monitoring and waste containment systems as applicable.

(11) At any time after closure the Department may in writing reduce the post-closure care period to less than 30 years if the Department finds that the reduced period is sufficient to protect human health and the environment — such as, leachate or ground-water monitoring results, characteristics of the waste, application of advanced technology, or alternative disposal, treatment, or re-use techniques indicate that the facility is secure.

(12) Prior to the time that the post-closure care period is due to expire, the Department may extend the post-closure care period if the extended period is necessary to protect human health and the environment such as, leachate or ground-water monitoring results indicate a potential for migration of waste at levels which may be harmful to human health and the environment.

The Department shall notify the owner or operator of such an extension in writing prior to the end of the post-closure care period.

(13) The Department may require, at closure, continuation of any of the security requirements during part or all of the post-closure care period after the date of completing closure when:

(i) hazardous wastes may remain exposed after completion of closure; or

(ii) access by the public or domestic livestock may pose a hazard to human health.

(14) Post-closure use of property on or in which hazardous wastes remain after closure shall never be allowed to disturb the integrity of the final cover, liners, or any other components of any containment system or the function of the facility's monitoring systems, unless the Department finds that the disturbance:

(i) is necessary to the proposed use of the property, and will not increase the potential hazard to human health or the environment; or

(ii) is necessary to reduce a threat to human health or the environment.

(15) All post-closure care activities shall be in accordance with the provisions of the approved post-closure plan.

(16) The owner or operator of a disposal facility shall have a written post-closure plan. The plan shall be submitted with the permit application and approved by the Department as part of the permit. A copy of the approved plan and all revisions to the plan shall be kept at the facility until the post-closure care periods begins. This plan shall identify the activities which will be conducted after closure and the frequency of those activities, and include at least:

(i) a description of the planned ground-water monitoring activities and frequencies at which they will be performed;

(ii) a description of the planned maintenance activities, and frequencies at which they will be performed, to ensure;

(A) the integrity of the cap and final cover or other containment structures where applicable; and

(B) the function of the facility monitoring equipment, and

(iii) The name, address, and phone number of the person or office to contact about the disposal facility during the post-closure care period. This person or office shall keep an updated post-closure plan during the post-closure care period.

(17) Any amendment to the post-closure plan shall be submitted for approval by the Department. The owner or operator may amend his 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 shall amend his plan whenever changes in operating plans or facility design; or events which occur during the active life of the facility or during the post-closure care period, affect his post-closure plan. He shall also amend his plan whenever there is a change in the expected year of closure.

(18) 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 shall be required at the same time if necessary to effectuate the purpose of this subsection, or if required in writing by the Department.

(19) Within 90 days after closure is completed, the owner or operator of a disposal facility shall submit to the Department and to the municipality in which the facility is located a survey plat indicating the location and dimensions of landfill cells or other disposal areas with respect to permanently surveyed benchmarks. This plat shall be prepared and certified by a registered land surveyor. The plat filed with the municipality shall contain a note, prominently displayed, which states the owner's or operator's obligation to restrict disturbance of the site as specified in paragraph (14). In addition, the owner or operator shall submit to the municipality and to the Department a record of the type, location, and quantity of hazardous waste disposed of within each cell or area of the facility. For wastes disposed of before these regulations were promulgated, the owner or operator shall identify the type, location, and quantity of the wastes to the best of his knowledge and in accordance with any records he has kept. Any changes in the type, location, or quantity of hazardous waste disposed of within each cell or area of the facility that occur after the survey plat and record of wastes have been filed shall be reported in writing to the municipality and to the Department.

(20) The owner of the property on which a disposal facility is located shall record a notation on the deed to the facility property — or on some other instrument which is normally examined during title search — that will in perpetuity notify any potential purchaser of the property that:

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

(ii) Its use is restricted under paragraph (13); and

(iii) The survey plat and record of the type, location, and quantity of hazardous waste disposed of within each cell or area of the facility required in paragraph (19) have been filed with the municipality and the Department.

(21) If at any time the owner or operator or any subsequent owner of the land upon which a hazardous waste facility was located removes the waste and waste residues, the liner, if any, and all contaminated underlying and surrounding soil, he may add a notation to the deed or instrument indicating the removal of the waste. Comment: On removing the waste and waste residues, the liner, if any, and the contaminated soil, the owner or operator, unless he can demonstrate in accordance with § 75.261 that any solid waste removed is not a hazardous waste, becomes a generator of hazardous waste and shall manage it in accordance with all applicable requirements of §§ 75.262 — 75.266.

(q) *Use and Management of Containers.* Use and management of containers shall conform with the following.

(1) If a container holding hazardous waste is not in good condition, or if it begins to leak, the owner or operator shall transfer the hazardous waste from the defective container to a container that is in good condition or manage the waste in some other way that complies with this section.

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

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

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

(5) The owner or operator shall inspect areas where containers are stored, at least weekly, for leaks and deterioration of containers and the containment system caused by corrosion and other factors.

(6) Weighing or measuring facilities if necessary or when required by the Department shall be provided for weighing all hazardous wastes

brought to the TSD facility, except for captive facilities that handle liquids or flowable wastes — less than 20% solids — which are amenable to accurate flow measurements, or captive facilities that possess other waste inventory controls — volume controls. All weighing facilities shall be capable of weighing the maximum anticipated load plus the weight of the transport vehicle. The precision of weighing devices shall be certified by the Pennsylvania Department of Agriculture. For off-site facilities or on-site facilities receiving waste from off-site sources, the hours of operation for the facility shall be prominently displayed on a sign at the entrance. The lettering shall be a minimum of four inches in height and of a color contrasting with its background.

(7) Incompatible wastes, or incompatible wastes and materials — see Appendix IV — shall not be placed in the same container, unless subsection (g)(2) is complied with.

(8) Hazardous waste shall not be placed in an unwashed container that previously held an incompatible waste or material — see Appendix IV — unless subsection (g)(2) is complied with.

(9) A storage container holding a hazardous waste that is incompatible with any waste or other materials stored nearby in other containers, piles, open tanks, or surface impoundments, shall be separated from the other materials or protected from them by means of an impermeable dike, berm, wall, or other device.

(10) Container storage and receiving areas shall have a containment system capable of collecting and holding spills, leaks, and precipitation. The containment system shall:

(i) Have a base underlying the containers which is free of cracks or gaps and is sufficiently impervious to contain leaks, spills, and accumulated rainfall;

(ii) Provide efficient drainage from the base to a sump or collection system so that standing liquid does not remain on the base longer than one hour after a spill or leak or a precipitation event.

(iii) Have sufficient capacity to contain the entire volume of the largest container or 10% of the total volume of all the containers, whichever is greater.

(11) Run-on into the containment system shall be prevented.

(12) Spilled or leaked waste and accumulated precipitation shall be removed from the sump or collection system with sufficient frequency to prevent overflow, and shall be managed in accordance with this title.

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

(14)(i) For indoor storage of reactive or ignitable hazardous waste, the total maximum container height shall not exceed six feet. The containers shall be grouped so that the maximum width and depth of a group is no greater than the area that would contain four 55 gallon drums wide by four 55 gallon drums deep — approximately eight feet by eight feet — or the containers shall be grouped so that the maximum width of a group is no greater than the area that would contain two 55 gallon drums deep, with the length of the group so limited that at least a five foot wide aisle surrounds the group. Each eight foot by eight foot group shall be separated by at least a five foot wide aisle.

(ii) For outdoor storage of reactive or ignitable hazardous waste, the total container height shall not exceed nine feet. The maximum width and depth of a group of such containers shall not exceed the equivalent of eight 55 gallon drums wide by eight 55 gallon drums deep. Each group shall be separated by at least a five foot wide aisle from any adjacent group. A main aisle or accessway at least 12 feet wide shall be maintained through a container storage area. A minimum 40 foot setback from a building shall be maintained for all outdoor container storage of reactive or ignitable hazardous wastes.

(iii) For indoor or outdoor storage of non-reactive or non-ignitable hazardous waste, the total container height shall not exceed nine feet. The maximum width and depth of a group of containers shall provide a configuration and aisle space which insures access for purposes of inspection, containment, and remedial action with emergency vehicles. The configuration shall be specified in the permit application and shall be approved in writing by the Department.

(r) *Tanks.*

(1) This subsection shall apply to owners and operators of facilities that use tanks to treat or store hazardous waste except as otherwise provided in subsection (a) of this section.

(2) Treatment or storage of hazardous waste in tanks shall comply with subsection (g)(2).

(3) Hazardous waste or treatment reagents shall not be placed in a tank if they could cause the tank or its inner liner to rupture, leak, corrode, or otherwise fail before the end of its intended life.

(4) Uncovered tanks shall be operated to ensure at least 60 centimeters (two feet) of freeboard, unless the tank is equipped with an overflow alarm and an overflow device to a standby tank with a capacity equal to or exceeding the volume of the top 60 centimeters (two feet) of the uncovered tank, or equipped with a waste feed cutoff system.

(5) Where hazardous waste is continuously fed into a tank, the tank shall be equipped with a means to stop the inflow.

(6) For liquid storage in above ground tanks or partially above ground tanks, there shall be a containment structure with a capacity that equals or exceeds the largest above ground tank volume plus a reasonable allowance for precipitation based on local weather conditions and plant operation.

(7) Whenever a tank is to be used to chemically treat or store a hazardous waste which is substantially different from waste previously treated or stored in that tank, or chemically treat hazardous waste with a substantially different process than any previously used in that tank, the owner or operator shall, before treating or storing the different waste or using the different process, conduct waste analyses and trial treatment or storage tests, or obtain written, documented information on similar storage or treatment of similar waste under similar operating conditions to show that this proposed treatment or storage will meet all applicable requirements of paragraphs (1) — (3).

(8) The owner or operator of a tank shall inspect, where present:

(i) Discharge control equipment at least once each operating day, to ensure that it is in good working order.

(ii) Data gathered from monitoring equipment at least onee each operating day, to ensure that the tank is being operated according to its design.

(iii) The level of waste in the tank, at least once each operating day, to ensure compliance with paragraph (4).

(iv) The construction materials of the tank, at least weekly, to detect corrosion or leaking of fixtures or seams.

(v) The construction materials of, and the area immediately surrounding, discharge confinement structures at

least weekly to detect erosion or obvious signs of leakage.

(vi) Records of inspection shall be maintained with the operations records referred to in subsection (k).

(9) At closure, all hazardous waste and hazardous waste residues shall be removed from tanks, discharge control equipment, and discharge confinement structures.

(10) Ignitable or reactive waste shall not be placed in a tank, unless:

(i) The waste is treated, rendered, or mixed before or immediately after placement in the tank so that the resulting waste, mixture, or dissolution of material no longer meets the definition of ignitable or reactive waste and paragraph (g)(2) is complied with;

(ii) the waste is stored or treated in such a way that it is protected from material or conditions which may cause the waste to ignite or react; or

(iii) the tank, by written Department approval, is used solely for emergencies.

(11) The owner or operator of a facility which treats or stores ignitable or reactive waste in covered tanks shall comply as a minimum with all applicable requirements in National Fire Protection Association (NFPA) standards for tanks, contained in the "Flammable and Combustible Code — 1981", or latest revised edition.

(12) Incompatible waste, or incompatible wastes and materials, as set forth in Appendix IV of § 75.265, shall not be placed in the same tank except in compliance with subsection (g)(2).

(13) Hazardous waste shall not be placed in an unwashed tank which previously held an incompatible waste or material except in compliance with subsection (g)(2) of this section.

(14) As part of the inspection schedule required in subsection (e)(2) and in addition to the specific requirements of paragraph (8), the owner or operator shall develop a schedule and procedure for assessing the condition of the tank. The schedule and procedure shall be adequate to detect cracks, leaks, corrosion, or erosion which may lead to cracks or leaks, or wall thinning to less than the thickness required under paragraph (15). Procedures for emptying a tank to allow entry and inspection of the interior shall be established when necessary to detect corrosion or erosion of the tank sides or bottom. The frequency of these assessments shall 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.

(15) Tanks shall have sufficient shell strength and, for closed tanks, pressure controls (e.g., pressure/vacuum vents) to assure that they do not collapse or rupture. The Department will review the design of the tanks, including the foundation, structural support, seams, and pressure controls. The Department will 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 Department will rely upon appropriate industrial design standards and other available information such as design standards for certain types of tanks published by the American Petroleum Institute, Underwriter's Laboratories, the American Concrete Institute, and several other organizations.

(16) All tanks shall be equipped with an alarm or warning device which will sound an audible warning or other suitable alerting device in the event the permitted liquid level is exceeded.

(17) Weighing or measuring facilities if necessary or when required by the Department shall be provided for weighing all hazardous wastes brought to the TSD facility, except for captive facilities that handle liquids or flowable wastes — less than 20% solids — which are amenable to accurate flow measurements, or captive facilities that possess other waste inventory controls — volume controls. All weighing facilities shall be capable of weighing the maximum anticipated load plus the weight of the transport vehicle. The precision of weighing devices shall be certified by the Pennsylvania Department of Agriculture.

(18) For off-site facilities or on-site facilities receiving waste from off-site sources, hours of operations for the site shall be prominently displayed on a sign at the entrance. The lettering shall be a minimum of four inches in height and of a color contrasting with its background.

(19) During construction or installation the tank shall be inspected for uniformity, damage, and imperfections.

(20) Whenever there is any indication of a possible failure of the tank, it shall be inspected in accordance with the provisions of the Tank Evaluation and Repair (TER) Plan required by paragraph (23).

(21) Whenever there is evidence of a failure, the tank shall be removed from service.

(22) If the tank is removed from service as required by paragraph (21), the owner or operator shall:

(i) immediately stop adding wastes to the tank;

(ii) immediately contain any leakage which has or is occurring;

(iii) immediately take measures which shall stop the leak; and

(iv) if the leak cannot be stopped by any other means, remove the waste from the tank.

(23) As part of the contingency plan required in subsection (i), the owner or operator shall specify:

(i) a procedure for complying with the requirements of paragraph (22); and

(ii) a Tank Evaluation and Repair (TER) Plan describing testing and monitoring techniques, procedures to be followed to evaluate the integrity of the tank if a failure is suspected, a schedule of actions to be taken in the event of a suspected failure, and a description of the repair techniques to be used in the event of leakage.

(24) No tank that has been removed from service in accordance with paragraph (21) of this subsection may be restored to service unless:

(i) the tank has been repaired; and

(ii) the tank has been certified by a registered professional engineer as meeting the design specifications approved in the permit.

(25) A tank that has been removed from service in accordance with paragraph (21) and that is not being repaired shall be closed.

(26) Access roads shall be paved or surfaced with such materials as asphalt or concrete or other materials approved in writing by the Department. Access roads shall be suitable for use in all types of weather by loaded transport vehicles and emergency vehicles and equipment. These roads shall have a base capable of withstanding anticipated load limits. The minimum cartway width for two-way traffic shall be 22 feet; for one-way traffic, separate roads with a minimum cartway width of 12 feet shall be provided; or if the HWM facility is a captive facility or a non-commercial off-site facility and the access is restricted to company personnel with minimal traffic volume, then the minimum cartway width for

two-way traffic shall be 12 feet, provided the entire length of the roadway is visible to the driver or passing points are provided at appropriate intervals so as to not impede access. The maximum sustained grade shall not exceed 12%.

(27) Unless otherwise approved in writing by the Department, a buffer zone of 50 feet shall be established between the property line and the permitted facility, within which no solid waste treatment, storage, or disposal activities shall take place.

(28) Surface water management measures on the site shall as a minimum be in conformance with the provisions of Chapter 102 (relating to erosion control). More stringent design standards may be required by the Department based on the best engineering practices and methods outlined in "Engineering Field Manual for Conservation Practices" published by USDA-SCS.

(29) All surface water run-off from active areas of the site where such run-off exists, shall be collected. It shall then be managed as a hazardous waste if it has been determined to be a hazardous waste. Necessary measures and structures shall be designed to handle water quantities based on the twenty-four hour rainfall in inches to be expected once in ten years. Supporting calculations shall be provided.

(30) Run-on shall be diverted away from the site with all the necessary measures and structures designed to handle water quantities based on the 24 hour rainfall in inches expected once in 100 years and supported by calculations.

(31) Best engineering construction practices shall be employed for all phases of installation and construction.

(32) Quality control measures and tests shall be specified and employed to insure that installation and construction conforms to all design materials and construction specifications.

(33) A registered professional engineer shall certify in writing for each phase of installation and construction, under penalty of law, that he has personally examined the installation and construction of the said phase and it is installed and constructed in accordance with the documents, statements, designs, and plans submitted as part of the application as approved by the Department.

(34) Vector, odor, and/or noise control procedures shall be carried out when necessary or when required by the Department to prevent health hazards or nuisances. The applicant shall submit a Vector, Odor, and Noise Control (VONC) Plan for written approval by the Department.

(35) Equipment provided for operation of the tank shall be maintained in operable condition and adequate in size and performance capability to assure that the facility operation will not be interrupted during normal working periods and that the operation of the facility is in accordance with these regulations.

(36) Standby equipment shall be on-site or readily available for use in the event of major equipment breakdown.

(37) Unloading areas, if necessary, shall be specified and shall permit vehicles to unload promptly.

(38) Provisions shall be made, if necessary, to prevent dust from hampering site operations or from causing health or safety hazards or nuisances.

(39) The site shall be operated in such a manner that the tracking of waste within or outside the site by equipment and machinery is eliminated or minimized.

(40) After removing all contaminated materials and tank structures during closure, the site shall be graded and revegetated as approved in writing by the Department.

(s) Surface Impoundments.

(1) This subsection shall apply to owners and operators of facilities that use surface impoundments to treat, store, or dispose of hazardous waste unless otherwise provided in subsection (a).

(2) This subsection sets forth standards for design and operation of surface impoundments used in the management of hazardous waste.

(3) The following are the minimum general design standards required:

(i) A surface impoundment shall be designed with sufficient freeboard to prevent any overtopping of the dike by overfilling, wave action, or a storm. There shall be at least 60 centimeters — two feet — of freeboard at all times, unless otherwise specified by the Department.

(ii) All earthen dikes shall have a protective cover, such as suitable vegetation, rock riprap, or non-erodible material to minimize wind and water erosion and preserve structural integrity.

(iii) Access roads shall be paved or surfaced with such materials as asphalt or concrete or other materials approved in writing by the Department. Access roads shall be suitable for use in all types of weather by loaded transport vehicles and emergency vehicles and equipment. These roads shall have a base capable of withstanding anticipated load limits. The minimum cartway width for two-way traffic shall be 22 feet; for one-way traffic, separate roads with a minimum cartway width of 12 feet shall be provided; or if the HWM facility is a captive facility or a non-commercial off-site facility and the access is restricted to company personnel with minimal traffic volume, then the minimum cartway width for two-way traffic shall be 12 feet, provided the entire length of the roadway is visible to the driver or passing points are provided at appropriate intervals so as to not impede access. The maximum sustained grade shall not exceed 12%.

(iv) Weighing or measuring facilities if necessary or when required by the Department shall be provided for weighing all hazardous wastes brought to the TSD facility, except for captive facilities that handle liquids or flowable wastes — less than 20% solids — which are amenable to accurate flow measurements, or captive facilities that possess other waste inventory controls — volume controls. All weighing facilities shall be capable of weighing the maximum anticipated load plus the weight of the transport vehicle. The precision of weighing devices shall be certified by the Pennsylvania Department of Agriculture.

(v) For off-site facilities or on-site facilities receiving waste from off-site sources, hours of operations for the site shall be prominently displayed on a sign at the entrance. The lettering shall be a minimum of four inches in height and of a color contrasting with its background.

(vi) A buffer zone of 50 feet shall be established between the property line and the permitted area, within which no solid waste treatment, storage, or disposal activities shall take place. No buildings or structures shall be constructed or placed within 25 feet of the surface impoundment, unless the structures are necessary to conduct the monitoring and testing requirements of this subchapter and are approved by the Department.

(vii) Final surface grades for surface impoundments used for disposal shall provide a slope of not less than 2.0% but not exceeding 15% except as otherwise approved in writing by the Department. Where final grades approved by the Department exceed 15%, but in no case exceeding 25%, a horizontal terrace 10 feet minimum in width shall be constructed on the slope for every 20 feet maximum in vertical

rise of the slope. The gradient of the terrace shall be 1.0% toward the center of the surface impoundment to eliminate overflow of the runoff onto the next terrace. The terrace shall be graded with a minimum 3.0% slope to remove any runoff to the sedimentation pond. The maximum side slope of the terrace shall be 28.5% or the angle of repose of the impounded waste, whichever is less. This shall be supported with testing and/or calculations.

(viii) Surface water management measures on the site shall as a minimum be in conformance with the provisions of Title 25, Chapter 102, Erosion Control Rules and Regulations of the Department. More stringent design standards may be required by the Department based on the best engineering practices and methods outlined in "Engineering Field Manual for Conservation Practices" published by USDA-SCS.

(ix) Run-on shall be diverted away from the site with all the necessary measures and structures designed to handle water quantities based on the 24 hour rainfall in inches expected once in 100 years and supported by calculations.

(x) Daily and intermediate cover, when and if required in writing by the Department, shall be soils that fall within the United States Department of Agriculture (USDA) textural classes sandy loam, loam, sandy clay loam, silty clay loam, and silt loam. All other cover materials shall be approved by the Department. The coarse fragment content — fragments not passing the No. 10 mesh sieve, 2mm — shall not exceed 50% by volume and the combustible and/or coal content shall not exceed 12% by volume. Boulders and stones as classified by USDA shall be excluded from soils to be used for any type of cover material. The source and volumes of daily and intermediate cover necessary and available shall be specified and supported by calculations.

(xi) Daily cover, when and if required by the Department, shall be a minimum uniform 6 inch compacted layer, and intermediate cover shall be a minimum uniform 12 inch graded and compacted layer.

(xii) Gas venting systems and gas monitoring systems shall be installed at all sites when necessary or when required by the Department. Gas venting may be accomplished by construction of either lateral and/or vertical venting. The maximum center to center spacing between the lateral lines or vertical trenches shall be 100 feet. Pipe vents located within 100 feet of any building, mechanical structure, or roadway shall be constructed so as to discharge above the roof line of said building or mechanical structure and a minimum of twelve feet above the roadway surface. A forced gas venting system shall be installed when and if required by the Department. Appropriate safety measures shall be included in the design and installation of any gas venting, collection, storage, or processing system.

(xiii) Hazardous waste in surface impoundments used for disposal shall be capable of withstanding anticipated static and dynamic loadings with a minimum factor of safety of 1.5.

(xiv) A surface impoundment shall be designed so that any flow of waste into the impoundment can be immediately shut off in the event of overtopping or liner failure.

(xv) A surface impoundment shall be designed to prevent discharge into the land and ground water and to surface water — except discharges authorized by an NPDES permit — during the life of the impoundment by use of a liner system described in this subsection.

(xvi) Dikes shall be designed with sufficient structural integrity to prevent massive failure without dependence on any liner system included in the surface impoundment design.

(xvii) All hazardous waste treated, stored, or disposed of in a surface impoundment shall be underlain by a liner system. The surface impoundment liner system shall be designed with the following components starting from the bottom of the system.

(A) A subbase of a prepared 6 inch thick layer of the soil upon which the liner system is constructed. The subbase shall be capable of supporting the expected static and dynamic loadings with a minimum factor of safety of 1.5. The subbase shall be compacted to 95% of the standard Proctor density. The subbase shall prevent damage to the bottom liner, be true to cross section, and uniform. The subbase shall have a surface which is smooth and free of all debris, plant materials, or other foreign materials. The minimum slope for all surface impoundment subbase surfaces, including any side slopes, shall be 2.0% and the maximum slope shall be 33% except for surface impoundments used for disposal which shall not exceed 20%. Any subbase sloped greater than those specified above shall be only as approved in writing by the Department.

(B) A bottom liner (secondary liner) meeting the requirements specified in Table 3, Appendix V and capable of detecting and diverting any leachate that may bypass or leak through the primary liner. The secondary liner shall be constructed so as to divert all leachate or waste, to a collection sump or point where it can be collected for proper treatment, storage, or disposal with sufficient frequency to prevent backup into the flow zone. The slope requirements shall conform to the slope of the subbase.

(C) A flow zone — leachate detection zone — between the secondary and primary liners capable of allowing free flow of liquids and providing a stable, uniform, smooth layer, free of all debris, plant materials, or other foreign material, and which will prevent damage to either the primary or secondary liners. The maximum particle size for the flow zone material shall be 0.25 inches and the permeability of the flow zone shall be greater than 1×10^{-4} cm/sec. The flow zone shall be a minimum one foot thick under the entire primary liner. A perforated piping system which is capable of withstanding all anticipated loads and which is capable of intercepting the liquids or leachate within the flow zone and transmitting them to a collection sump or point shall be installed within the flow zone. The piping system design and pipe grade, size, and spacing shall ensure that all liquids will exit the landfill in less than 6 months. This shall be supported by calculations and drawings. A positive projecting installation design of the piping system shall be used unless otherwise approved in writing by the Department. Stones or aggregate surrounding the pipes shall be large enough to prevent clogging of the pipe and fine enough to prevent damage to the liners. Any other method of preventing the pipes from clogging shall meet the approval of the Department.

(D) A top liner (primary) meeting the requirements specified in Table 3, Appendix V. For surface impoundments used for disposal, this liner shall be capable of diverting to a collection sump or point all liquids or leachate, passing through or generated within the hazardous waste, where it can be collected for proper treatment, storage, or disposal with sufficient frequency to prevent backup into the surface impoundment.

(E) A protective cover zone/leachate collection zone, a minimum of one foot (1') thick capable of protecting the primary liner from the hazardous waste. The protective cover shall be stable, uniform, smooth, free of debris, plant material, or other foreign material.

The maximum particle size for protective cover shall be 0.25 inches. For surface impoundments used for disposal, the protective cover shall be capable of allowing free flow of all liquids and leachate passing through or generated within the solid waste and shall have a permeability greater than 1×10^{-4} cm/sec. A perforated piping system shall be installed within the protective cover which is capable of withstanding all anticipated loads and capable of intercepting the liquids and leachate within the protective cover zone and transmitting them to a collection sump or point. The piping system design and the pipe spacing, grade, and size shall insure that all liquids and leachate drain through the protective cover at a rate twice the maximum expected rate of infiltration through the waste above. This shall be supported with calculations and drawings. A positive projecting installation design of the piping system shall be used unless otherwise approved in writing by the Department. Stones or aggregate surrounding the pipes shall be large enough to prevent clogging of the pipe and fine enough to prevent damage to the liner. Further measures to prevent clogging or damage to the pipe and additional measures to prevent damage to the liner shall be installed if required by the Department.

(F) A cap which is capable of preventing the infiltration of any liquid into closed portions of the surface impoundment. The cap shall meet the minimum requirements specified in Table 3, Appendix V. It shall be placed on a stable one foot thick layer of intermediate cover material which has been compacted and graded to prevent damage to the cap. This requirement may be altered or waived if it is determined by the Department that capping is not necessary.

(xviii) For surface impoundments used for treatment or storage, the outside slopes of all berms or dikes shall not exceed 33% unless otherwise approved in writing by the Department.

(xix) For surface impoundments used for disposal, the outside slopes of all berms or dikes shall not exceed 20% unless otherwise approved in writing by the Department.

(xx) All liners shall be installed and constructed in conformance with manufacturer's specifications and shall have the written approval of the Department. Other types of liners shall be approved if it is demonstrated to the Department that the proposed liner is substantially equivalent to the specifications for the primary and secondary liners.

(xxi) During construction or installation, liner systems shall be inspected for uniformity, damage, and imperfections, such as holes, cracks, thin spots, and foreign materials. Earth material liner systems shall be tested for compaction density, moisture content, and permeability after placement. Manufactured liner materials shall be inspected to ensure tight seams and joints and the absence of tears or blisters.

(xxii) For all surface impoundments a minimum distance of 4 feet shall be maintained between the top of the subbase and any seasonal high water table without the use of any artificial or manmade ground-water drainage or dewatering system. Soil mottling shall indicate the presence of a seasonal high ground water table. The distance between the top of the subbase and the ground water table shall be a minimum of eight feet.

(xxiii) The outer perimeter of all liner and liner systems shall be well protected and well marked through all stages of construction, closure, and final closure.

(xxiv) For a surface impoundment used for disposal, the conveyance system and storage system for the leachate from the leachate collection zone and runoff shall meet as a minimum the following design standards when required by the Department:

(A) The minimum storage capacity for leachate shall be 25,000 gallons per acre of active portions of the surface impoundment plus an additional 1000 gallons per acre of closed portions.

(B) The minimum storage capacity for runoff shall be based on the 24 hour rainfall in inches expected once in ten years per acre of active portions of the surface impoundment.

(C) All such storage tanks or surface impoundments shall meet the applicable requirements of this section for tanks and surface impoundments.

(D) The piping system conveying the leachate or runoff from the surface impoundment to the collection point — tank or surface impoundment — shall be: sized to convey the leachate flow as calculated in subparagraph (xvii), chemically compatible with the leachate, of sufficient strength to withstand all anticipated loads, equipped with cleanouts where necessary or as required in writing by the Department, and sealed to prevent any loss of leachate.

(E) The liner collection pipe and the conveyance pipe shall be connected such that all leachate is directed into the conveyance pipe.

(F) A containment system shall have an effective life equal to or greater than the life of the surface impoundment.

(xxv) Leachate detection zone tanks shall be a minimum of 100 gallons in capacity and connected to the leachate detection zone by means of a piping system. The piping system conveying the detected leachate shall be sized to convey the leachate flow as calculated in subparagraph (xvii)(C), chemically compatible, of sufficient strength to withstand all anticipated loads, sealed to prevent any loss of leachate, and designed to intercept and convey all the leachate detected.

(xxvi) Best engineering construction practices shall be employed for all phases of construction.

(xxvii) Quality control measures and tests shall be specified and employed to ensure that construction conforms to all design, materials, and construction specifications.

(xxviii) A registered professional engineer shall certify in writing for each phase of construction under penalty of law that he has personally examined the construction of the said phase and it is constructed and prepared in accordance with the documents, statements, designs, and plans submitted as part of the application as approved by the Department.

(xxix) For surface impoundments used for disposal:

(A) Design for the treatment facilities to receive the leachate and runoff from storage shall be submitted to the Department for written approval prior to issuance of a permit.

(B) The design flow rate for the treatment facility shall be a minimum of 15,000 gallons per day for each acre of active portion, and an additional 100 gallons for each acre of closed portion. The design standards for the treatment facilities shall meet the requirements of subsection (y).

(C) The treatment facilities shall be compatible with and capable of treating the waste constituents expected to be present in the leachate and runoff and the anticipated volumes of waste.

(xxx) For surface impoundments used for disposal, the closure shall conform to subsection (o) and the following specific requirements:

(A) A final layer of cover material compacted to a minimum uniform depth of two feet shall be placed over the entire surface of the landfill. The final cover shall be soils that fall within the United States Department of Agriculture (USDA) textural classes

of sandy loam, loam, sandy clay loam, silty clay loam, and silt loam. All other final cover materials shall be approved in writing by the Department. The soil shall compact well, not crack excessively when dry, and support a vegetative cover. The coarse fragment content — fragments not passing the No. 10 mesh sieve, 2mm. — shall not exceed 50% by volume, and the combustible and/or coal content shall not exceed 12% by volume. Boulders and stones as classified by USDA shall be excluded from soils used for cover material. The source and volume of final cover necessary and available shall be specified and supported by calculations.

(B) The final cover layer shall be completed within 30 days after disposing of the final volume of hazardous waste unless otherwise approved in writing by the Department. Completion shall include permanent stabilization of all slopes.

(C) Completed portions of the surface impoundment shall be graded as specified in this subsection within two weeks of completion.

(D) Seedbed preparation and planting operations to promote stabilization of the final soil cover shall be done as soon as weather permits and seasonal conditions are suitable for the establishment of the type of vegetation to be used. Reseeding and maintenance of cover material shall be mandatory until adequate vegetative cover is established to prevent erosion. Applicable revegetation procedures as published in PennDOT Form 408 or the current "Agronomy Guide" of The College of Agriculture, Pennsylvania State University, may be utilized.

(xxxi) Closure of surface impoundments used for treatment or storage, shall conform to the closure requirements of subsection (o) and at closure, all hazardous waste and hazardous waste residues shall be removed from the impoundment. Any component of the impoundment or any appurtenant structures or equipment — such as, discharge platforms, pipes, baffles, skimmers, aerators, or other equipment — containing or contaminated with hazardous waste or hazardous waste residues shall be decontaminated or removed. Such wastes shall be subject to all applicable regulations.

(4) The following are the minimum general operating standards required for surface impoundments:

(i) Whenever a surface impoundment is to be used to chemically treat a hazardous waste which is substantially different from waste previously treated in that impoundment, or chemically treat hazardous waste with a substantially different process than any previously used in that impoundment; the owner or operator shall, before treating the different waste or using the different process, conduct waste analyses and trial treatment tests, or obtain written, documented information on similar treatment of similar waste under similar operating conditions.

(ii) The owner or operator shall comply with the requirements of subsection (g)(2).

(iii) The owner or operator shall inspect the following:

(A) The freeboard level at least once each operating day.

(B) The surface impoundment, including dikes and vegetation surrounding the dike, at least once a week to detect existing and potential leaks, deterioration, or failures in the impoundments.

(C) The collection sump or point at least daily to detect leakage through the top liner. However, the owner or operator shall not be required to inspect the collection sump or point daily provided that:

(I) The collection sump or point is equipped with an alarm system capable of detecting any accumulation of liquids in the sump of one inch or greater.

(II) The alarm system is maintained in proper working order.

(III) The owner or operator has received prior written approval from the Department.

(iv) Ignitable or reactive waste shall not be placed in a surface impoundment, unless:

(A) the waste is treated, rendered, or mixed before or immediately after placement in the impoundment so that the resulting waste, mixture, or dissolution of the material no longer meets the definition of ignitable or reactive waste; and subsection (g)(2) is complied with; or

(B) with written Department approval, the surface impoundment is used solely for emergencies.

(v) Incompatible wastes, or incompatible wastes and materials, see Appendix IV, shall not be placed in the same surface impoundment, unless subsection (g)(2) is complied with and unless approved in writing by the Department.

(vi) Earthen dikes shall be kept free of:

(A) plants with root systems which could displace the earthen materials upon which the structural integrity of the dike is dependent; and

(B) burrowing mammals which could remove earthen materials upon which the structural integrity of the dike is dependent or create leaks through burrows in the dike.

(vii) Whenever there is any indication of a possible failure of the surface impoundment, the impoundment shall be inspected in accordance with the provisions of the Surface Impoundment Evaluation and Repair (SIER) Plan required by subparagraph (x).

(viii) Whenever there is evidence of a failure of the impoundment, the impoundment shall be removed from service.

(ix) If the surface impoundment is removed from service as required by subparagraph (viii), the owner or operator shall:

(A) immediately shut off the flow of or stop the addition of wastes into the impoundment;

(B) immediately contain any leakage which has occurred or is occurring;

(C) immediately take measures which will stop the leak; and

(D) if the leak cannot be stopped by any other means, empty the impoundment.

(x) As part of the PPC Plan required in subsection (i), the owner or operator shall specify:

(A) a procedure for complying with the requirements of subparagraph (ix) of this paragraph; and

(B) a SIER plan describing testing and monitoring techniques; procedures to be followed to evaluate the stability of the impoundment if a failure is suspected; a schedule of actions to be taken in the event of a suspected failure; and a description of the repair techniques to be used in the event of leakage.

(xi) No surface impoundment that has been removed from service due to failure may be restored to service unless:

(A) the impoundment has been repaired; and

(B) the impoundment has been certified by a registered professional engineer as meeting the design specifications approved in the permit.

(xii) A surface impoundment that has been removed from service due to failure and that is not being repaired shall be closed in accordance with subparagraph (ix).

(xiii) Surface impoundment contents subject to dispersal by wind shall be covered or otherwise managed so that wind dispersal of the hazardous waste and all other solid waste is controlled.

(xiv) Vector, odor, and/or noise control procedures shall be employed when necessary or when required in writing by the Department to prevent health hazards or nuisances. The applicant shall submit a Vector, Odor, and Noise Control (VONC) Plan for written approval by the Department.

(xv) The site shall be designed and operated in a manner which prevents or minimizes surface water percolation into the hazardous waste deposits.

(xvi) Equipment provided for operation of the surface impoundment shall be maintained in operable condition and adequate in size and performance capability to assure that the facility operation will not be interrupted during normal working periods and the operation of the facility is in accordance with these regulations.

(xvii) Standby equipment shall be on-site or readily available for use in the event of major equipment breakdown.

(xviii) Unloading areas shall be specified and restricted to the proximity of the working face and shall permit collection vehicles to unload promptly.

(xix) An attendant shall direct vehicles to the unloading area or clearly marked signs shall be located prominently to direct vehicles to the unloading area.

(xx) Provisions shall be made to prevent dust from hampering surface impoundment operations or from causing health or safety hazards or nuisances.

(xxi) Surface impoundments shall be operated in such a manner that the tracking of waste within or outside the site by equipment and machinery is eliminated or minimized.

(t) *Waste Piles.* Waste piles shall conform with the following.

(1) The regulations of this subsection apply to owners and operators of facilities that store or treat hazardous waste in piles except as otherwise provided in subsection (a). A waste pile used as a disposal facility is a landfill and shall meet the requirements of subsection (v).

(2) A waste pile shall be designed to control dispersal of the waste by wind or by water erosion.

(3) A waste pile shall be designed to prevent discharge into the land, surface water, or ground water during the life of the pile.

(4) The Department may specify in writing control practices — such as, cover or frequent wetting — where necessary to ensure that wind dispersal of hazardous waste from piles is controlled.

(5) Weighing or measuring facilities if necessary or when required by the Department shall be provided for weighing all hazardous wastes brought to the TSD facility, except for captive facilities that handle liquids or flowable wastes — less than 20% solids which are amenable to accurate flow measurements, or captive facilities that possess other waste inventory controls — volume controls. All weighing facilities shall be capable of weighing the maximum anticipated load plus the weight of the transport vehicle. The precision of weighing devices shall be certified by the Pennsylvania Department of Agriculture.

(6) For off-site facilities or on-site facilities receiving waste from off-site sources, hours of operations for the site shall be prominently displayed on a sign at the entrance. The lettering shall be a minimum of four inches in height and of a color contrasting with its background.

(7) The liner system for the waste pile shall consist of:

(i) a leachate and run-off collection system; and

(ii) a liner underlying and in contact with the waste pile which will prevent discharge into the land, surface water, or ground water during the life of the pile based on the liners thickness, the permeability of the liners, and the characteristics of the waste or leachate to which the liners will be exposed. The liner system shall be of sufficient strength and thickness to prevent failure due to puncture, cracking, tearing, or other physical damage from equipment used to place the waste in or on the pile, or to remove waste from the pile, or to clean and expose the liner surface for inspection. The liner permeability shall not exceed 1×10^{-7} cm/sec.

(8) A waste pile liner shall be constructed:

(i) Of materials that have appropriate chemical properties and strength and be of sufficient thickness to prevent failure due to climatic conditions, the stress of installation, and pressure of and physical contact with the waste to which they are exposed.

(ii) On a subbase capable of providing support to the liners and to loads placed or moving above the liners to prevent failure of the liners.

(iii) So that no standing liquids may accumulate.

(9) A liner system shall be protected from plant growth which could damage any component of the system.

(10) A liner system shall have an effective life equal to or greater than the life of the pile.

(11) The conveyance system and storage system for the leachate from the leachate and runoff collection system shall meet as a minimum the following design standards:

(A) The minimum storage capacity for leachate shall be 25,000 gallons per acre of the waste pile.

(B) The minimum storage capacity for runoff shall be based on twenty-four hour rainfall in inches expected once in ten years per acre of the waste pile.

(C) All such storage tanks or surface impoundments shall meet the applicable requirements of this section for tanks and surface impoundments.

(D) The piping system conveying the leachate or runoff from the waste pile to the collection point (tank or surface impoundment) shall be: sized for the anticipated leachate and runoff flow, chemically compatible with the leachate, of sufficient strength to withstand all anticipated loads, equipped with cleanouts where necessary or as required by the Department, and sealed to prevent any loss of leachate.

(E) The liner collection pipe and the conveyance pipe shall be connected such that all leachate is directed into the conveyance pipe.

(12) During construction or installation, the liner system shall be inspected for uniformity, damage, and imperfections — such as, holes, cracks, thin spots, and foreign materials — and manufactured liner materials — such as, membranes, sheets, and coatings — shall be inspected to ensure tight seams and joints and the absence of tears or blisters.

(13) Whenever there is any indication of a possible failure of the liner system, that system shall be inspected in accordance with the provisions of the Waste Pile Evaluation and Repair (WPER) Plan required by paragraph (16).

(14) Whenever there is evidence of a failure of the liner system, the waste pile shall be removed from service.

(15) If the waste pile is removed from service as required by paragraph (14), the owner or operator shall:

(i) immediately stop adding wastes to the pile;

(ii) immediately contain any leakage which has or is occurring;

(iii) immediately take measures which shall stop the leak; and

(iv) if the leak cannot be stopped by any other means, remove the waste from the liner.

(16) As part of the contingency plan required in subsection (i), the owner or operator shall specify:

(i) a procedure for complying with the requirements of paragraph (14); and

(ii) a Waste Pile Evaluation and Repair (WPER) Plan describing testing and monitoring techniques; procedures to be followed to evaluate the integrity of the liner system if a failure is suspected; a schedule of actions to be taken in the event of a suspected failure; and a description of the repair techniques to be used in the event of leakage.

(17) No waste pile that has been removed from service in accordance with paragraph (14) may be restored to service unless:

(i) the liner system has been repaired; and

(ii) the liner system has been certified by a registered professional engineer as meeting the design specifications approved in the permit.

(18) A waste pile that has been removed from service in accordance with paragraph (14) and that is not being repaired shall be closed.

(19) At all times the perimeter of the waste pile shall remain at least 5 feet from the outer edge of the liner.

(20) Ignitable or reactive waste shall not be placed in a pile, unless:

(i) Addition of the waste to an existing pile:

(A) results in the waste or mixture no longer meeting the definition of ignitable or reactive waste under § 75.261 (relating to criteria, identification, and listing of hazardous waste), and

(B) complies with subsection (g)(2); or

(ii) 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.

(21) Incompatible wastes, or incompatible wastes and materials — see Appendix IV 75.265 — shall not be placed in the same pile, unless subsection (g)(2) is complied with. A pile of hazardous waste that is incompatible with any waste or other material stored nearby in other containers, piles, open tanks, or a surface impoundment shall be separated or protected from the other materials by means of a dike, berm, wall, or other device.

(22) Hazardous waste shall not be piled on the same base where incompatible wastes or materials were previously piled, unless the base has been decontaminated sufficiently to ensure compliance with subsection (g)(2).

(23) Access roads shall be paved or surfaced with such materials as asphalt or concrete or other materials approved in writing by the Department. Access roads shall be suitable for use in all types of weather by loaded transport vehicles and emergency vehicles and equipment. These roads shall have a base capable of withstanding anticipated load limits. The minimum cartway width for two-way traffic shall be 22 feet; for one-way traffic, separate roads with a minimum cartway width of 12 feet shall be provided; or if the HWM facility is a captive facility or a non-commercial offsite facility and the access is restricted to company personnel with minimal traffic volume, then the minimum cartway width for two-way traffic shall be 12 feet, provided the entire length of the roadway is visible to the driver or passing points are provided at appropriate intervals so as to not impede access. The maximum sustained grade shall not exceed 12%.

(24) Unless otherwise approved in writing by the Department, a buffer zone of a minimum of 50 feet shall be maintained between the property line and the permitted facility, within which no solid waste treatment, storage, or disposal activity shall occur.

(25) Surface water management measures on the site shall as a minimum be in conformance with the provisions of Title 25, Chapter 102, Erosion Control Rules and Regulations of the Department. More stringent design standards may be required in writing by the Department based on the best engineering practices and methods outlined in "Engineering Field Manual for Conservation Practices" published by USDA-SCS.

(26) All surface water run-off from active areas of the permitted site shall be collected. It shall then be managed as a hazardous waste unless it has been determined not to be a hazardous waste. Necessary measures and structures shall be designed to handle water quantities based on 24 hour rainfall in inches to be expected once in ten years. Supporting calculations shall be provided.

(27) Run-on shall be diverted away from the site, with all the necessary measures and structures designed to handle water quantities based on the 24 hour rainfall in inches expected once in 100 years and supported by calculations.

(28) For all waste piles a minimum distance of 20 inches between the top of the subbase and seasonal high ground water table shall be maintained without the use of any artificial or manmade ground water drainage or dewatering systems. Soil mottling shall indicate the presence of a seasonal high ground water table.

(29) Design of treatment facilities to receive the leachate and runoff from storage, if such facilities are needed or required in writing by the Department, shall be submitted to the Department for written approval prior to issuance of a permit. The treatment facilities shall be constructed prior to the acceptance of any hazardous waste at the facility.

(30) The design flow rate for the treatment facility shall be a minimum of 15,000 gallons per day for each acre of active portion. The design standards for the treatment facilities shall meet the requirements of § 75.265(y) (relating to interim status for hazardous waste management facilities and permit program for new and existing hazardous waste management facilities).

(31) The treatment facilities shall be compatible with and capable of treating the waste constituents expected to be present in the leachate and runoff and the anticipated volumes of waste.

(32) Best engineering construction practices shall be employed for all phases of construction.

(33) Quality control measures and tests shall be specified and employed to ensure that construction conforms to all design, materials, and construction specifications.

(34) A registered professional engineer shall certify in writing for each phase of installation or construction under penalty of law that he has personally examined the construction of the said phase and it is constructed and prepared in accordance with the documents, statements, designs, and plans submitted as part of the application as approved by the Department.

(35) Vector, odor, and/or noise control procedures shall be employed when necessary or when required in writing by the Department to prevent health hazards or nuisances. The applicant shall submit a Vector, Odor, and Noise Control (VONC) Plan for the approval by the Department.

(36) The site shall be designed and operated in a manner which prevents or minimizes surface water percolation into the hazardous waste deposits.

(37) Equipment provided for operation of the facility shall be maintained in operable condition, and of adequate capacity and performance capability to ensure that the facility operation will not be interrupted during normal working periods and that operation of the facility is in accordance with these regulations.

(38) Standby equipment shall be on-site or readily available for use in the event of major equipment breakdown.

(39) Unloading areas shall be specified and shall permit vehicles to unload promptly.

(40) Provisions shall be made to prevent dust from hampering site operations or from causing health or safety hazards or nuisances.

(41) The site shall be operated in such a manner that the tracking of waste within and outside the site by equipment and machinery is eliminated or minimized.

(42) At closure, all hazardous waste and hazardous waste residues shall be removed from the pile. Any component of the waste pile containing or contaminated with hazardous waste or hazardous waste residues shall be decontaminated or removed.

(43) After removing all contaminated materials and liner during closure, the site shall be graded and revegetated as required in writing by the Department.

(u) *Land Treatment.* Land treatment shall comply with the following.

(1) This subsection shall apply to owners and operators of hazardous waste land treatment facilities except as otherwise provided in subsection (a).

(2) Hazardous waste shall be placed in or on a land treatment facility only if the waste is amenable to land treatment, and will not cause adverse environmental or human health problems.

(3) Incompatible wastes, or incompatible wastes and materials, see Appendix IV, shall not be placed in the same land treatment area, unless subsection (g)(2) is complied with.

(4) Run-on shall be diverted away from the land treatment facility and run-off from a land treatment facility shall be collected. If the collected run-off is a hazardous waste under § 75.261 (relating to criteria, identification, and listing of hazardous waste), it shall be managed as a hazardous waste in accordance with all applicable requirements. The procedures for the design and operation of the run-off control system shall reflect a consideration of:

(i) The volume of contaminated run-off produced at the facility.

(ii) The capacity of any runoff collection device at the facility.

(iii) Climatic conditions in the area.

(iv) The quality of the runoff produced and the available options for managing any contaminated runoff from the facility.

(v) The physical and chemical characteristics of the waste in the facility.

(5) Food chain crops shall not be grown on a hazardous waste land treatment facility unless the owner or operator can demonstrate, based on field testing, that any arsenic, lead, mercury, cadmium, or other hazardous waste constituent present:

(i) will not be transferred to the food portion of the crop by plant uptake or direct contact, and will not otherwise be ingested by food chain animals; and

(ii) will not occur in greater concentrations in the crops grown on the land treatment facility than in the same crops grown on untreated similar soils under similar conditions in the same region.

(6) The information necessary to make the demonstration required by paragraph (5) shall at a minimum:

(i) be based upon tests for the specific waste and application rates used at the facility; and

(ii) include plant tissue analysis, soil profile descriptions from test pits dug in representative areas of all soil series mapped on the facility by the USDA Soil Conservation Service or a qualified soil scientist, soil chemical analysis, sample selection criteria, sample size determination, analytical methods, and statistical procedures.

(7) An outline of the demonstration required in paragraphs (5) and (6) shall be submitted for Departmental approval before commencing the project.

(8) The following requirements shall be met for all hazardous waste land treatment facilities unless otherwise approved in writing by the Department.

(i) The pH of the soil affected by the waste shall be maintained between 6.5 and 8.0 during the operating life of the facility and as required in the closure and post-closure plans approved by the Department or as otherwise specified by the Department.

(ii) The hazardous waste application shall be made at rates consistent with Department guidelines "Sewage, Septic Tank, and Holding Tank Waste Use on Agricultural Land."

(iii) The hazardous waste shall be mixed into or turned under the soil surface within 24 hours of application.

(iv) Hazardous waste shall be spread or sprayed in thin layers so as to prevent ponding and standing accumulations of liquids or sludges.

(v) Hazardous waste shall not be applied when ground is saturated, covered with snow, frozen, or during periods of rain.

(vi) Tobacco and any crops intended for human consumption shall not under any circumstances be grown on hazardous waste land treatment facilities.

(vii) Hazardous waste shall not be applied in quantities which will result in vector or odor problems.

(viii) Hazardous waste shall only be applied to those soils which fall within the USDA textural classes of sandy loam, loam, sandy clay loam, silty clay loam, and silt loam. All other materials shall be approved in writing by the Department.

(ix) The soils shall have sola with a minimum depth of 20 inches and at least 40 inches of soil depth.

(x) The soils shall have a minimum depth of twenty inches to seasonal high water table or twenty inches to mottling.

(xi) The minimum depth to the permanent ground water table shall be 4 feet.

(xii) The site shall have no closed depressions present.

(xiii) The existing slopes on the site shall not exceed 12%.

(xiv) The site shall not be used as pasture land during its operating life or through post-closure.

(9) The owner or operator of any hazardous waste land treatment facility who intends to grow food chain crops shall submit for Department approval a facility operating plan which demonstrates how the animal feed will be distributed to preclude ingestion by humans. The facility operating plan shall include, but not be limited to, de-

scribing the measures to be taken to safeguard against possible health hazards from cadmium entering the food chain, which may result from alternative land uses.

(10) Future property owners shall be notified by a stipulation in the property deed which states that the property has received hazardous waste and that food chain crops should not be grown, due to a possible health hazard.

(11) In addition to the ground-water monitoring program required in subsection (n), the owner or operator shall submit for written Departmental approval an Unsaturated Zone Monitoring (UZM) Plan which is designed to:

(i) detect the vertical migration of hazardous waste and hazardous waste constituents under the active portion of the land treatment facility; and

(ii) provide information on the background concentrations of the hazardous waste and hazardous waste constituents in similar but untreated soils nearby; this background monitoring shall be conducted before or in conjunction with the monitoring required under paragraph (11)(i).

(12) The Unsaturated Zone Monitoring (UZM) Plan shall include, at a minimum:

(i) soil monitoring using soil samples; and

(ii) soil-pore water monitoring using devices such as lysimeters.

(13) To comply with paragraph (11)(i), the owner or operator shall demonstrate in his unsaturated zone monitoring plan that:

(i) the depth at which soil and soil-pore water samples are to be taken is below the depth to which the waste is incorporated into the soil;

(ii) the number of soil and soil-pore water samples to be taken is based on the variability of:

(A) the hazardous waste constituents in the waste and in the soil; and

(B) the soil series and phases; and

(iii) The frequency and timing of soil and soil-pore water sampling is based on the frequency, time and rate of waste application, proximity to ground water, and soil permeability.

(14) The owner or operator shall retain his Unsaturated Zone Monitoring Plan at the facility.

(15) The owner or operator shall analyze the soil and soil-pore water samples for the hazardous waste constituents that were found in the waste during the waste analysis.

(16) The owner or operator of a land treatment facility shall maintain records of the application dates, application rates, quantities, and location of each hazardous waste placed in the facility, in the operating record required in subsection (k).

(17) In the closure and post-closure plan prepared under subsection (o) the owner or operator shall address the following objectives and indicate how they will be achieved:

(i) control of the migration of hazardous waste and hazardous waste constituents from the treated area into the ground water;

(ii) control of the discharge of contaminated run-off from the facility into surface water or ground water; and

(iii) control of the emission of airborne particulate contaminants caused by wind erosion.

(18) The owner or operator shall consider at least the following factors in addressing the closure and post-closure care objectives of paragraph (17).

(i) Type and amount of hazardous waste and hazardous waste constituents applied to the land treatment facility.

(ii) The mobility and the expected rate of migration of the hazardous waste and hazardous waste constituents.

(iii) Site location, topography, and surrounding land use, with respect to the potential effects of pollutant migration.

(iv) Climate, including amount, frequency, and pH of precipitation.

(v) Geological and soil profiles and surface and subsurface hydrology of the site, and soil chemical characteristics, including at least cation exchange capacity, total organic carbon, and pH.

(vi) Unsaturated zone monitoring information obtained under paragraphs (11) — (15).

(vii) Type, concentration, and depth of migration of hazardous waste constituents in the soil as compared to the background concentrations in the soil.

(19) The owner or operator shall consider at least the following methods in addressing the closure and post-closure care objectives of paragraph (17):

(i) removal of contaminated soils;

(ii) placement of a final cover, considering:

(A) functions of the soil cover; and

(B) characteristics of the soil cover, including material, final surface contours, thickness, porosity and permeability, slope, length of slope, and type of vegetation on the cover;

(iii) collection and treatment of run-off;

(iv) diversion structures to prevent surface water run-on from entering the treated area; and

(v) monitoring of soil, soil-pore water, and ground water; and

(vi) maintenance of soil pH.

(20) In addition to the requirements of subsection (o), during the post-closure care period, the owner or operator of a land treatment facility shall:

(i) maintain any unsaturated zone monitoring system, and collect and analyze samples from this system in a manner and frequency specified in the post-closure plan;

(ii) restrict access to the facility as appropriate for its post-closure use; and

(iii) assure that growth of food chain crops is in compliance with this subsection.

(21) Ignitable or reactive wastes shall not be land treated unless approved by the Department.

(22) Weighing or measuring facilities if necessary or when required by the Department shall be provided for weighing all hazardous wastes brought to the TSD facility, except for captive facilities that handle liquids or flowable wastes — less than 20% solids which are amenable to accurate flow measurements, or captive facilities that possess other waste inventory controls — volume controls. All weighing facilities shall be capable of weighing the maximum anticipated load plus the weight of the transport vehicle. The precision of weighing devices shall be certified by the Pennsylvania Department of Agriculture.

(23) For off-site facilities or on-site facilities receiving waste from off-site sources, hours of operations for the site shall be prominently displayed on a sign at the entrance. The lettering shall be a minimum of four inches in height and of a color contrasting with its background.

(24) Vector, odor, and/or noise control procedures shall be employed when necessary or when required by the Department to prevent health hazards or nuisances. The applicant shall submit a Vector, Odor, and Noise Control (VONC) Plan for approval by the Department.

(25) Equipment provided for operation of the landfill shall be maintained in operable condition, and be of adequate capacity and performance capability to ensure that the facility operation will not be interrupted during normal working periods and that the operation of the facility is in accordance with these regulations.

(26) Standby equipment shall be onsite or readily available for use in the event of major equipment breakdown.

(27) Unloading areas shall be specified and restricted to the proximity of the working face and shall permit collection vehicles to unload promptly.

(28) An attendant shall direct vehicles to the unloading area or clearly marked signs shall be located prominently to direct vehicles to the unloading area.

(29) The facility shall be operated in such a manner that the tracking of waste within and outside the site by equipment and machinery is eliminated or minimized.

(30) Provisions shall be made to prevent dust from hampering facility operations or from causing health or safety hazards or nuisances.

(31) Access roads shall be paved or surfaced with such materials as asphalt or concrete or other materials approved in writing by the Department. Access roads shall be suitable for use in all types of weather by loaded transport vehicles and emergency vehicles and equipment. These roads shall have a base capable of withstanding anticipated load limits. The minimum cartway width for two-way traffic shall be 22 feet; for one-way traffic, separate roads with a minimum cartway width of 12 feet shall be provided; or if the HWM facility is a captive facility or a non-commercial offsite facility and the access is restricted to company personnel with minimal traffic volume, then the minimum cartway width for two-way traffic shall be 12 feet, provided the entire length of the roadway is visible to the driver or passing points are provided at appropriate intervals so as to not impede access. The maximum sustained grade shall not exceed 12%.

(v) *Landfills.*

(1) This subsection applies to owners and operators of new hazardous waste landfills and existing hazardous waste landfills having interim status and applying for permit under § 75.265 (relating to interim status for hazardous waste management facilities and permit program for new and existing hazardous waste management facilities) except as otherwise provided in subsection (a). A waste pile used as a disposal facility is a landfill and shall meet the requirements of this section.

(2) This subsection establishes minimum standards that define the acceptable management of hazardous waste disposal in landfills.

(3) The following are the minimum general design standards required:

(i) Access roads shall be paved or surfaced with such materials as asphalt or concrete or other materials approved in writing by the Department. Access roads shall be suitable for use in all types of weather by loaded transport vehicles and emergency vehicles and equipment. These roads shall have a base capable of withstanding anticipated load limits. The minimum cartway width for two-way traffic shall be 22 feet; for one-way traffic, separate roads with a minimum cartway width of 12 feet shall be provided; or if the HWM facility is a captive facility or a non-commercial offsite facility and the access is restricted to company personnel with minimal traffic volume, then the minimum cartway width for two-way traffic shall be 12 feet, provided the entire length of the roadway is visible to the driver or passing points are provided at appropriate intervals so as to not impede access. The maximum sustained grade shall not exceed 12%.

(ii) Weighing or measuring facilities if necessary or when required by the Department shall be provided for weighing all hazardous wastes brought to the TSD facility, except for captive facilities that handle liquids or flowable wastes — less than 20% solids — which are amenable to accurate flow measurements, or captive facilities that possess other waste inventory controls — volume controls. All weighing facilities shall be capable of weighing the maximum anticipated load plus the weight of the transport vehicle. The precision of weighing devices shall be certified by the Pennsylvania Department of Agriculture.

(iii) For off-site facilities or on-site facilities receiving waste from off-site sources, hours of operations for the site shall be prominently displayed on a sign at the entrance. The lettering shall be a minimum of 4 inches in height and of a color contrasting with its background.

(iv) A minimum buffer zone of 50 feet shall be maintained between the property line and the permitted facility within which no solid waste treatment, storage, or disposal activity shall occur. No building or structure shall be constructed or placed within 25 feet of the disposal area unless the structures or buildings are necessary to conduct the monitoring and testing requirements of this subchapter and are approved in writing by the Department. In addition, no placement of waste shall be made within 3 feet of the effective edge of the liner.

(v) Final surface grades of the fill area shall provide a slope of not less than 2.0% but not exceeding 15% except as otherwise approved by the Department.

(vi) Where final grades approved in writing by the Department exceed 15%, but in no case exceeding 25%, a horizontal terrace 10 feet minimum in width shall be constructed on the slope for every 20 feet maximum in vertical rise of the slope. The gradient of the terrace shall be 1.0% toward the center of the landfill to eliminate overflow of the runoff onto the next terrace. The terrace shall be graded with a minimum 3.0% slope to remove any runoff to the sedimentation pond. The side slope of the terrace shall be a maximum 28.5% or the angle of repose of the landfilled waste, whichever is less. This shall be supported with testing and/or calculations.

(vii) Surface water management measures on the site shall at a minimum be in conformance with the provisions of Chapter 102 (relating to erosion control). More stringent design standards may be required by the Department based on the best engineering practices and methods outlined in "Engineering Field Manual for Conservation Practices" published by USDA-SCS.

(viii) All surface water run-off from active areas of the site shall be collected. It shall then be managed as a hazardous waste unless it has been determined not to be a hazardous waste. Necessary measures and structures shall be designed to handle water quantities based on the 24 hour rainfall in inches to be expected once in 10 years. Supporting calculations shall be provided.

(ix) Run-on shall be diverted away from the site, with all the necessary measures and structures designed to handle water quantities based on the 24 hour rainfall in inches, expected once in 100 years, and be supported by calculations.

(x) Daily and intermediate cover, when and if required in writing by the Department, shall be soils that fall within the United States Department of Agriculture (USDA) textural classes sandy loam, loam, sandy clay loam, silty clay loam, and silt loam. All other cover materials shall be approved by the Department. The coarse

fragment content (fragments not passing the No. 10 mesh sieve, 2mm.) shall not exceed 50% by volume and the combustible and/or coal content shall not exceed 12 percent by volume. Boulders and stones as classified by USDA shall be excluded from soils to be used for any type of cover material. The source and volumes of daily and intermediate cover necessary and available shall be specified and supported by calculations.

(xi) Daily cover, when and if required by the Department, shall be a minimum uniform 6-inch compacted layer and intermediate cover shall be a minimum uniform 12-inch graded and compacted layer.

(xii) Gas venting systems and gas monitoring systems shall be installed at all sites when necessary or when required by the Department. Gas venting may be accomplished by construction of either lateral and/or vertical venting. The maximum center to center spacing between the lateral lines or vertical trenches shall be 100 feet. Pipe vents located within 100 feet of any building, mechanical structure, or roadway shall be constructed so as to discharge above the roof line of said building or mechanical structure and a minimum of 12 feet above the roadway surface. A forced gas venting system shall be installed when and if required in writing by the Department. Appropriate safety measures shall be included in the design and installation of any gas venting, collection, storage, or processing system.

(xiii) Landfilled waste shall be capable of withstanding anticipated static and dynamic loadings with a minimum factor of safety of 1.5.

(xiv) All hazardous waste disposed of in a landfill shall be underlain by a liner system. The landfill liner system shall be designed with the following components, starting from the bottom of the system.

(A) A subbase, a prepared 6-inch thick layer of the ground upon which the liner system is constructed. The subbase shall be capable of supporting the expected static and dynamic loadings with a minimum factor of safety of 1.5. The subbase shall be compacted to 95% of the standard Proctor density. The subbase shall prevent damage to the bottom liner, be true to cross section, and uniform. The subbase shall have a surface which is smooth and free of all debris, plant materials, or other foreign materials. The minimum slope for all subbase surfaces including side slopes shall be 2.0% and the maximum slope shall be twenty percent (20%). Any subbase slopes greater than 20% shall be only as approved in writing by the Department.

(B) A bottom liner — secondary liner — meeting the requirements specified in Table 3, Appendix V and capable of detecting and diverting any leachate that may bypass or leak through the primary liner. The secondary liner shall be constructed so as to divert all leachate or waste, to a collection sump or point where it can be collected for proper treatment, storage, or disposal with sufficient frequency to prevent backup into the flow zone. The slope requirements shall conform to the slope of the subbase.

(C) A flow zone — leachate detection zone — between the secondary and primary liners capable of allowing free flow of liquids and providing a stable, uniform, smooth layer, free of all debris, plant materials, or other foreign material, and which will prevent damage to either the primary or secondary liners. The maximum particle size for the flow zone material shall be 0.25 inches and the permeability of the flow zone shall be greater than 1×10^{-4} cm/sec. The flow zone shall be a minimum one foot thick under the entire primary liner. A perforated piping system shall be installed within the flow zone which is capable of intercepting the liquids or leachate within the zone and transmitting them to a collection sump or point, and capable of withstanding all anticipated loads. The piping system design and pipe grade, size, and spacing shall ensure that all liquids will exit the landfill in less than 6 months. This shall be supported by calculations and drawings. A positive projecting installation design of the piping system shall be used unless otherwise approved in writing by the Department. Stones or aggregate surrounding the pipes shall be large enough to prevent clogging of the pipe and fine enough to prevent damage to the liners. Any other method of preventing the pipes from clogging shall meet the approval of the Department.

(D) A top liner (primary) meeting the requirements specified in Table 3, Appendix V and capable of diverting to a collection sump or point, all liquids or leachate, passing through or generated within the hazardous waste, where it can be collected for proper treatment, storage, or disposal with sufficient frequency to prevent backup into the landfill; and

(E) A protective cover zone/leachate collection zone, a minimum of one foot thick capable of protecting the primary liner from the hazardous waste and capable of allowing free flow of all liquids and leachate passing through or generated within the hazardous waste. The protective cover shall be stable, uniform, smooth, free of debris, plant material, or other foreign material. The permeability of this zone shall be greater than 1×10^{-4} cm/sec and the maximum particle size shall be 0.25 inches. A perforated piping system shall be installed within the protective cover which is capable of intercepting the liquids and leachate within the protective cover zone and transmitting them to a collection sump or point, and capable of withstanding all anticipated loads. The piping system design and the pipe spacing, grade, and size shall insure that all liquids and leachate drain through the protective cover at a rate twice the maximum expected rate of infiltration through the waste above. This shall be supported with calculations and drawings. A positive projecting installation design of the piping system shall be used unless otherwise approved in writing by the Department. Stones or aggregate surrounding the pipes shall be large enough to prevent clogging of the pipe and fine enough to prevent damage to the liner. Further measures to prevent clogging or damage to the pipe and additional measures to prevent damage to the liner shall be installed if required by the Department.

(F) A cap which is capable of preventing the infiltration of any liquid into closed portions of the landfill. The cap shall meet the minimum requirements specified in Appendix V, Table 3. It shall be placed on a stable one foot thick layer of intermediate cover material which has been compacted and graded to prevent damage to the cap. This requirement may be altered or waived it it is determined by the Department that capping is not necessary.

(xv) For all landfills a minimum distance of 4 feet shall be maintained between the top of the subbase and any seasonal high water table without the use of any artificial or manmade ground-water drainage or dewatering systems. Soil mottling shall indicate the presence of a seasonal high ground water table. The distance between the top of the subbase and the ground water table shall be a minimum of 8 feet.

(xvi) The outer perimeter of all liners and liner systems shall be well protected and well marked through all stages of construction, closure, and final closure.

(xvii) All new hazardous waste landfill disposal areas shall be designed to preclude any leachate from existing landfill disposal areas not meeting the

requirements of this section from entering into the lined landfill disposal areas that are permitted as new facilities.

(xviii) The conveyance system and storage system for the leachate from the leachate collection zone and run-off shall meet as a minimum the following design standards:

(A) The minimum storage capacity for leachate shall be 25,000 gallons per acre of active portions of the landfill plus an additional 1000 gallons per acre of closed landfill portions.

(B) The minimum storage capacity for runoff shall be based on the 24 hour rainfall in inches expected once in 10 years per acre of active portions of the landfill.

(C) All such storage tanks or surface impoundments shall meet the applicable requirements of this section for tanks and surface impoundments.

(D) The piping system conveying the leachate or runoff from the landfill to the collection point — tank or surface impoundment — shall be: sized to convey the leachate flow as calculated in subparagraph (3)(xiv) chemically compatible with the leachate, of sufficient strength to withstand all anticipated loads, equipped with cleanouts where necessary or as required in writing by the Department, and sealed to prevent any loss of leachate.

(E) The liner collection pipe and the conveyance pipe shall be connected such that all leachate is directed into the conveyance pipe.

(xix) Leachate detection zone tanks shall be a minimum of 100 gallons in capacity and connected to the leachate detection zone by means of a piping system. The piping system conveying the detected leachate shall be sized to convey the leachate flow as calculated in subparagraph (3)(xiv) chemically compatible, of sufficient strength to withstand all anticipated loads, sealed to prevent any loss of leachate, and designed to intercept and convey all the leachate detected.

(xx) Best engineering construction practices shall be employed for all phases of construction.

(xxi) Quality control measures and tests shall be specified and employed to ensure that construction conforms to all design materials and construction specifications.

(xxii) A registered professional engineer shall certify in writing for each phase of construction under penalty of law that he has personally examined the construction of the said phase and it is constructed and prepared in accordance with the documents, statements, designs, and plans submitted as part of the application as approved by the Department.

(xxiii) Design of treatment facilities to receive the leachate and runoff from storage, if such facilities are needed or are required in writing by the Department, shall be submitted to the Department for written approval prior to issuance of a permit. The treatment facilities shall be constructed prior to the acceptance of any hazardous waste at the landfill.

(xxiv) The design flow rate for the treatment facility shall be a minimum of 15,000 gallons per day for each acre of active area. The design standards for the treatment facilities shall meet the requirements of subsection (y).

(xxv) The treatment facilities shall be compatible with and capable of treating the waste constituents expected to be present in the leachate and runoff and the anticipated volumes of waste.

(xxvi) Closure of a landfill shall conform to subsection (o) and the following specific requirements:

(A) A final layer of cover material compacted to a minimum uniform depth of 2 feet shall be placed over the entire surface of the landfill. The final cover shall be soils that fall within the United States Department of Agriculture (USDA) textural classes of sandy loam, loam, sandy clay loam, silty clay loam, and silt loam. All other final cover materials shall be approved in writing by the Department. The soil shall compact well, not crack excessively when dry, and support a vegetative cover. The coarse fragment content (fragments not passing the No. 10 mesh sieve, 2mm.) shall not exceed 50% by volume, and the combustible and/or coal content shall not exceed 12% by volume. Boulders and stones as classified by USDA shall be excluded from soils used for any type of cover material. The source and volume of final cover necessary and available shall be specified and supported by calculations.

(B) The final cover layer shall be completed within 30 days after disposing of the final volume of hazardous waste or as otherwise approved in writing by the Department. Completion shall include permanent stabilization of all slopes.

(C) Completed portions of the landfill shall be graded as specified in this subsection within two weeks of completion.

(D) Seedbed preparation and planting operations to promote stabilization of the final soil cover shall be done as soon as weather permits and seasonal conditions are suitable for the establishment of the type of vegetation to be used. Reseeding and maintenance of cover material shall be mandatory until adequate vegetative cover is established to prevent erosion. Applicable revegetation procedures as published in PennDOT Form 408 or the current "Agronomy Guide" of The College of Agriculture, Pennsylvania State University, may be utilized.

(4) The following are the minimum general operating standards required:

(i) Landfill contents subject to dispersal by wind shall be covered or otherwise managed at the landfill so that wind dispersal of the hazardous waste and all other solid waste is controlled.

(ii) Incompatible wastes, or incompatible wastes and materials, see Appendix IV, shall not be placed in the same landfill cell unless paragraph (g)(2) is complied with and written approval by the Department is obtained.

(iii) Incompatible wastes shall not be mixed together in a landfill unless approved in writing by the Department.

(iv) No hazardous waste shall be codisposed with municipal waste unless approved by the Department.

(v) Liquid waste and waste containing free liquids shall not be placed in a landfill. Any hazardous waste to be disposed of in a landfill shall have greater than 20% solids content by dry weight and shall not be flowable. Flowable refers to flow in the sense of pourable as a liquid.

(vi) An empty container shall be crushed flat, shredded, or similarly reduced in volume before it is buried in the landfill.

(vii) Vector, odor, and/or noise control procedures shall be employed when necessary or when required by the Department to prevent health hazards and nuisances. The applicant shall submit a Vector, Odor, and Noise Control (VONC) Plan for the written approval in writing by the Department.

(viii) The site shall be designed and operated in a manner which prevents or minimizes surface water percolation into the hazardous waste deposits.

(ix) Equipment provided for operation of the HWM landfill shall be maintained in operable condition and be of adequate capacity and performance capability to ensure that the facility operation will not be interrupted during normal working periods and that

operation of the facility is in accordance with these regulations.

(x) All solid waste shall be spread and compacted in shallow layers, not exceeding a depth of two feet unless otherwise approved in writing by the Department. Compacting of the solid waste shall be accomplished by repeated passages of landfill equipment.

(xi) Standby equipment shall be onsite or readily available for use in the event of major equipment breakdown.

(xii) Unloading areas shall be specified and restricted to the proximity of the working face and shall permit collection vehicles to unload promptly.

(xiii) An attendant shall direct vehicles to the unloading area or clearly marked signs shall be located prominently to direct vehicles to the unloading area unless otherwise approved in writing by the Department.

(xiv) Burning of solid waste is prohibited at a hazardous waste landfill.

(xv) Provisions shall be made to prevent dust from hampering landfill operations or from causing health or safety hazards and nuisances.

(xvi) Portable litter control fences constructed of wire mesh, snow-fencing or other suitable material when necessary or when required in writing by the Department shall be located in the immediate operating area, approximately 50 to 75 feet downwind from the working face. The nature of the solid waste or excessive winds may require additional litter control measures which shall be provided. The entire landfill shall be adequately policed, and litter shall be collected routinely at no greater than weekly intervals from fences, roadways, and tree line barriers and incorporated into the solid waste cells.

(xvii) The landfill shall be operated in such a manner that the tracking of waste within and outside the site by equipment and machinery is eliminated or minimized.

(xviii) The application of leachate or runoff onto the landfill shall not be permitted unless approved by the Department.

(xix) The collection sump or point shall be inspected at least daily to detect leakage through the top liner. However, the owner or operator shall not be required to inspect the collection sump or point daily provided that:

(A) the collection sump or point is equipped with an alarm system capable of detecting any accumulation of liquids in the sump of one inch or greater;

(B) the alarm system is maintained in proper working order; and

(C) the owner or operator has received prior written approval from the Department.

(w) *Incinerators.* Incinerators shall comply with the following.

(1) The regulations in this subsection apply to owners and operators of facilities that incinerate or trial burn hazardous waste except as otherwise provided in subsection (a) or as otherwise specified by the Department.

(2) A permit application shall be required for the construction and operation of an incinerator and related appurtenances and written Department approval shall be required for incineration or a trial burn of a hazardous waste.

(3) Before an owner or operator incinerates his own specific hazardous waste or a specific hazardous waste from a specific generator for the first time he shall submit to the Department the following information either with the permit application or on a form specified by the Department. The following parameters shall be analyzed and quantified along with additional parameters as may be required by the Department in order to provide data as required by paragraph (9). Each analysis shall include sample data, sample methods, sample description and collection conditions, analysis data, and laboratory name, address, contact, and telephone number. All analyses submitted shall specify the analytical techniques utilized along with any special preparation or deviation from accepted techniques:

(i) General properties.

(A) Moisture (percent by weight)

(B) Ash (percent by weight)

(C) Heating value (BTU/lb.)

(D) Density (lb./cubic foot at 70°F)

(E) Viscosity (Centipoise at 70°F)

(F) PCB (ppm by weight)

(G) Hazardous organic constituents listed in 75.261, Appendix VIII as appropriate (percent by weight)

(H) Flash point (°F)

(ii) Ultimate Analysis

(A) Carbon (percent by weight)

(B) Hydrogen as H_2 (percent by weight)

(C) Oxygen as O_2 (percent by weight)

(D) Nitrogen as N_2 (percent by weight)

(E) Water (percent by weight)

(F) Phosphorus (percent by weight)

(G) Bromine as Br_2 (percent by weight)

(H) Chlorine as Cl_2 (percent by weight)

(I) Fluorine as F_2 (percent by weight)

(J) Arsenic (percent by weight)

(K) Beryllium (percent by weight)

(L) Lead (percent by weight)

(M) Mercury (percent by weight)

(N) Cadmium (percent by weight)

(O) Chromium as hexavalent chrome (percent by weight)

(P) Remainder as ash (percent by weight)

(4) Throughout normal operation the owner or operator shall conduct sufficient waste analyses to verify that the waste feed to the incinerator is within the physical and chemical composition limits specified in the permit.

(5) The owner or operator of a hazardous waste incinerator shall burn only wastes specified in his permit and only under operating conditions specified for those wastes. Other hazardous wastes shall be burned only after operating conditions have been specified in a new permit or a permit modification or as otherwise approved in writing by the Department. Operating requirements for new wastes shall be based on the analyses required in paragraph (3) and trial burn results. In lieu of actual trial burn of the waste to be incinerated, alternative data from operational or other trial burns in which similar waste has been incinerated under similar conditions may be substituted to support the contention that a trial burn is not needed. Such data shall demonstrate that the wastes and the incinerator units are sufficiently similar and shall include:

(i) Principal Organic Hazardous Constituents (POHC's) which the applicant has identified in the waste for which permit or approval is sought, and any differences from the POHC's in the waste for which burn data are provided.

(ii) The engineering design and operating conditions of the incinerator unit to be used, compared with that for which comparative burn data are available.

(iii) A description of the results submitted from any previously conducted trial burns including:

(A) Sampling and analysis techniques used to calculate performance standards.

(B) Methods and results of monitoring temperatures, waste feed rates, air feed rates, and carbon monoxide.

(C) Identification of any hazardous combustion by-products detected.

(6) An incinerator burning hazardous waste shall be designed, constructed, and maintained so that, when operated in accordance with operating requirements specified in paragraph (7) it will meet the following performance standards:

(i) An incinerator burning hazardous waste shall achieve a destruction and removal efficiency (DRE) of 99.99% for each Principal Organic Hazardous Constituent (POHC) designated in its permit or approval for each waste feed. DRE is determined for each POHC from the following equation:

$$DRE = \frac{(Win\text{-}Wout)}{Win} \times 100\%.$$

where:
Win = Mass feed rate of one POHC in the waste stream feeding the incinerator, and
Wout = Mass emission rate of the same POHC present in exhaust emissions prior to release to the atmosphere.

(ii) An incinerator burning hazardous waste containing more than 0.5% halogens shall remove 99% of each hydrogen halide from the exhaust gas.

(iii) An incinerator burning hazardous waste shall not emit particulate matter in concentrations exceeding 180 milligrams per dry standard cubic meter (.08 grains per dry standard cubic foot) when corrected to 12% CO_2, when tested in accordance with the provisions of Chapter 139. The Department may impose an alternate standard pursuant to the Chapter 141 should the Department determine that the standards set forth in (w)(6)(iii) do not protect public health or may violate the provisions of Chapter 131.

(7) An incinerator shall be operated in accordance with operating requirements specified in the permit. These shall be specified on a case-by-case basis as those demonstrated to be sufficient to comply with the performance standards specified in paragraph (6) and shall include the following unless otherwise specified in writing by the Department.

(i) Each set of operating requirements shall specify the composition of the waste feed — including acceptable variations in the physical or chemical properties of the waste feed which will not affect compliance with the performance requirements — to which operating requirements apply. For each such waste feed, the permit shall specify acceptable operating limits including the following conditions:

(A) Carbon monoxide (CO) level in the stack exhaust gas.

(B) Waste feed rate.

(C) Combustion temperature and residence time.

(D) Air feed rate to the combustion system.

(E) Allowable variations in incinerator system design or operating procedures.

(F) Opacity of the plume which shall not be in excess of the standards set forth in § 123.41 when measured in accordance with the techniques specified in § 123.43.

(G) Such other operating requirements as are necessary to ensure that the performance standards are met.

(ii) During start-up and shut-down of an incinerator, hazardous waste shall not be fed into the incinerator unless the incinerator is operating within the conditions of operation and achieves a steady state condition.

(iii) Fugitive emissions from the combustion zone shall be controlled by:

(A) keeping the combustion zone totally sealed against fugitive emissions;

(B) maintaining a combustion zone pressure lower than atmospheric pressure; or

(C) an alternate means of control demonstrated to provide fugitive emissions control equivalent to maintenance of combustion zone pressure lower than atmospheric pressure.

(iv) An incinerator shall be operated with a functioning system to automatically cut off waste feed to the incinerator when operating conditions deviate from limits established in a permit and upon the failure of:

(A) Elements of input control systems.

(B) Combustion or atomizing air blower.

(C) Current from the flame detector and other safety devices.

(D) Electrical power to the facility.

(v) An incinerator shall cease operation when changes in waste feed, incinerator design, or operating conditions exceed limits designated in its permit.

(8) Principal Organic Hazardous Constituents (POHC's) in the waste feed shall be treated to the extent required by the performance standards and shall be designated based on the following:

(i) One or more POHC's shall be specified in the facility's permit, from among those constituents listed in § 75.261, Appendix VIII for each waste feed to be burned. The Department may designate POHC's from constituents other than those listed in § 75.261, Appendix VIII if necessary to protect the release of such constituents into the environment.

(ii) The POHC's shall be determined based upon an acceptable ambient concentration (AAC) of the POHC's and/or by-products considering the degree of difficulty of incineration, relative amounts in its waste feed system, and the physicial characteristics of the incinerator and the surrounding environment. Subsection (A): An acceptable AAC for POHC is an ambient air quality standard as referenced in Chapter 131 of the Rules and Regulations of the Department, 25 Pa. Code § 131.1 et seq. or (B) threshold limit value (TLV) as contained in the registry of toxic effects of chemical substances, or cited, or in the absence of either, (C) the lethal concentration (50 percentile) or lethal dose (50 percentile) mammalian as contained in the registry of toxic effects of chemical substances and modified as follows:

(A) $AAC\ (ug/m^3) = LC_{50}\ (mg/m^3)/50$ or

(B) $AAC\ (ug/m^3) = LD_{50}\ (mg/kg)/123$

(9) The owner or operator shall conduct as a minimum, the following monitoring and inspection while incinerating hazardous waste and record the data:

(i) Combustion temperature, waste feed rate, and air feed rate on a continuous basis.

(ii) CO on a continuous basis at a point in the incinerator downstream of the combustion zone and prior to release to the atmosphere.

(iii) Sampling and analysis of the waste and exhaust emissions to verify that the operating requirements established in the permit achieve the performance standards at a frequency specified in the permit. Such sampling and analysis shall, as a minimum, provide the following:

(A) A quantitative analysis of the exhaust gas for the concentration and mass emissions of POHCs, CO_2, O_2, and hazardous combustion byproducts.

(B) A quantitative analysis of the scrubber water, ash residues and other residues for POHCs.

(C) A total mass balance of POHCs.

(D) The ambient air quality impact of a POHC utilizing modeling techniques approved by the Department. The guidelines for air quality maintenance, planning and analysis Volume 10 (revised): Procedures for Evaluating Air Quality Impact of New Stationary Sources (EPA-450/477-001 AQA PS No. 1.2-029R).

(E) A computation of DRE.

(F) If the waste feed contains more than 0.5% halogens, a computation of halogen removal efficiency.

(G) A computation of particulate emissions.

(iv) An identification of sources of fugitive emissions and their means of control.

(v) The incinerator and associated equipment shall be inspected at least daily for leaks, spills, and fugitive emissions. All emergency waste feed cut-off controls and system alarms shall be checked daily to verify proper operation.

(10) At closure the owner or operator shall remove all hazardous waste and hazardous waste residues, including, but not limited to, ash, scrubber waters, and scrubber sludges from the incinerator site.

(11) Hazardous waste incineration shall not be placed in operation unless the owner or operator has made provisions for and has received the Departmental permit and written approval for the disposal of ash, scrubber water residues, scrubber water, and other residues.

(12) An owner or operator of a combustion unit or process as defined in Chapter 121, which thermally destructs a hazardous waste shall not be required to obtain a Solid Waste Management permit for the construction and operation of a boiler or process, but shall be required to obtain an air quality plan approval pursuant to Chapter 127, and shall also be subject to the following requirements:

(i) Submission of an analysis along with the information on forms specified by the Department as indicated in paragraph (3).

(ii) Submission of forms specified by the Department for approval to dispose of ash, scrubber water residues, scrubber water, and other residues.

(iii) An approved air quality plan shall be deemed to constitute a solid waste management permit under this subsection.

(13) A buffer zone of a minimum 50 feet shall be maintained between the property line and the permitted facility within which no solid waste treatment, storage, or disposal activity shall occur.

(14) Best engineering construction practices shall be employed for all phases of construction.

(15) Quality control measures and tests shall be specified and employed to ensure that construction conforms to all design, materials, and construction specifications.

(16) A registered professional engineer shall certify in writing for each phase of construction or installation under penalty of law that he has personally examined the construction and installation of said phase and that it is constructed or installed in accordance with the documents, statements, design, and plans submitted as part of the permit application as approved by the Department.

(17) Odor and noise control procedures shall be utilized when necessary or as required by the Department to prevent health hazards or nuisances. The applicant shall submit an odor and noise control program for approval by the Department.

(18) Equipment provided for operation of the facility shall be maintained in operable condition and be of adequate capacity and performance capability to ensure that the facility operation will not be interrupted during normal working periods and that operation of the facility is in accordance with these regulations.

(19) Standby equipment shall be on-site or readily available for use in the event of major equipment breakdown.

(20) Unloading areas shall be specified and shall permit vehicles to unload promptly.

(21) The site shall be operated in such a manner that the tracking of waste within and outside the site by equipment and machinery is eliminated or minimized.

(22) Access roads shall be paved or surfaced with such materials as asphalt or concrete or other materials approved in writing by the Department. Access roads shall be suitable for use in all types of weather by loaded transport vehicles and emergency vehicles and equipment. These roads shall have a base capable of withstanding anticipated load limits. The minimum cartway width for two-way traffic shall be 22 feet; for one-way traffic, separate roads with a minimum cartway width of 12 feet shall be provided; or if the HWM facility is a captive facility or a non-commercial off-site facility and the access is restricted to company personnel with minimal traffic volume, then the minimum cartway width for two-way traffic shall be 12 feet, provided the entire length of the roadway is visible to the driver or passing points are provided at appropriate intervals so as to not impede access. The maximum sustained grade shall not exceed 12%.

(23) Weighing or measuring facilities if necessary or when required by the Department shall be provided for weighing all hazardous wastes brought to the TSD facility, except for captive facilities that handle liquids or flowable wastes — less than 20% solids — which are amenable to accurate flow measurements, or captive facilities that possess other waste inventory controls — volume controls. All weighing facilities shall be capable of weighing the maximum anticipated load plus the weight of the transport vehicle. The precision of weighing devices shall be certified by the Pennsylvania Department of Agriculture.

(24) For off-site facilities or on-site facilities receiving waste from off-site sources, the hours of operation for the facility shall be prominently displayed on a sign at the entrance. The lettering shall be a minimum of 4 inches in height and of a color contrasting with its background.

§ 75.265. Interim status for hazardous waste management facilities and permit program for new and existing hazardous waste management facilities.

(a) *Scope.*

(1) This section establishes acceptable minimum standards for management of hazardous waste as defined in § 75.261 (relating to criteria, identification and listing of hazardous waste) during the period of interim status and the permit program for new and existing hazardous waste management facilities.

(2) The standards of this section apply to any person or municipality who treats, stores, or disposes of hazardous waste who has fully complied with the requirements for interim status until final administrative disposition of their permit application is made unless otherwise specified in this section or in § 75.261 (relating to criteria, identification and listing of hazardous waste).

(3) The requirements of this section do not apply to the following:

(i) The owner or operator of a POTW which treats, stores, or disposes of hazardous waste provided that the permit by rule provision in subsection (z)(14) is complied with.

(ii) A person or municipality who

owns or operates a facility permitted by the Department to manage municipal or residual solid waste, if the only hazardous waste the facility treats, stores, or disposes of is excluded from regulation under § 75.261(d) (relating to criteria, identification and listing of hazardous waste) provided that:

(A) the facility receives written approval to accept such wastes from the Department in compliance with subsection (c); and

(B) the total hazardous wastes received at the facility during any quarter is less than 1.0% by weight of the total amount of nonhazardous wastes landfilled at the facility during the previous quarter.

(iii) The owner or operator of a facility which treats or stores hazardous waste, if such treatment or storage meets the criteria in § 75.261(e)(1) (relating to criteria, identication and listing of hazardous waste) except to the extent that § 75.261(e)(2) (relating to criteria, identification and listing of hazardous waste) provides otherwise.

(iv) A generator accumulating waste for less than 90 days onsite in compliance with § 75.262(g) (relating to generators of hazardous waste).

(v) A farmer disposing of waste pesticides from his own use in compliance with § 75.262(n) (relating to generators of hazardous waste).

(vi) The owner or operator of a totally enclosed treatment facility as defined in § 75.260 (relating to definitions and requests for determinations).

(vii) Persons or municipalities with respect to those activities which are carried out to immediately contain or treat a spill of hazardous waste, hazardous waste constituents, or material which, when spilled, becomes a hazardous waste, except that, with respect to such activiities, the appropriate requirements of subsections (h) and (i) are applicable to owners and operators of treatment, storage, and disposal facilities otherwise subject to this section. This paragraph only applies to activities taken in immediate response to a spill. After the immediate response activities are completed, the regulations of this title apply fully to the management of any spill residue or debris which is a hazardous waste under § 75.261 (relating to criteria, identification and listing of hazardous waste).

(b) *Identification numbers.*

(1) Any person or municipality who owns or operates a hazardous waste management facility shall not accept hazardous waste for treatment, storage, or disposal without having received an identification number from the Department and shall not accept hazardous waste from a transporter who has not received an identification number and license, except as otherwise provided.

(2) An owner or operator of a hazardous waste management facility who has not received an identification number may obtain one by applying to the Department using the notification form. Upon receiving the request, the Department will assign an identification number to the owner or operator.

(3) An identification number received as a result of notification to EPA pursuant to section 3010 of the Resource Conservation and Recovery Act shall be deemed to satisfy the requirements of this section when furnished to the Department upon request.

(c) *General requirements for hazardous waste management approvals and analyses.*

(1) Before an owner or operator treats, stores, or disposes of a specific hazardous waste from a specific generator for the first time, he shall submit to the Department for approval, on a form provided by the Department, a report which the owner or operator shall retain for 20 years, and which shall include the following information: a detailed chemical and physical analysis of the waste, a description of the waste and the process generating the waste, name and address of the HWM facility, description of the HWM facility's treatment, storage or disposal methods, results of liner compatibility testing, an assessment of the impact of the waste on the HWM facility, and any other information which the Department may prescribe in order for the Department to determine whether the waste will be treated, stored, or disposed of in accordance with this section. The chemical and physical analysis of the waste shall be repeated under any of the following circumstances:

(i) when necessary to ensure that it is accurate and up-to-date;

(ii) when the owner or operator is notified, or has reason to believe, that the process or operation generating the hazardous waste has changed; and

(iii) when the results of the inspection or analysis or both of each hazardous waste for off-site facilities or on-site facilities receiving hazardous waste from off-site sources indicates that the waste received at the facility does not match the description of waste on the accompanying manifest or shipping paper.

(2) The owner or operator of an off-site facility or an on-site facility receiving hazardous waste from off-site sources shall inspect and, if necessary, analyze each hazardous waste received at the facility to determine whether it matches the identity of the waste specified on the accompanying manifest or shipping paper.

(3) The owner or operator shall develop and follow a written waste analysis plan which shall be submitted to the Department for approval at such time in the application process as the Department may prescribe. The plan shall be retained at the facility. At a minimum, the plan shall specify:

(i) the parameters for which each hazardous waste will be analyzed and the rationale for the selection of those parameters;

(ii) the test methods which will be used to test for these parameters;

(iii) the sampling methods which will be used to obtain a representative sample of the waste to be analyzed. A representative sample may be obtained using either;

(A) one of the sampling methods described in Appendix I of § 75.261; or

(B) an equivalent sampling method approved by the Department.

(iv) the frequency with which the initial analysis of the waste will be received or repeated to ensure that the analysis is accurate and up-to-date;

(v) for off-site facilities or on-site facilities receiving hazardous waste from off-site sources, the waste analyses that the hazardous waste generators supply in accordance with the requirements of this subsection;

(vi) where applicable, the testing procedures which will be used to meet the additional waste analysis requirements for the following hazardous waste management methods; tanks, surface impoundments, waste piles, land treatment, landfills, incineration, thermal treatment, and chemical, physical, and biological treatment; and

(vii) for off-site facilities or on-site facilities receiving hazardous waste from off-site sources, the procedures which will be used to determine the identity of each hazardous waste managed at the facility and the sampling method which will be used to obtain a representative sample of the waste to be identified, if the identification method includes sampling.

(4) The owner or operator of a facility utilizing a liner shall conduct an evaluation of liner compatibility with the hazardous waste before accepting such waste for emplacement in a waste

pile, surface impoundment, or a landfill unless the approval to accept such a waste is granted in the permit. The evaluation procedure shall meet the approval of the Department prior to its commencement. The evaluation of the liner shall consist of testing the liner in the presence of the waste for a minimum of 30 days or as otherwise approved by the Department. In lieu of actual testing, existing published or documented data on the hazardous waste or waste generated from similar processes proving the liner compatibility may be substituted if approved by the Department. The results of evaluation of the liner compatibility shall be furnished to the Department for written approval of the waste before acceptance by the facility.

(d) *Security.*

(1) The owner or operator shall prevent unknowing entry, and minimize the possibility for unauthorized entry by persons or livestock onto the active portions of the facility, unless:

(i) physical contact with the waste, structures, or equipment within the active portion of the facility will not injure unknowing or unauthorized persons or livestock which may enter the active portion of the facility; and

(ii) disturbance of the waste or equipment by the unknowing or unauthorized entry of persons or livestock onto the active portion of the facility, will not cause a violation of the requirements of this section.

(2) Unless exempt under paragraph (1) a facility shall have:

(i) a 24-hour surveillance system which continuously monitors and controls entry onto the active portion of the facility; or

(ii) an artificial barrier which completely surrounds the active portion of the facility, and a means to control entry, at all times, through gates or other entrances to the active portion of the facility. A natural barrier may be substituted if approved by the Department.

(iii) The requirements of paragraph (2)(i) and (ii) shall be considered satisfied if the facility within which the active portion is located has a surveillance system or a barrier and a means to control entry in accordance with the requirements of paragraph (2)(i) and (ii).

(3) Unless exempt under paragraph (1), a sign with the legend, "Danger — Unauthorized Personnel Keep Out" shall be posted at each entrance to the active portion of a facility, and at other locations, in sufficient numbers to be seen from any approach to the active portion. The lettering shall be a minimum of four inches in height and of a color contrasting with its background. Existing signs with other legends may be used provided that the legend on the sign indicates that only authorized personnel are allowed to enter the active portion and entry onto the active portion can be dangerous.

(e) *General inspection and construction inspection requirements.*

(1) The owner or operator shall inspect his facility for malfunctions and deterioration, operator errors, and discharges which may cause or lead to an emission or discharge of hazardous waste constituents to the environment or a threat to human health. The owner or operator shall conduct these inspections often enough to identify problems in time to correct them before they harm human health or the environment.

(2) The owner or operator shall develop a written schedule for inspecting all monitoring equipment, safety and emergency equipment, security devices, and operating and structural equipment that are important to preventing, detecting, or responding to environmental or human health hazards. This schedule shall be submitted to the Department for approval at such time in the application process as the Department may prescribe.

(i) The schedule shall be retained at the facility

(ii) The schedule shall identify the types of problems which are to be looked for during the inspection.

(3) The frequency of the inspection may vary for the items on the schedule. However, it should be based on the rate of possible deterioration of the equipment and the probability of an environmental or human health incident if the deterioration or malfunction or any operator error goes undetected between inspections. Areas subject to spills, such as loading and unloading areas, shall be inspected daily when in use. At a minimum, the inspection schedule shall include the items and frequencies called for in subsections (d), (r), (s), (t), (u), (v), (w), (x) and (y).

(4) The owner or operator shall remedy deterioration or malfunction of equipment or structures which the inspection reveals on a schedule that ensures the problem does not lead to an environmental or human health hazard. Where a hazard is imminent or has already occurred, remedial action shall be taken immediately.

(5) The owner or operator shall record inspections in an inspection log or summary. He shall keep these records for the operating life of the facility. At a minimum, these records shall include the date and time of the inspection, the name of the inspector, a notation of the observations made, and the date and nature of any repairs or other remedial actions. These records shall be furnished to the Department upon request.

(6) A schedule for construction of a HWM facility shall be submitted to the Department for approval. At a minimum, the schedule shall provide for Department inspection and approval of each phase of construction.

(f) *Personnel training.*

(1) Facility personnel shall successfully complete a program of classroom instruction or on-the-job training that teaches them to perform their duties in a way that ensures the facility's compliance with the requirements of this section. The owner or operator shall ensure that this program includes as a minimum all the elements required under this subsection. This training program shall be outlined and submitted to the Department for approval at such time in the application process as the Department may prescribe.

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

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

(i) procedures for using, inspecting, repairing, and replacing facility emergency and monitoring equipment;

(ii) key parameters for automatic waste feed cut-off system;

(iii) communications or alarm systems;

(iv) response to fire or explosion;

(v) response to ground-water contamination incidents; and

(vi) shutdown of operations.

(4) Facility personnel shall successfully complete the program required in paragraph (1) within 6 months after the effective date of this chapter or 6 months after the date of their employ-

ment or assignment to a facility, or to a new position at a facility, whichever is later. Employes hired after the effective date of this chapter shall not work in unsupervised positions until they have completed the training requirements of paragraph (1).

(5) Facility personnel shall participate in an annual review and evaluation of the elements of the initial training program required in paragraph (1).

(6) The owner or operator shall maintain the following documents and records at the facility which shall be furnished to the Department upon request:

(i) The job title for each position at the facility related to hazardous waste management, and the name of the employe holding each position.

(ii) A written job description for each position listed under paragraph (6)(i). This description may be consistent in its degree of specificity with descriptions for other similar positions in the same company location or bargaining unit, but must include the requisite skill, education or other qualifications, and duties of facility personnel assigned to each position.

(iii) A written description of the type and amount of both introductory and continuing training that will be given to each person filling a position listed under paragraph (6)(i).

(iv) Records that document that the training or job experience required under paragraphs (1), (2), (3), (4), and (5) has been given to, and completed by, facility personnel.

(7) Training records on current personnel shall be retained until closure of the facility. Training records on former employes shall be retained for the operating life of the facility. Personnel training records may accompany personnel transferred within the same company.

(g) *General requirements for ignitable, reactive, or incompatible wastes.*

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

(2) Where specifically required by other subsections of this section, the treatment, storage, or disposal of ignitable or reactive waste, and the mixture or commingling of incompatible wastes, or incompatible wastes and materials, shall be conducted so that they do not:

(i) generate extreme heat or pressure, fire or explosion, or violent reaction;

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

(iii) produce uncontrolled flammable fumes or gases in sufficient quantities to pose a risk of fire or explosion;

(iv) damage the structural integrity of the device or facility containing the waste; or

(v) through other like means threaten human health or the environment.

(h) *Preparedness and prevention.*

(1) Facilities shall be maintained and operated to minimize the possibility of a fire, explosion, or discharge of hazardous waste or hazardous waste constituents to air, soil, surface water, or ground water which could threaten human health or the environment.

(2) All facilities shall be equipped with the following, unless none of the hazards posed by waste handled at the facility could require a particular kind of equipment in this paragraph:

(i) an internal communications or alarm system capable of providing immediate emergency instruction — voice or signal — to facility personnel;

(ii) 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;

(iii) portable fire extinguishers, fire control equipment — including special extinguishing equipment, such as that using foam, inert gas, or dry chemicals — spill control equipment, and decontamination equipment; and

(iv) water at adequate volume and pressure to supply water hose streams, foam producing equipment, automatic sprinklers, or water spray systems.

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

(4) Whenever hazardous waste is being poured, mixed, spread, or otherwise handled, all personnel involved in the operation shall have immediate access to an on-site internal alarm or emergency communication device, either directly or through visual or voice contact with another employee, unless such a device is not required under paragraph (2).

(5) An employee working alone on the premises while the facility is operating shall have immediate access to a device, such as a telephone, immediately available at the scene of operation, or a hand-held two-way radio capable of summoning external emergency assistance, unless the Department has determined that such a device is not required under paragraph (2).

(6) 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 facility operation in an emergency, unless aisle space is not needed for any of these purposes.

(7) The owner or operator shall attempt to make the following arrangements, as appropriate for the type of waste handled at his facility and the potential need for services as follows:

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

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

(iii) Agreements with State and local emergency response teams, emergency response contractors, and equipment suppliers.

(iv) Arrangements to familiarize local hospitals with the properties of hazardous waste handled at the facility and the types of injuries or illnesses which could result from fire, explosion, or discharge at the facility.

(8) Where State or local authorities decline to enter into such arrange-

ments, the owner or operator shall document the refusal in the operating record.

(i) *Preparedness, Prevention, and Contingency (PPC) Plan and emergency procedures.*

(1) Each owner or operator shall be responsible for developing and implementing a contingency plan for effective action to minimize and abate hazards to human health and the environment from fire, explosion, emission or discharge of hazardous waste or hazardous waste constituents to air, soil, surface water, or ground water.

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

(3) The contingency plan shall describe the actions facility personnel shall take to comply with paragraphs (1), (2), and (12) — (21) in response to fire, explosion, emissions or discharges of hazardous waste or hazardous waste constituents to air, soil, surface water, or ground water.

(4) The contingency plan and all revisions and amendments thereof shall be prepared and implemented in accordance with the Department guidelines and submitted to the Department for approval at such time in the application process as the Department may prescribe.

(5) 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, pursuant to subsection (h).

(6) The plan shall list names, addresses, and phone numbers — office and home — of all persons qualified to act as emergency coordinator and this list shall be kept up-to-date. Where more than one person is listed, one shall be named as primary emergency coordinator and others shall be listed in the order in which they will assume responsibility as alternates.

(7) 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) The plan shall include an evacuation plan for facility personnel where there is a possibility that evacuation could be necessary. This plan shall describe signals to be used to begin evacuation, evacuation routes, and alternate evacuation routes in cases where the primary routes could be blocked by fire or emissions and discharges of hazardous waste or hazardous waste constituents.

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

(i) maintained at the facility; and

(ii) submitted to all local police departments, fire departments, hospitals, and emergency response teams that may be called upon to provide emergency services.

(10) The contingency plan shall be reviewed, and immediately amended, if necessary, whenever:

(i) applicable regulations are revised;

(ii) the plan fails in an emergency;

(iii) the facility changes in its design, construction, operation, maintenance, or other circumstances, in a manner that materially increases the potential for fire, explosion, emissions or discharges of hazardous waste or hazardous waste constituents, or changes the response necessary in an emergency;

(iv) the list of emergency coordinators changes; or

(v) the list of emergency equipment changes.

(11) At all times, there shall be at least one employee either on the facility premises or on call with the responsibility for coordinating all emergency response measures. This emergency coordinator shall be thoroughly familiar with all aspects of the facility's contingency plan, all operations and activities at the facility, the location and characteristics of waste handled, the location of all records within the facility, and the facility layout. In addition, this person shall have the authority to commit the resources needed to carry out the contingency plan.

(12) Whenever there is an imminent or actual emergency situation, the emergency coordinator shall immediately:

(i) activate facility alarms or communication systems, where applicable, to notify all facility personnel; and

(ii) notify local agencies with designated response roles if their help is needed.

(13) Whenever there is a fire, explosion, emission or discharge, the emergency coordinator shall immediately identify the character, exact source, amount, and areal extent of emitted or discharged materials. He may do this by observation or review of facility records or manifests and, if necessary, by chemical analysis.

(14) Concurrently, the emergency coordinator shall assess possible hazards to human health or the environment that may result from the fire, explosion, emission or discharge. This assessment shall consider both direct and indirect effects of the fire, explosion, emission or discharge.

(15) If the emergency coordinator determines that the facility has had a fire, explosion, emission or discharge which could threaten human health or the environment, he shall report his findings as follows:

(i) If his assessment indicates that evacuation of local areas may be advisable, he shall immediately notify appropriate authorities. He shall be available to help appropriate officials decide whether local areas should be evacuated.

(ii) He shall immediately notify the Department by telephone at 717-787-4343 and the National Response Center at 800-424-8802. The report shall include:

(A) name of the person reporting the incident:

(B) name, address, and identification number of facility;

(C) phone number where the person reporting the spill can be reached;

(D) date, time, and location of the incident;

(E) a brief description of the incident including type of incident, nature of hazardous material involvement, and possible hazards to human health or the environment outside the facility;

(F) the extent of injuries, if any; and

(G) for each waste involved in the incident, the shipping name, hazard class, U.N. number of the waste, and quantity of the waste involved.

(16) During an emergency, the emergency coordinator shall take all reasonable measures necessary to ensure that fire, explosion, and emission or discharge to 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 waste, and removing or isolating containers.

(17) If the facility stops operations in response to a fire, explosion, or emission or discharge, the emergency coordinator shall monitor for leaks, pressure buildup, gas generation, or ruptures in valves, pipes, or other

equipment, wherever this is appropriate.

(18) Immediately after an emergency, the emergency coordinator shall with Department approval provide for treating, storing, or disposing of recovered waste, contaminated soil or surface water, or other material that results from a fire, explosion, emission or discharge at the facility.

(19) The emergency coordinator shall ensure that, in the affected areas of the facility:

(i) no waste that may be incompatible with the emitted or discharged material is treated, stored, or disposed of until cleanup procedures are completed; and

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

(20) The owner or operator shall notify the Department and the appropriate State or local authorities that the facility is in compliance with paragraph (19) before operations are resumed in the affected areas of the facility.

(21) The owner or operator shall note in the operating record the time, date, and details of an incident that requires implementing the contingency plan. Within 15 days after the incident, he shall submit a written report of the incident to the Department. The report shall include the following:

(i) name, address, and telehone number of the owner or operator;

(ii) name, address, and telephone number of the facility;

(iii) date, time, and type of incident;

(iv) name and quantity of materials involved;

(v) the extent of injuries, if any;

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

(vii) estimated quantity and disposition of recovered material that resulted from the incident.

(j) *Manifest system and discrepancy reporting.*

(1) Requirements under this section apply to owners and operators of off-site facilities and on-site facilities receiving hazardous waste from off-site sources, except as otherwise provided in this section.

(2) General requirements for a manifest shall consist of the following:

(i) A generator who transports or offers for transportation a shipment of hazardous waste to an off-site treatment, storage, or disposal facility shall complete a manifest before the waste is transported off-site.

(ii) For all hazardous waste shipments designated for off-site treatment, storage, or disposal within this Commonwealth, the generator shall use the manifest forms provided by the Department and shall complete and distribute such manifest forms according to the instructions specified on the manifest.

(iii) For all hazardous waste shipments generated in this Commonwealth and designated for treatment, storage, or disposal outside this Commonwealth, the generator shall use the EPA authorized disposer state manifest form or format, or a manifest form meeting the minimum EPA requirements.

(iv) A generator shall designate on the manifest one facility which is permitted to manage the waste described on the manifest.

(v) The Department manifest shall require the following information as a minimum:

(A) A unique manifest document number.

(B) The names, site addresses, telephone numbers, and identification numbers of the generator, transporters, and treatment, storage or disposal facility.

(C) The proper United States Department of Transportation shipping name, United States Department of Transportation hazard class, and U. N. number of the waste as outlined in the United States Department of Transportation regulations 49 C.F.R. §§ 172.101, 172.202 and 172.203.

(D) The physical form — solid, liquid, or gas — and the total quantity of each hazardous waste by units of weight or volume, and the type and number of containers.

(E) A certification equivalent to the following: "This is to certify that the above named materials are properly classified, described, packaged, marked, and labelled and are in proper condition for transportation according to the applicable regulations of the Department of Transportation, U. S. EPA, and the State. The wastes described were consigned to the transporter named. The treatment, storage, or disposal (TSD) facility can and will accept the shipment, and has a valid permit to do so. I certify that the foregoing is true and correct to the best of my knowledge."

(3) The hazardous waste manifest shall consist of six copies, with Copies 1, 2, and 3 detaching into two parts, A and B. The manifest form shall be completed and routed as follows, except that manifests for bulk shipments transported by rail or water shall be completed and routed according to the scheme set forth in subsection (j)(9).

(i) The generator shall complete Part A of all copies of the manifest. The generator shall instruct the initial transporter's authorized representative to sign, date, and certify the receipt of the shipment.

(ii) For shipments of hazardous waste generated within the Commonwealth of Pennsylvania and to be disposed of within this Commonwealth the generator shall retain a complete Copy 2 of the manifest and Part A of Copy 3 for his records.

(iii) In the case of an interstate shipment of hazardous waste, the generator shall detach Part A of Copies 1, 2, and 3, distribute Part A of Copy 1 to the disposer state, Part A of Copy 2 to the generator state, and retain Part A of Copy 3 for his records.

(iv) The transporter's authorized representative shall carry the remaining copies of the manifest along with the shipment.

(v) Upon delivery of the shipment to the designated treatment, storage, or disposal facility, or to transporter number two, transporter number one shall sign and date and certify delivery of the shipment, obtain the signature, date of receipt of shipment, and certification of the treatment, storage, or disposal facility's authorized representative or the authorized representative of transporter number two and detach and retain Copy 5 of the manifest.

(vi) Upon delivery of the shipment to the designated treatment, storage, or disposal facility by transporter number two, transporter number two shall sign and date and certify the delivery of the shipment, obtain the signature, date of receipt of shipment, and certification of the treatment, storage, or disposal facility's authorized representative and detach and retain Copy 6 of the manifest.

(vii) For shipments within the Commonwealth of Pennsylvania, the treatment, storage, or disposal facility's authorized representative shall retain complete Copies 1 and 4 of the manifest and return Part B of Copy 3 to the generator within 24 hours of delivery of the shipment.

(viii) In the case of the interstate shipment of hazardous waste, the treatment, storage, or disposal facil-

ity's authorized representative shall detach and distribute Part B of Copies 1, 2, and 3 of the manifest in the following manner:

(A) Treatment, storage, or disposal facility's authorized representative shall forward Part B of Copy 1 of the manifest to the state in which the designated treatment, storage, or disposal facility is located.

(B) Treatment, storage, or disposal facility's authorized representative shall forward Part B of Copy 2 of the manifest to the state in which the installation generating the hazardous waste is located and shall return Part B of Copy 3 of the manifest to the generator within 24 hours after the delivery of the shipment. The treatment, storage, or disposal facility shall retain Copy 4 for its records.

(4) Each manifest form shall record a maximum of two transporters. If more than two transporters are to be utilized, the generator shall complete additional manifest forms and reference the first manifest document number on such additional manifest forms.

(5) If more than four hazardous wastes from the same generator are to be shipped in the same shipment, the generator shall complete additional manifests for each group of four or less hazardous wastes.

(6) Copies of the manifest retained by the generator and the treatment, storage, or disposal facility shall be furnished to the Department upon request.

(7) Note any significant discrepancies in subsection (j)(10) on each copy of the manifest.

(8) Retain at the facility a copy of each manifest for at least 20 years from the date of delivery.

(9) For bulk shipment of hazardous waste designated for treatment, storage, or disposal within this Commonwealth solely by railroad or water, the manifest shall be completed and routed as follows:

(i) The generator shall complete Part A of all copies of the manifest. The generator shall instruct the initial transporter's authorized representative to sign and date and certify the receipt of the shipment.

(ii) For shipments of hazardous waste generated within the Commonwealth of Pennsylvania and to be disposed of within the Commonwealth of Pennsylvania, the generator shall retain a complete Copy 2 of the manifest and Part A of Copy 3 for his records.

(iii) In the case of an interstate shipment of hazardous waste, the generator shall detach Part A of copies 1, 2, and 3, distribute Part A of Copy 1 to the disposer state, Part A of Copy 2 to the generator state, and retain Part A of Copy 3 for his records.

(iv) The generator or the initial transporter delivering a shipment of hazardous waste to the rail or water transporter shall obtain the signature and date of receipt of shipment and certification of the rail or water transporter on the manifest and forward the remaining copies of the manifest, except those for additional transporters, to the designated treatment, storage, or disposal facility. Each transporter other than the rail or water transporter shall retain his copy of the manifest for his records.

(v) The rail or water transporter shall carry along with the shipment either his copy of the manifest or the shipping paper containing all the information required on the manifest in subsection (j)(2)(v) except the identification numbers, generator's certification, and signatures.

(vi) The delivering rail or water transporter shall obtain the signature, date of receipt of shipment, and certification of the authorized representative of the treatment, storage, or disposal facility on either the manifest or the shipping paper.

(vii) The designated treatment, storage, or disposal facility's authorized representative shall sign and date and certify the acceptance of the shipment on the manifest forwarded by the generator or initial transporter and shall obtain the signature, date of delivery of shipment, and certification of the rail or water transporter.

(viii) For shipments within the Commonwealth of Pennsylvania, the treatment, storage, or disposal facility's authorized representative shall retain completed copies 1 and 4 of the manifest and return Part B of Copy 3 to the generator.

(ix) In the case of the interstate shipment of hazardous waste, the treatment, storage, or disposal facility's authorized representative shall detach and distribute Part B of Copies 1, 2, and 3 of the manifest in the following manner:

(A) Treatment storage, or disposal facility's authorized representative shall forward Copy 1 of the manifest to the state in which the designated treatment, storage or disposal facility is located.

(B) Treatment, storage, disposal facility's authorized representative shall forward Part B of Copy 2 of the manifest to the state in which the installation generating the hazardous waste is located, and shall return Part B of Copy 3 of the manifest to the generator within 24 hours after the delivery of the shipment. The treatment, storage, or disposal facility shall retain Copy 4 for its records.

(10) 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.

(i) Significant discrepancies in quantity are:

(A) for bulk waste, variations greater than 2.0% in weight; or

(B) for batch waste, any variation in piece count, such as discrepancy of one drum in a truckload.

(ii) 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, or differences in physical form, color, odor, and the like.

(11) Upon discovering a significant discrepancy, the owner or operator shall reconcile the discrepancy with the waste generator or transporter before the waste is stored, treated, or disposed by the HWM facility. If the discrepancy is not resolved within 3 days after receiving the waste, the owner or operator shall immediately notify the Department by telephone and a letter describing the discrepancy and attempts to reconcile it, enclosing a legible copy of the manifest or shipping paper at issue.

(k) *Operating record.*

(1) The owner or operator of an on-site or off-site facility shall keep a written operating record at his facility.

(2) The following information shall be recorded, as it becomes available, and maintained in the operating record until closure of the facility:

(i) A description and the quantity of each hazardous waste received, and the methods and dates of its treatment, storage, or disposal at the facility as required by Appendix I of this section. The Quarterly Report form may be used to record this information.

(ii) The location of each hazardous waste within the facility and the quantity at each location. For disposal facilities, the location and quantity of each hazardous waste shall be recorded on a map or diagram of each

cell or disposal area. For all facilities, this information shall include cross-references to specific manifest document numbers, if the waste was accompanied by a manifest.

(iii) Records and results of waste analyses and trial tests performed as specified in the following subsections (c), (r), (s), (t), (u), (v), (w), (x), and (y).

(iv) Summary reports and details of all incidents that require implementing the contingency plan as specified in subsection (i)(21).

(v) Records and results of inspections as required by subsection (e)(5).

(vi) Monitoring, testing, or analytical data where required by subsections (n), (u), (w), and (x).

(vii) All closure cost estimates and, for disposal facilities, all post-closure estimates under subsection (p).

(l) *Availability, retention, and disposition of records.*

(1) All records, including plans, required under this section shall be furnished to the Department upon request, and made available at all reasonable times for inspection by the Department.

(2) The retention period for all records required under this section shall be extended automatically during the course of any enforcement action regarding the facility or as requested by the Department.

(3) A copy of records of waste disposal locations and quantities under subsection (k)(2)(ii) shall be submitted to the Department and the local land authority upon closure of the facility or as otherwise prescribed by the Department.

(4) The reports, plans, outlines, and any other documents retained at a facility which require the Department's approval shall be replaced by the most recently approved copy of the reports, plans, and documents.

(m) *Quarterly facility report and additional reports.*

(1) The owner or operator of an off-site facility or on-site facility receiving hazardous waste from off-site sources shall submit quarterly reports:

(i) To the Department on a form designated by the Department. The form shall contain as a minimum the following information.

(A) The name, identification number, mailing address, and the location of the facility.

(B) The name and telephone number of the facility's contact person.

(C) The identification number and hazardous waste transporter (HWT) license number of each transporter.

(D) The name, identification number, and address of each generator.

(E) The description, Department of Transportation hazard class and hazardous waste number, and date of treatment, storage, or disposal of the hazardous waste.

(F) The amount and units of measure of each hazardous waste in a shipment.

(G) The manifest document number for each hazardous waste shipment.

(H) Signature and certification of the facility's authorized representative.

(I) The information required by clauses (C), (D), (E), (F), and (G) shall be provided for each shipment of hazardous waste and each waste stream within the shipment.

(ii) No later than the last day of the following month for the quarters: January through March due on or before April 30; April through June due on or before July 31; July through September due on or before October 31; October through December due on or before January 31.

(2) The owner or operator of an on-site or off-site facility shall report to the Department:

(i) Emissions, discharges, fires, and explosions as required in subsection (i)(21).

(ii) Ground-water contamination and monitoring data as required in subsection (n).

(iii) Facility closure as required in subsection (o).

(3) Captive facilities shall not submit quarterly reports to the Department. They shall, however, maintain records of hazardous waste treatment, storage, and disposal activity pursuant to subsection (k) on a form specified by the Department. This form shall be maintained for the life of the facility as a part of its operating record. These records shall be made available to the Department upon request.

(n) *Ground-water monitoring.*

(1) By November 19, 1981, the owner or operator of a surface impoundment, landfill, or land treatment facility which is used to manage hazardous waste shall implement a ground-water monitoring program capable of determining the facility's impact on the quality of any ground-water system which the facility has the potential to affect, or as otherwise deemed necessary by the Department.

(2) The owner or operator shall install, operate, and maintain a ground-water monitoring system which meets the requirements of paragraphs (3) — (6) and shall comply with paragraphs (7) — (19). This ground-water monitoring program shall be conducted during the active life of the facility, and for disposal facilities, during the post-closure care period.

(3) A ground-water monitoring system shall be capable of yielding ground-water samples for analysis and shall consist of the following:

(i) At least one monitoring well installed hydraulically upgradient, that is, in the direction of increasing static head, from the limit of the waste management area. Their number, locations, and depths shall be sufficient to yield ground-water samples that are:

(A) representative of background ground-water quality; and

(B) not affected by the facility.

(ii) At least three monitoring wells installed hydraulically downgradient, that is, in the direction of decreasing static head, at the perimeter of the waste management area. Their number, locations, and depths shall ensure that they immediately detect any statistically significant amounts of hazardous waste or hazardous waste constituents that migrate from the waste management area to the ground water.

(iii) The locations of the monitoring wells shall be approved by the Department before they are constructed.

(4) Separate monitoring systems for each waste management component of a facility are not required provided that provisions for sampling upgradient and downgradient ground-water quality will detect a discharge from the waste management area.

(i) In the case of a facility consisting of only one surface impoundment, landfill, or land treatment area, the waste management area is described by the waste boundary or perimeter.

(ii) In the case of a facility consisting of more than one surface impoundment, landfill, or land treatment area, the waste management area is described by an imaginary boundary line which circumscribes the several waste management components.

(5) All monitoring wells shall be cased in a manner that maintains the integrity of the monitoring well borehole. This casing shall be screened or perforated, and packed with gravel or sand where necessary, to enable sam-

ple collection at depths where appropriate aquifer flow zones exist. The annular space above the sampling depth shall be sealed with a suitable material to prevent contamination of samples and the ground water.

(6) All monitoring wells shall be protected from damage by heavy equipment in the normal operations of the facility and from vandals. The protective installation shall include:

(i) A length of steel casing several inches larger in diameter and height than the monitoring well and at least ten feet in length, installed around the monitoring well casing. The height of this steel casing shall be a minimum one foot above final grade and at least several inches above the monitoring well casing. This length of protective steel casing shall be grouted and placed with a cement collar at least three feet deep to hold it firmly in position. The steel casing shall be painted a highly visible color and be numbered.

(ii) A cap on the monitoring well casing which will allow the well to be locked and secured from acts of vandalism.

(7) The owner or operator shall obtain and analyze samples of ground water from the installed ground-water monitoring system. The owner or operator shall develop and follow a ground-water sampling and analysis plan which shall be submitted to the Department for approval at such time in the application process as the Department may prescribe, and which shall be retained at the facility for the life of the facility. The plan shall include procedures and techniques for the following:

(i) Sample collection.

(ii) Sample preservation and shipment.

(iii) Analytical procedures.

(iv) Chain of custody control.

(8) The owner or operator at a minimum shall determine the concentrations or values of the following parameters in ground-water samples in accordance with paragraphs (9) — (11):

(i) Parameters characterizing the suitability of the ground water as a drinking water supply, as specified in Appendix II.

(ii) Parameters establishing ground-water quality:

(A) Chloride.

(B) Iron.

(C) Manganese.

(D) Phenols.

(E) Sodium.

(F) Sulfate.

(G) Additional parameters as required by the Department.

(iii) Parameters used as indicators of ground-water contamination:

(A) pH.

(B) Total Organic Carbon.

(C) Total Organic Halogen.

(D) Specific Conductance.

(E) Additional parameters as required by the Department.

(9) For all monitoring wells, the owner or operator shall establish initial background concentrations or values of all parameters specified in paragraph (8) quarterly for one year.

(10) For each upgradient monitoring well, each of the indicator parameters specified in paragraph (8)(iii) shall have at least four replicate measurements obtained for each sample. The initial background arithmetic mean and variance shall be determined by pooling these replicate measurements obtained during the first year.

(11) After the first year, all monitoring wells shall be sampled and the samples analyzed as follows:

(i) Samples collected to establish ground-water quality shall be obtained and analyzed for the parameters specified in paragraph (8)(ii) at least semi-annually. Results of analyses shall be submitted to the Department.

(ii) Samples collected to indicate ground-water contamination shall be obtained and analyzed for the parameters specified in paragraph (8)(iii) at least quarterly. Results of these analyses shall be submitted to the Department.

(12) The elevation of the ground water surface at each monitoring well shall be determined when the well is sampled. The elevation of the water in the respective wells shall be included with the analytical results for each well submitted to the Department in accordance with paragraph (11).

(13) By November 19, 1981, the owner or operator shall prepare and submit to the Department for written approval an outline of a ground-water quality assessment and abatement program. The outline shall be retained at the facility throughout the life and post-closure care period of the facility and shall describe a more comprehensive ground-water monitoring program capable of the following:

(i) Determining which hazardous waste or hazardous waste constituents have entered the ground water.

(ii) Determining the rate and extent of migration of hazardous waste or hazardous waste constituents in the ground water.

(iii) Determining the concentrations of hazardous waste or hazardous waste constituents in the ground water.

(iv) Abating any ground-water contamination attributable to the hazardous waste management facility.

(14) For each indicator parameter specified in paragraph (8)(iii), the owner or operator shall calculate the arithmetic mean and variance, based on at least four replicate measurements on each sample for each well monitored in accordance with paragraph (11)(ii) and compare these results with its initial background arithmetic mean — calculated from the upgradient well, during the first year. The comparison shall consider individually each of the wells in the monitoring system, and shall use the Student's t-test at the 0.01 level of significance — see Appendix III of this section — to determine statistically significant increase or decrease of pH or increase of other parameters over initial background.

(i) If the comparisons for an upgradient well under paragraph (14) show a significant increase or decrease of pH or increase of other parameters, the owner or operator shall submit this information in accordance with paragraph (18)(ii)(B).

(ii) If the comparisons for downgradient wells made under this paragraph (14) show a significant increase or decrease of pH or increase of other parameters, the owner or operator shall then immediately obtain additional ground-water samples from those downgradient wells where a significant difference was detected, split the samples in two, and obtain analyses of all additional samples to determine whether the significant difference was a result of laboratory error.

(15) If the analyses performed under paragraph (14)(ii) confirm the significant increase or decrease of pH or increase of other parameters, the owner or operator shall provide written notice to the Department within seven days of the date of such confirmation that the facility may be affecting ground-water quality.

(i) Within thirty days after the notification required by paragraph (15) the owner or operator shall develop and submit to the Department for written approval a specific plan, based on the outline required under paragraph (13) and certified by a qualified geologist or geotechnical engineer, for

a ground-water quality assessment and abatement program at the facility.

(ii) The plan to be submitted shall specify the following:

(A) The number, location, size, and depth of wells.

(B) Sampling and analytical methods for those hazardous wastes or hazardous waste constituents in the facility.

(C) Evaluation procedures including any use of previously gathered ground-water quality information.

(D) Abatement procedures.

(E) A schedule of implementation.

(iii) The owner or operator shall implement the ground-water quality assessment plan which satisfies the requirements of paragraph (15)(ii) and, at a minimum, determine the following:

(A) The rate and extent of migration of the hazardous waste or hazardous waste constituents in the ground water.

(B)) The concentrations of the hazardous waste or hazardous waste constituents in the ground water.

(iv) The owner or operator shall make his first determination under paragraph (15)(iii) as soon as technically feasible, and within 15 days after that determination, submit to the Department a written report containing an assessment of the ground-water quality.

(v) If the owner or operator determines, based on the results of the first determination under paragraph (15)(iii) that no hazardous waste or hazardous waste constituents from the facility have entered the ground water, then he may reinstate the indicator evaluation program described in paragraph (7) — (12) and (14). If the owner or operator reinstates the indicator evaluation program, he shall so notify the Department in the report submitted under paragraph (15)(iv).

(vi) If the owner or operator determines, based on the first determination under paragraph (15)(iii) that hazardous waste or hazardous waste constituents from the facility have entered the ground water, then he:

(A) shall continue to make the determinations required under paragraph (15)(iii) on a quarterly basis until final closure of the facility, if the ground-water quality assessment plan was implemented prior to final closure of the facility;

(B) may cease to make the determinations required under paragraph (15)(iii) if the ground-water quality assessment plan was implemented during the post-closure care period; and

(C) shall submit for Department approval the abatement plan to be used to abate any ground-water contamination.

(16) Notwithstanding any other provision of this subsection, a ground-water quality assessment to satisfy the requirements of paragraph (15)(iii) which is initiated prior to final closure of the facility shall be completed and reported in accordance with paragraph (15)(iv).

(17) Unless the ground water is monitored to satisfy the requirements of paragraph (15)(iii), at least annually by January 31, the owner or operator shall evaluate the data on ground-water surface elevations obtained under paragraph (12) to determine whether the requirements under paragraph (3) for locating the monitoring wells continues to be satisfied. If the evaluation shows that paragraph (3) is no longer satisfied or the Department determines that paragraph (3) is no longer satisfied, the owner or operator shall modify the number, location, or depth of the monitoring wells to bring the ground-water monitoring system into compliance with this requirement. These changes and a required schedule for such changes shall be approved in writing by the Department before any construction begins.

(18) Unless the ground water is monitored to satisfy the requirements of paragraph (15)(iii), the owner or operator shall:

(i) keep records of the analyses required in paragraphs (9) — (11), the associated ground-water surface elevations required in paragraph (12), and the elevations required in paragraph (14) throughout the active life of the facility, and, for disposal facilities, throughout the post-closure care period as well; and

(ii) report the following ground-water monitoring information to the Department.

(A) During the first year, when initial background concentrations are being established for the facility, measurements of the parameters listed in paragraph (8)(i), for each ground-water monitoring well within 15 days after completing each quarterly analysis. The owner or operator shall separately identify for each monitoring well any parameters whose measurements were found to exceed the maximum contaminant levels listed in Appendix II of this section.

(B) Semiannually: measurements of the paragraphs listed in paragraph (8)(ii), for each ground water monitoring well. The owner or operator shall separately identify any significant differences from initial background found in the wells. During the active life of the facility, this information shall be submitted as part of the quarterly report required under subsection (m).

(C) Quarterly: measurements of the parameters listed in paragraph (8)(iii), for each ground-water monitoring well, along with the required evaluations for these parameters under paragraph (14). The owner or operator shall separately identify any significant differences from initial background found in the upgradient wells, in accordance with paragraph (14)(i). During the active life of the facility, this information shall be submitted quarterly.

(D) Also quarterly: results of the evaluation of ground-water surface elevations under paragraph (17), and a description of the response to that evaluation, where applicable.

(19) If the ground water is monitored to satisfy the requirements of paragraph (15)(iii), the owner or operator shall:

(i) submit to the Department quarterly and keep records of the analyses and evaluations specified in the plan, which satisfies the requirements of paragraph (15)(ii) throughout the active life of the facility, and, for disposal facilities, throughout the post-closure care period also; and

(ii) annually, until final closure of the facility, submit to the Department by January 31 a report containing the results of his ground-water quality assessment program which includes, but is not limited to, the measured rate of migration of hazardous waste or hazardous waste constituents in the ground water during the reporting period and volumes of hazardous waste or hazardous waste constituents removed from the ground water using the abatement procedures specified in paragraph (15)(vi).

(o) *Closure and Post-Closure.* Closure and post-closure shall include the following.

(1) Except as subsection 75.265(a) provides otherwise:

(i) paragraphs (1) — (10), which concern closure, apply to the owners and operators of all hazardous waste management facilities; and

(ii) paragraphs (11) — (21), which concern post-closure care, apply to the owners and operators of all hazardous waste disposal facilities except incinerators.

(2) The owner or operator shall close his facility in a manner that:

(i) minimizes the need for further maintenance, and

(ii) controls, minimizes, or eliminates, to the extent necessary to protect human health and the environment, post-closure escape of hazardous waste, hazardous waste constituents, leachate, contaminated rainfall, or waste decomposition products to the ground-water or surface water or to the atmosphere.

(3) By May 19, 1981, the owner or operator shall have a written closure plan. This plan shall be submitted to the Department for written approval at such time in the application process as the Department may prescribe or as specified in paragraph (5), whichever is sooner. He shall retain a copy of the closure plan and all revisions to the plan at the facility until closure is completed and certified. This plan shall identify the steps necessary to completely or partially close the facility at any point during its intended operating life and to completely close the facility at the end of its intended operating life. The closure plan shall include, at least:

(i) A description of how and when the facility will be partially closed, if applicable, and ultimately closed. The description shall identify the maximum extent of the operation which will be unclosed during the life of the facility, and how the requirements of paragraphs (2), (7), (9), and (10) and the applicable closure requirements of subsections (r), (s), (t), (u), (v), (w), (x), and (y) will be met.

(ii) An estimate of the maximum inventory of waste in storage and in treatment at any time during the life of the facility.

(iii) A description of the steps needed to decontaminate facility equipment during closure.

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

(4) The owner or operator may amend his closure plan at any time during the active life of the facility. The active life of the facility is that period during which wastes are periodically received. The owner or operator shall amend the plan whenever changes in operating plans or facility design affect the closure plan, or whenever there is a change in the expected year of closure of the facility. The plan shall be amended and submitted to the Department for written approval within 60 days of the proposed changes to the plan.

(5) The owner or operator shall submit his closure plan to the Department at least 180 days before the date he expects to receive the final volume of waste. The owner or operator shall submit his closure plan to the Department no later than 15 days after:

(i) termination of interim status — except when a permit is issued to the facility simultaneously with termination of interim status; or

(ii) issuance of a judicial decree or Department compliance order to cease receiving wastes or close.

(6) The Department may in writing modify, approve, or disapprove the plan within 90 days of receipt and after providing the owner or operator and the affected public the opportunity to submit written comments. If the closure plan is disapproved by the Department, the owner or operator shall modify the plan or devise a new plan, either of which shall be submitted for written Department approval within 30 days of notice of disapproval. If the Department modifies the plan, this modified plan shall become the approved closure plan.

(7) Within 90 days after receiving the final volume of hazardous waste, or 90 days after approval of the closure plan, whichever is later, the owner or operator shall treat, remove from the site, or dispose of on-site all hazardous waste in accordance with the approved closure plan. The Department may approve in writing a longer period if the owner or operator demonstrates that:

(i) the activities required to comply with this subsection will, of necessity, take him longer than 90 days to complete; or

(ii) the facility has additional capacity under its permit.

(8) The owner or operator shall complete closure activities in accordance with the approved closure plan and within 180 days after receiving the final volume of wastes or 180 days after approval of the closure plan, whichever is later. The Department may in writing approve a longer closure period if the owner or operator demonstrates that;

(i) the closure activities will, of necessity, take him longer than 180 days to complete; or

(ii) the facility has additional capacity under its permit.

(9) When closure is complete, all facility equipment and structures shall have been properly disposed of, or decontaminated by removing all hazardous waste and hazardous residues.

(10) When closure is completed, the owner or operator shall submit to the Department 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.

(11) Post-closure care shall continue for 30 years after the date of completing closure and shall consist of at least the following:

(i) ground-water monitoring and reporting in accordance with the requirements of subsection (n); and

(ii) maintenance of monitoring and waste containment systems as specified in subsections (n), (s), (u) and (v), where applicable.

(12) The Department may require continuation of any of the security requirements for 30 years after the date closure has been completed when:

(i) wastes may remain exposed after completion of closure; or

(ii) access by the public or domestic livestock may pose a hazard to human health.

(13) Post-closure use of property on or in which hazardous waste remains after closure shall never be allowed to disturb the integrity of the final cover, liner(s), or any other components of any hazardous waste management facility or the function of the facility's monitoring systems, unless the owner or operator can demonstrate to the Department that the disturbance:

(i) is necessary to the proposed use of the property, and will not increase the potential hazard to human health or the environment; or

(ii) is necessary to reduce a threat to human health or the environment.

(14) The owner or operator of a disposal facility shall provide post-closure care in accordance with the approved post-closure plan for at least 30 years after the date of completing closure. However, the owner or operator may request the Department to allow some or all of the requirements for post-closure care to be discontinued or altered prior to the end of the 30 year period. The request shall include evidence demonstrating the secure nature of the facility that makes continuing the specified post-closure require-

ments unnecessary. Alternately, the Department may require the owner or operator to continue one or more of the post-closure care and maintenance requirements contained in the facility's post-closure plan for a specified period of time. The Department may do this if it finds there has been noncompliance with any applicable standards or requirements, or that such continuation is necessary to protect human health or the environment. At the end of the specified period of time, the Department will determine whether to continue or terminate post-closure care and maintenance at the facility. A person or municipality may request the Department to extend or reduce the post-closure care period based on cause. These requests shall be considered by the Department at the time the post-closure plan is submitted and at five year intervals after the completion of closure.

(15) By May 19, 1981, the owner or operator of a disposal facility shall have a written post-closure plan which shall be submitted to the Department for written approval as the Department may prescribe, or as specified in paragraph (17), whichever is sooner. He shall keep this plan at the facility. This plan shall identify the activities which will be conducted after final closure and the frequency of those activities. The post-closure plan shall include at least:

(i) A description of the planned ground-water monitoring activities and frequencies at which they will be performed to comply with subsection (n) during the post-closure period;

(ii) A description of the planned maintenance activities and frequencies at which they will be performed, to ensure:

(A) the integrity of the cap and final cover or other facility structures as specified in subsections (s), (u), and (v) where applicable; and

(B) the function of the facility monitoring equipment; and

(iii) The name, address, and phone number of the person or office to contact about the disposal facility during the post-closure care period. This person or office shall keep an updated post-closure plan during the post-closure care period.

(16) The owner or operator may amend his post-closure plan at any time during the life, which includes post-closure care, of the disposal facility. The owner or operator shall amend his plan any time changes in operating plans or facility design, or events which occur during the life of the facility, affect his post-closure plan. The plan shall be amended and submitted for written Departmental approval within 60 days of the proposed changes to the plan.

(17) The owner or operator of a disposal facility shall submit his post-closure plan to the Department at least 180 days before he expects to receive the final volume of waste. The owner or operator shall submit his post-closure plan to the Department no later than 15 days after:

(i) termination of interim status — except when a permit is issued to the facility simultaneously with termination of interim status; or

(ii) issuance of a judicial decree or Department compliance order.

(18) The Department will approve, modify, or disapprove the plan within 90 days of its receipt. If the Department does not approve the plan, the owner or operator shall modify the plan or submit a new plan for approval within 30 days of the disapproval. If the Department modifies the plan, this modified plan shall become the approved post-closure plan.

(19) Within 90 days after closure is completed, the owner or operator of a disposal facility shall submit to the municipality in which the facility is located and to the Department a survey plat indicating the location and dimensions of landfill cells or other disposal areas with respect to permanently surveyed benchmarks. This plat shall be prepared and certified by a registered land surveyor. The plat filed with the municipality shall contain a note, prominently displayed, which states the owner's or operator's obligation to restrict disturbance of the site as specified in paragraph (13). In addition, the owner or operator shall submit to the Department and to the municipality a record of the type, location, and quantity of hazardous waste disposed of within each cell or area of the facility. The owner or operator shall identify the type, location, and quantity of hazardous waste disposed of within each cell or area of the facility. For waste disposed of before November 19, 1980, the owner or operator shall identify the type, location and quantity of the wastes to the best of his knowledge and in accordance with any records he has kept.

(20) The grantor in every deed for the conveyance of property on which hazardous waste is presently being disposed, or has ever been disposed by the grantor or to the grantor's actual knowledge, shall include in the property description of such deed an acknowledgement of such hazardous waste disposal and that the use of such property is restricted under paragraph (13). Such acknowledgement is to include, but not be limited to, the surface area size and exact location of the disposed waste and a description of the types of hazardous waste contained therein. Such amended property descriptions shall be made a part of the deed for all future conveyances or transfers of the subject property. The warranty in such deed shall not be applicable to the surface area size and exact location of the disposed waste and a description of the types of hazardous waste contained therein.

(21) Before transferring ownership or operation of a facility during its operating life, or of a disposal facility during the post-closure care period, the owner or operator shall notify the new owner or operator in writing of the requirements of this section. 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 his obligation to comply with all applicable requirements.

(22) All post-closure care activities shall be performed in accordance with the provisions of the approved post-closure plan.

(p) *Financial requirements.*

(1) Paragraph (2) applies to owners and operators of all hazardous waste facilities except as otherwise provided in subsection (a). Paragraph (5) applies only to owners and operators of disposal facilities. States and the Federal Government are exempt from the requirements of this subsection.

(2) On the effective date of this section, each facility owner or operator shall have a written estimate of the cost of closing the facility. The owner or operator shall keep this estimate, and all subsequent estimates required in this subsection at the facility. The estimate shall equal the cost of closure at the point in the facility's operating life when the extent and manner of its operation would make closure the most expensive, as indicated by its closure plan.

(3) The owner or operator shall prepare a new closure cost estimate whenever a change in the closure plan affects the cost of closure.

(4) On each anniversary of the effective date of this section, the owner or operator shall adjust the latest closure cost estimate using an inflation factor derived from the annual Implicit Price Deflator for Gross National Product

as published by the U. S. Department of Commerce in its Survey of Current Business. The inflation factor shall be calculated by dividing the latest published annual Deflator by the Deflator for the previous year. The result is the inflation factor. The adjusted closure cost estimate shall equal the latest closure cost estimate times the inflation factor.

(5) On the effective date of this section, the owner or operator of a disposal facility shall have a written estimate of the annual cost of post-closure monitoring and maintenance of the facility. The owner or operator shall keep this estimate, and all subsequent estimates required in this subsection at the facility.

(6) The owner or operator shall prepare a new annual post-closure cost estimate whenever a change in the post-closure plan affects the cost of post-closure care. The latest post-closure cost estimate is calculated by multiplying the latest annual post-closure cost estimate by 30.

(7) On each anniversary of the effective date of this section, during the operating life of the facility, the owner or operator shall adjust the latest post-closure cost estimate using the inflation factor calculated in accordance with paragraph (4). The adjusted post-closure cost estimate shall equal the latest post-closure cost estimate times the inflation factor.

(q) *Use and management of containers.*

(1) If a container holding hazardous waste is not in good condition, or if it begins to leak, the owner or operator shall transfer the hazardous waste from the defective container to a container that is in good condition or manage the waste in some way that complies with this section.

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

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

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

(5) The owner or operator shall inspect areas where containers are stored, at least weekly, for leaks and for deterioration caused by corrosion or other factors.

(6) Containers holding ignitable or reactive waste shall be set back at least 50 feet — 15 meters — from the facility's property line.

(7) Incompatible wastes, or incompatible wastes and materials — see Appendix IV of this section — shall not be placed in the same container, unless subsection (g)(2) is complied with.

(8) Hazardous waste shall not be placed in an unwashed container that previously held an incompatible waste or material — see Appendix IV of this section — unless subsection (g)(2) is complied with.

(9) A storage container holding a hazardous waste that is incompatible with any waste or other materials stored nearby in other containers, piles, open tanks, or surface impoundments, shall be separated from the other materials or protected from them by means of an impermeable dike, berm, wall, or other device.

(10) Container storage areas shall have a containment system capable of collecting and holding spills, leaks, and precipitation. The containment system shall:

(i) Have an impervious base underlying the containers which is free of cracks or gaps so as to contain leaks, spills, and accumulated rainfall. All joints in an impervious base shall be sealed with appropriate sealants.

(ii) Provide efficient drainage from the base to a sump or collection system.

(iii) Have sufficient capacity to contain the entire volume of the largest container or 10% of the total volume of all the containers, whichever is greater.

(11) Run-on into the containment system shall be prevented.

(12) Spilled or leaked waste and accumulated precipitation shall be removed from the sump or collection system with sufficient frequency to prevent overflow.

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

(14) Storage of flowable liquid wastes — less than 20% solids by dry weight and flowable — in containers of less than 110 gallons capacity shall be in accordance with the following criteria unless otherwise approved by the Department:

(i) For indoor storage of reactive or ignitable hazardous waste, the total maximum container height shall not exceed 6 feet. The containers shall be grouped so that the maximum width and depth of a group is no greater than the area that would contain four 55 gallon drums wide by four 55 gallon drums deep — approximately 8 feet by 8 feet — or the containers shall be grouped so that the maximum width of a group is no greater than the area that would contain two 55 gallon drums deep, with the length of the group so limited that at least a five foot wide aisle surrounds the group. Each eight foot by eight foot group shall be separated by at least a five foot wide aisle.

(ii) For outdoor storage of reactive or ignitable hazardous waste, the total container height shall not exceed 9 feet. The maximum width and depth of a group of such containers shall not exceed the equivalent of eight 55 gallon drums wide by eight 55 gallon drums deep. Each group shall be separated by at least a five foot wide aisle from any adjacent group. A main aisle or accessway at least 12 feet wide shall be maintained through a container storage area. A minimum 40 foot setback from a building shall be maintained for all outdoor container storage of reactive or ignitable hazardous wastes.

(iii) For indoor or outdoor storage of non-reactive or non-ignitable hazardous waste, the total container height shall not exceed 9 feet. The maximum width and depth of a group of containers shall provide a configuration and aisle space which insures access for purposes of inspection, containment, and remedial action with emergency vehicles. The configuration shall be specified in the permit application and shall be approved in writing by the Department.

(r) *Tanks.*

(1) This subsection shall apply to owners and operators of facilities that use tanks to treat or store hazardous waste except as otherwise provided in subsection (a) of this section.

(2) Treatment or storage of hazardous waste in tanks shall comply with subsection (g)(2).

(3) Hazardous waste or treatment reagents shall not be placed in a tank if they could cause the tank or its inner liner to rupture, leak, corrode, or otherwise fail before the end of its intended life.

(4) Uncovered tanks shall be operated to ensure at least 60 centimeters (2 feet) of freeboard, unless the tank is equipped with an overflow alarm and an overflow device to a standby tank with a capacity equal to or exceeding the volume of the top 60 centimeters (2 feet) of the uncovered tank.

(5) Where hazardous waste is continuously fed into a tank, the tank shall be equipped with a means to stop the inflow.

(6) For liquid storage in above ground tanks or partially above ground tanks, there shall be a containment structure with a capacity that equals or exceeds the largest above ground tank volume plus a reasonable allowance for precipitation based on local weather conditions and plant operation. The requirements of this paragraph shall be complied with within 6 months after the effective date of this section.

(7) Whenever a tank is to be used to chemically treat or store a hazardous waste which is substantially different from waste previously treated or stored in that tank, or chemically treat hazardous waste with a substantially different process than any previously used in that tank, the owner or operator shall, before treating or storing the different waste or using the different process, conduct waste analyses and trial treatment or storage tests, or obtain written documented information on similar storage or treatment of similar waste under similar operating conditions to show that this proposed treatment or storage will meet all applicable requirements of paragraphs (1) — (3).

(8) The owner or operator of a tank shall inspect, where present:

(i) Discharge control equipment at least once each operating day, to ensure that it is in good working order.

(ii) Data gathered from monitoring equipment at least once each operating day, to ensure that the tank is being operated according to its design.

(iii) The level of waste in the tank, at least once each operating day, to ensure compliance with paragraph (4).

(iv) The construction materials of the tank, at least weekly, to detect corrosion or leaking of fixtures or seams.

(v) The construction materials of, and the area immediately surrounding, discharge confinement structures at least weekly to detect erosion or obvious signs of leakage.

(9) At closure, all hazardous waste and hazardous waste residues shall be removed from tanks, discharge control equipment, and discharge confinement structures.

(10) Ignitable or reactive waste shall not be placed in a tank, unless:

(i) the waste is treated, rendered, or mixed before or immediately after placement in the tank so that the resulting waste, mixture, or dissolution of material no longer meets the definition of ignitable or reactive waste and paragraph (g)(2) is complied with; or

(ii) the waste is stored or treated in such a way that it is protected from material or conditions which may cause the waste to ignite or react; or

(iii) The tank, by written Department approval, is used solely for emergencies.

(11) The owner or operator of a facility which treats or stores ignitable or reactive waste in covered tanks shall comply with National Fire Protection Association (NFPA) buffer zone requirements for tanks, contained in Tables 2-1 through 2-6 of the "Flammable and Combustible Code — 1977".

(12) Incompatible waste, or incompatible waste and materials, see Appendix IV of this section, shall not be placed in the same tank, in compliance with subsection (g)(2).

(13) Hazardous waste shall not be placed in an unwashed tank which previously held an incompatible waste or material in compliance with subsection (g)(2).

(s) *Surface impoundments.*

(1) This subsection shall apply to owners and operators of facilities that use surface impoundments to treat, store, or dispose of hazardous waste unless otherwise provided in subsection (a).

(2) Sufficient freeboard shall be maintained in a surface impoundment to prevent any overtopping of the dike by overfilling, wave action, or a storm. There shall be at least 60 centimeters (2 feet) of freeboard.

(3) All earthen dikes shall have a protective cover, such as suitable vegetation, rock riprap, or non-erodible material to minimize wind and water erosion and preserve structural integrity.

(4) Whenever a surface impoundment is to be used to chemically treat a hazardous waste which is substantially different from waste previously treated in that impoundment, or chemically treat hazardous waste with a substantially different process than any previously used in that impoundment, the owner or operator shall, before treating the different waste or using the different process, conduct waste analyses and trial treatment tests, or obtain written, documented information on similar treatment of similar waste under similar operating conditions.

(5) The owner or operator shall comply with the requirements of subsection (g)(2).

(6) The owner or operator shall inspect the following:

(i) The freeboard level at least once each operating day.

(ii) The surface impoundment, including dikes and vegetation surrounding the dike, at least once a week to detect leaks, deterioration, or failures in the impoundment.

(7) At closure, the owner or operator may elect to remove from the impoundment the following:

(i) Standing liquids.

(ii) Waste and waste residues.

(iii) The liner, if any.

(iv) Underlying and surrounding contaminated soil.

(8) If the owner or operator removes all the impoundment materials listed in paragraph (7), or can demonstrate that none of the materials listed in paragraph (7) remaining at any state of removal are hazardous wastes, the impoundment is not further subject to the requirements of this subsection.

(9) If the owner or operator does not remove all the impoundment materials listed in paragraph (7), or does not make the demonstration described in paragraph (8), he shall close the impoundment and provide post-closure care as for a landfill in subsections (o) and (y). If necessary to support the final cover specified in the approved closure plan, the owner or operator shall treat remaining liquids, residues, and soils by removal of liquids, drying, or other means.

(10) Ignitable or reactive waste shall not be placed in a surface impoundment, unless:

(i) the waste is treated, rendered, or mixed before or immediately after placement in the impoundment so that the resulting waste, mixture, or dissolution of material no longer meets the definition of ignitable or reactive waste; and subsection (g)(2) is complied with; or

(ii) the surface impoundment is used solely for emergencies after approval by the Department.

(11) Incompatible wastes, or incompatible wastes and materials, see Appendix IV, shall not be placed in the

same surface impoundment, unless subsection (g)(2) is complied with.

(t) *Waste piles.*

(1) This subsection shall apply to owners and operators of facilities that treat or store hazardous waste in piles except as otherwise provided in subsection (a). A pile of hazardous waste shall be managed as a landfill under subsection (v) if the pile is used as a disposal facility.

(2) The owner or operator of a pile containing hazardous waste which could be subject to dispersal by wind shall cover or otherwise manage the pile so that wind dispersal is controlled.

(3) The owner or operator shall analyze a representative sample of waste from each incoming shipment before adding the waste to an existing pile, unless:

(i) the only wastes the facility receives are amenable to piling and are compatible with each other; or

(ii) the waste received is compatible with the waste in the pile to which it is to be added.

(4) The analysis conducted shall be capable of differentiating between the types of hazardous waste the owner or operator places in piles, so that mixing of incompatible waste does not inadvertently occur. The analysis shall include a visual comparison of color and texture.

(5) If leachate or run-off from a pile is a hazardous waste, then either:

(i) the pile shall be placed on an impermeable base that is compatible with the waste under conditions of treatment or storage, run-on shall be diverted away from the pile, and any leachate and run-off from the pile shall be collected and managed as a hazardous waste; or

(ii) the pile shall be protected from precipitation and run-on by some other means; and

(iii) no liquids or wastes containing free liquids shall be placed in the pile.

(6) The date for compliance with paragraph (5)(i) and (ii) is 12 months after the effective date of these regulations or earlier date as specified by the Department.

(7) Ignitable or reactive waste shall not be placed in a pile, unless:

(i) 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 subsection (g)(2), or

(ii) 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) Incompatible wastes and materials, see Appendix IV, shall not be placed in the same pile, unless subsection (g)(2) is complied with.

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

(10) Hazardous waste shall not be piled on the same area where incompatible wastes or materials were previously piled, unless the area has been decontaminated sufficiently to ensure compliance with subsection (g)(2).

(u) *Land treatment.*

(1) This subsection shall apply to owners and operators of hazardous waste land treatment facilities except as otherwise provided in subsection (a).

(2) Hazardous waste shall not be placed in or on a land treatment facility unless the waste can be made nonhazardous by biological degradation or chemical reactions occurring in or on the soil.

(3) Run-on shall be diverted away from the land treatment facility.

(4) Run-off from a land treatment facility shall be collected. If the collected run-off is a hazardous waste under § 75.261 (relating to criteria, identification, and listing of hazardous waste), it shall be managed as a hazardous waste in accordance with all applicable requirements.

(5) The date for compliance with paragraphs (3) and (4) is 12 months after the effective date of this section or an earlier date as specified by the Department.

(6) Before placing a hazardous waste in or on a land treatment facility, the owner or operator shall:

(i) determine the concentrations in the waste of any substances which exceed the maximum concentrations contained in Table I of § 75.261 (relating to criteria, identification, and listing of hazardous wastes) that cause a waste to exhibit the EP toxicity characteristic;

(ii) for any waste listed in § 75.261 (relating to criteria, identification, and listing of hazardous wastes) determine the concentrations of substances which caused the waste to be listed as a hazardous waste; and

(iii) if food chain crops are grown, determine the concentrations in the waste of arsenic, cadmium, lead, and mercury, unless the owner or operator has written, documented data that show that these constituents are not present.

(7) An owner or operator of a hazardous waste land treatment facility on which food chain crops are being grown, or have been grown, or will be grown in the future, shall notify the Department within 60 days after the effective date of this section.

(8) Food chain crops shall not be grown on the treated area of a hazardous waste land treatment facility unless the owner or operator can demonstrate to the Department, based on field testing, that any arsenic, lead, mercury, or other constituents identified under paragraph (6)(ii):

(i) will not be transferred to the food portion of the crop by plant uptake or direct contact, and will not otherwise be ingested by food chain animals; and

(ii) will not occur in greater concentrations in the crops grown on the land treatment facility than in the same crops grown on untreated similar soils under similar conditions in the same region.

(9) The information necessary to make the demonstration required by paragaph (8) shall be retained at the facility and shall at a minimum:

(i) be based upon tests for the specific waste and application rates being used at the facility; and

(ii) include plant tissue analysis, soil profile descriptions from test pits dug in representative areas of all soil series mapped on the facility by the USDA Soil Conservation Service or a qualified soil scientist, soil chemical analysis, sample selection criteria, sample size determination, analytical methods, and statistical procedures.

(10) Food chain crops shall not be grown on a land treatment facility receiving waste that contains cadmium unless all the following requirements are met:

(i) The pH of the soil affected by the waste is 6.5 or greater at the time of each waste application, except for waste containing cadmium at concentrations of 2 mg/kg (dry weight) or less.

(ii) The annual application of cadmium from waste does not exceed 0.5 kilograms per hectare (kg/ha) on land used for production of tobacco, or leafy vegetables or root crops grown for human consumption. For other food chain crops, the annual cadmium application rate shall not exceed:

Time Period	Annual Cadmium Application Rate (kg/ha)	(lb/ac)
Present to June 30, 1984	2.0	2.78
July 1, 1984 to Dec. 31, 1986	1.25	1.12

(iii) The cumulative lifetime application of cadmium from waste shall not exceed the levels in either clauses (A) or (B).

(A) Maximum cumulative lifetime application (kg/ha)

Soil cation exchange capacity (meq/100g)	Background soil pH less than 6.5	Background soil pH greater than 6.5
less than 5	5	5
5-15	5	10
greater than 15	5	20

(B) For soils with a background pH of less than 6.5, the cumulative lifetime cadmium application rate shall not exceed the levels below, provided that the pH of the soil affected by the waste is adjusted to and maintained at 6.5 or greater whenever food chain crops are grown.

Soil cation exchange capacity (meq/100g)	Maximum cumulative application (kg/ha)
less than 5	5
5-15	10
greater than 15	20

(iv) The only food chain crop produced is animal feed.

(v) The pH of the waste and the soil (mixture) is 6.5 or greater at the time of waste application and at the time the crop is planted, and this pH level is maintained whenever food chain crops are grown.

(vi) There is a facility operating plan which demonstrates how the animal feed will be distributed to preclude ingestion by humans. The facility operating plan shall describe the measures to be taken to safeguard against possible health hazards from cadmium entering the food chain, which may result from alternative land uses.

(vii) Future property owners are notified by a stipulation in the property deed which states that the property has received waste at high cadmium application rates and that food chain crops should not be grown due to a possible health hazard.

(viii) The Department as it deems necessary may require additional conditions and restrictions for the demonstration project depending on the design and the site.

(ix) A conceptual design of the plan shall be approved by the Department prior to the commencement of the demonstration project.

(11) The owner or operator shall implement a written Unsaturated Zone Monitoring (UZM) Plan which is designed to:

(i) Detect the vertical migration of hazardous waste and hazardous waste constituents under the active portion of the land treatment facility; and

(ii) Provide information on the background concentrations of the hazardous waste and hazardous waste constituents in similar but untreated soils nearby; this background monitoring shall be conducted before or in conjunction with the monitoring required under paragraph (11)(i) of this subsection.

(12) The Unsaturated Zone Monitoring Plan shall include, at a minimum:

(i) soil monitoring using soil samples; and

(ii) soil-pore water monitoring using devices such as lysimeters.

(13) To comply with paragraph (11)(i), the owner or operator shall demonstrate in his Unsaturated Zone Monitoring Plan that:

(i) the depth at which soil and soil-pore water samples are to be taken is below the depth to which the waste is incorporated into the soil;

(ii) the number of soil and soil-pore water samples to be taken is based on the variability of:

(A) the hazardous waste constituents in the waste and in the soil; and

(B) the soil series and phases in the land treatment area; and

(iii) the frequency and timing of soil and soil-pore water sampling is based on the frequency, time and rate of waste application, proximity to ground water, and soil permeability.

(14) The owner or operator shall retain at the facility his Unsaturated Zone Monitoring Plan, and the rationale used in developing the plan.

(15) The owner or operator shall analyze the soil and soil-pore water samples for the hazardous waste constituents that were found in the waste during the waste analysis under paragraphs (6)(i) and (ii).

(16) The owner or operator of a land treatment facility shall maintain records of the application dates, application rates, quantities, and location of each hazardous waste placed in the facility, in the operating record required in subsection (k).

(17) In the closure and post-closure plan required in subsection (o) the owner or operator shall address the following objectives and indicate how they will be achieved.

(i) control of the migration of hazardous waste and hazardous waste constituents from the treated area into the ground water;

(ii) control of the discharge of contaminated run-off from the facility into surface water or ground water;

(iii) control of the emission of airborne particulate contaminants caused by wind erosion; and

(iv) Compliance with paragraphs (7) — (10) concerning the growth of food chain crops.

(18) The owner or operator shall consider at least the following factors in addressing the closure and post-closure care objectives of paragraph (17).

(i) type and amount of hazardous waste and hazardous waste constituents applied to the land treatment facility;

(ii) the mobility and the expected rate of migration of the hazardous waste and hazardous waste constituents;

(iii) site location, topography, and surrounding land use, with respect to the potential effects of pollutant migration;

(iv) climate, including amount, frequency, and pH of precipitation;

(v) geological and soil profiles, surface and subsurface hydrology of the site, and soil chemical characteristics, including at least cation exchange capacity, total organic carbon, and pH;

(vi) unsaturated zone monitoring information obtained under paragraphs (11) — (15); and

(vii) type, concentration, and depth of migration of hazardous waste con-

stituents in the soil as compared to their background concentrations.

(19) The owner or operator shall consider at least the following methods in addressing the closure and post-closure care objectives of paragraph (17):

(i) removal of contaminated soils;

(ii) placement of a final cover, considering:

(A) functions of the soil cover; and

(B) characteristics of the soil cover, including material, final surface contours, thickness, porosity and permeability, slope, length of slope, and type of vegetation on the cover;

(iii) collection and treatment of runoff;

(iv) diversion structures to prevent surface water run-on from entering the treated area; and

(v) monitoring of soil, soil-pore water, and ground water.

(20) In addition to the requirements of subsection (o)(10) — (13), during the post-closure care period the owner or operator of a land treatment facility shall:

(i) maintain any unsaturated zone monitoring system, and collect and analyze samples from this system in a manner and frequency specified in the post-closure plan;

(ii) restrict access to the facility as appropriate for its post-closure use; and

(iii) assure that growth of food chain crops complies with paragraphs (7) — (10).

(21) Ignitable or reactive waste shall not be land treated unless approved by the Department.

(22) Incompatible wastes, or incompatible wastes and materials, see Appendix IV, shall not be placed in the same land treatment area, unless subsection (g)(2) is complied with.

(v) *Landfills.*

(1) This subsection applies to owners and operators of facilities that dispose of hazardous waste in landfills except as otherwise provided in subsection (a). A waste pile used as a disposal facility is a landfill and is governed by this subsection.

(2) Run-on shall be diverted away from the landfill.

(3) Run-off from active portions of a landfill shall be collected. If the collected run-off is a hazardous waste, it shall be managed as a hazardous waste in accordance with all applicable requirements.

(4) The date for compliance with paragraphs (2) and (3) shall be 12 months after the effective date of this section or earlier as determined by the Department.

(5) The owner or operator of a landfill containing hazardous waste which is subject to dispersal by wind shall cover or otherwise manage the landfill so that wind dispersal of the hazardous waste is controlled.

(6) The owner or operator of a landfill shall maintain the following items in the operating record required in subsection (k).

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

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

(7) The owner or operator shall place a final cover over the landfill, and the closure plan under paragraphs (o)(3) — (5) shall specify the function and design of the cover. In the post-closure plan the owner or operator shall include the post-closure care requirements of paragraph (10).

(8) In the closure and post-closure plans, the owner or operator shall address the following objectives and indicate how they will be achieved:

(i) control of pollutant migration from the facility by ground water, surface water, and air;

(ii) control of surface water infiltration, including prevention of ponding; and

(iii) prevention of erosion.

(9) The owner or operator shall consider at least the following factors in addressing the closure and post-closure care objectives of paragraph (8).

(i) type and amount of hazardous waste and hazardous waste constituents in the landfill;

(ii) the mobility and the expected rate of migration of the hazardous waste and hazardous waste constituents;

(iii) site location, topography, and surrounding land use, with respect to the potential effects of pollutant migration;

(iv) climate, including amount, frequency, and pH of precipitation;

(v) characteristics of the cover including material, final surface contours, thickness, porosity and permeability, slope, length of slope, and type of vegetation on the cover; and

(vi) geological and soil profiles and surface and subsurface hydrology of the site.

(10) In addition to the requirements of subsection (o), during the post-closure care period, the owner or operator of a hazardous waste landfill shall:

(i) maintain the function and integrity of the final cover as specified in the approved closure plan;

(ii) maintain and monitor the leachate collection, removal, and treatment system, if there is one present in the landfill, to prevent excess accumulation of leachate in the system. The collected leachate is a hazardous waste, unless it is determined to be non-hazardous in accordance with § 75.261(b)(4), and shall be managed as a hazardous waste in accordance with all applicable requirements;

(iii) maintain and monitor the gas collection and control system, if there is one present in the landfill, to control the vertical and horizontal escape of gases;

(iv) protect and maintain surveyed benchmarks; and

(v) restrict access to the landfill as appropriate for its post-closure use.

(11) Ignitable or reactive waste shall not be placed in a landfill, unless approved by the Department.

(12) Incompatible wastes, or incompatible wastes and materials, see Appendix IV of this section, shall not be placed in the same landfill cell unless paragraph (g)(2) is complied with.

(13) Liquid waste and waste containing free liquids shall not be placed in a landfill. Any hazardous waste to be disposed of in a landfill shall have greater than 20% solids content by dry weight and shall not be flowable. Flowable refers to flow in the sense of pourable as a liquid. The date for compliance with this requirement shall be 12 months after the effective date of these regulations or earlier as determined by the Department. Written approval shall be obtained from the Department to continue such disposal activities during this 12 month period.

(14) No hazardous waste shall be co-disposed with municipal waste unless approved by the Department.

(15) An empty container shall be crushed flat, shredded, or similarly reduced in volume before it is buried in the landfill.

(w) *Incinerators.*

(1) The requirements of this subsection apply to owners and operators of facilities that dispose hazardous waste in incinerators, except as otherwise provided in subsection (a).

(2) Before adding hazardous waste in an incinerator, the owner or operator shall bring the incinerator to steady state (normal) conditions of operation, including steady state operating temperature and air flow, using auxiliary fuel or other means.

(3) The owner or operator shall sufficiently analyze any type of waste which has not been previously burned in the incinerator to enable him to establish steady state (normal) operating conditions including waste and auxiliary fuel feed and air flow to determine the type of pollutants which might be emitted. At a minimum, the analysis shall determine:

(i) heating value of the waste;

(ii) halogen content and sulfur content; and

(iii) Concentrations in the waste of lead and mercury, unless the owner or operator has written, documented data that show that the element is not present.

(4) The owner or operator shall conduct, as a minimum, the following monitoring and inspections when incinerating hazardous waste:

(i) Existing instruments which relate to combustion and emission control shall be monitored at least every 15 minutes. Appropriate corrections to maintain steady state combustion conditions shall be made immediately either automatically or by the operator. Instruments which relate to combustion and emission control would normally include those measuring waste feed, auxiliary fuel feed, air flow, incinerator temperature, scrubber flow, scrubber pH, and relevant level controls.

(ii) The stack plume emissions shall be observed visually at least hourly for normal appearance, color, and opacity. The operator shall immediately make any indicated operating corrections necessary to return visible emissions to their normal appearance.

(iii) The complete incinerator and associated equipment — pumps, valves, conveyors, pipes, and the like — shall be inspected at least daily for leaks, spills, and fugitive emissions, and all emergency shutdown controls and system alarms shall be checked to assure proper operation.

(5) At closure, the owner or operator shall remove all hazardous waste and hazardous waste residues including but not limited to ash, scrubber waters, and scrubber sludges from the incinerator.

(6) An owner or operator of a combustion unit or process as defined in Chapter 121 which thermally destructs a hazardous waste shall not be required to obtain a Solid Waste Management permit for the construction and operation of a boiler process, but shall be required to obtain an air quality plan approval pursuant to Chapter 127, and shall also be subject to the following requirements:

(i) Submission of an analysis along with the information on forms specified by the Department as indicated in paragraph (3).

(ii) Submission of forms specified by the Department for approval to dispose of ash, scrubber water residues, scrubber water, and other residues.

(iii) An approved air quality plan shall be deemed to constitute a Solid Waste Management permit under this section.

(x) *Thermal treatment.*

(1) This subsection applies to owners and operators of facilities that thermally treat hazardous waste in devices other than incinerators unless otherwise provided in subsection (a). Thermal treatment in incinerators is subject to the requirements of subsection (w).

(2) Before adding hazardous waste, the owner or operator shall bring his thermal process to steady state (normal) conditions of operation, including steady state operating temperature, using auxiliary fuel or other means, unless the process is a non-continuous (batch) thermal treatment process which requires a complete thermal cycle to treat a discrete quantity of hazardous waste.

(3) The owner or operator shall sufficiently analyze any type of waste which has not been previously treated in his thermal treatment process to enable him to establish steady state (normal) or other operating conditions appropriate for a non-continuous process, including waste and auxiliary fuel feed and to determine the type of pollutants which might be emitted. At a minimum, the analysis shall determine:

(i) heating value of the waste;

(ii) halogen content and sulfur content in the waste; and

(iii) concentrations in the waste of lead and mercury, unless the owner or operator has written, documented data that show that the element is not present.

(4) The owner or operator shall conduct, as a minimum, the following monitoring and inspections when thermally treating hazardous waste:

(i) Existing instruments which relate to temperature and emission control — if an emission control device is present — shall be monitored at least every 15 minutes. Appropriate corrections to maintain steady state or other appropriate thermal treatment conditions shall be made immediately either automatically or by the operator. Instruments which relate to temperature and emission control would normally include those measuring waste feed, auxiliary fuel feed, treatment process temperature, and relevant process flow and level controls.

(ii) The stack plume (emissions) where present, shall be observed visually at least hourly for normal appearance (color and opacity). The operator shall immediately make any indicated operating corrections necessary to return any visible emissions to their normal appearance.

(iii) The complete thermal treatment process and associated equipment — pumps, valves, conveyors, pipes, and the like — shall be inspected at least daily for leaks, spills, and fugitive emissions, and all emergency shutdown controls and system alarms shall be checked to assure proper operation.

(5) At closure, the owner or operator shall remove all hazardous waste residues, including but not limited to, ash from the thermal process or equipment

(6) Open burning of hazardous waste is prohibited except for the open burning and detonation of waste explosives. Waste explosives include waste which has the potential to detonate and bulk military propellants which cannot safely be disposed of through other modes of treatment. Detonation is an explosion in which chemical transformation passes through the material faster than the speed of sound — 0.33 kilometers/second at sea level. Owners or operators choosing to openly burn or detonate waste explosives shall do so in accordance with the following table and in a manner that does not threaten human health or the environment:

Pounds of Waste Explosives or Propellants	*Minimum Distance from Open Burning or Detonation to the Property of Others*
0 — 100	204 meters (670 feet)
101 — 1,000	380 meters (1,250 feet)
1,001 — 10,000	530 meters (1,730 feet)
10,001 — 30,000	690 meters (2,260 feet)

(7) The open burning of waste explosives as specified in paragraph (6) shall not be permitted in air basins as defined in § 121.1.

(y) *Chemical, physical, and biological treatment.*

(1) This subsection applies to owners and operators of facilities which treat hazardous waste by chemical, physical, or biological treatment processes in other than tanks, surface impoundments, and land treatment facilities, except as otherwise provided in subsection (a). Chemical, physical, and biological treatment of hazardous waste in tanks, surface impoundments, and land treatment facilities shall be conducted in accordance with subsections (r), (s), and (u), respectively.

(2) Chemical, physical, or biological treatment of hazardous waste shall comply with paragraph (g)(2).

(3) Hazardous waste or treatment reagents shall not be placed in the treatment process or equipment if they could cause the treatment process or equipment to rupture, leak, corrode, or otherwise fail before the end of its intended life.

(4) Where hazardous waste is continuously fed into a treatment process or equipment, the process or equipment shall be equipped with a means to stop the inflow.

(5) When a hazardous waste which is substantially different from waste previously treated in a treatment process or equipment at the facility is to be treated in that process or equipment, or a substantially different process than any previously used at the facility is to be used to chemically treat hazardous waste, the owner or operator shall before treating the different waste or using the different process or equipment:

(i) conduct waste analyses and trial treatment tests; or

(ii) obtain written, documented information on similar treatment of similar waste under similar operating conditions to show that this proposed treatment will meet all applicable requirements of paragraphs (2) and (3).

(6) The owner or operator of a treatment facility shall inspect:

(i) discharge control and safety equipment at least once each operating day, to ensure that it is in good working order;

(ii) data gathered from monitoring equipment such as pressure and temperature gauges, at least once each operating day, to ensure that the treatment process or equipment is being operated according to its design;

(iii) the construction materials of the treatment process or equipment, at least weekly, to detect corrosion or leaking of fixtures or seams; and

(iv) the construction materials of and the area immediately surrounding, discharge confinement structures, at least weekly, to detect erosion or obvious signs of leakage.

(7) At closure, all hazardous waste and hazardous waste residues shall be removed from treatment processes or equipment, discharge control equipment, and discharge confinement structures.

(8) Ignitable or reactive waste shall not be placed in a treatment process or equipment unless:

(i) The waste is treated, rendered, or mixed before or immediately after placement in the treatment process or equipment so that the resulting waste, mixture, or dissolution of material no longer meets the definition of ignitable or reactive waste, or subsection (g)(2) is complied with.

(ii) The waste is treated in such a way that it is protected from material or conditions which may cause the waste to ignite or react.

(9) Incompatible wastes, or incompatible wastes and materials — see Appendix IV of this section — shall not be placed in the same treatment process or equipment unless subsection (g)(2) is complied with.

(10) Hazardous waste shall not be placed in unwashed treatment equipment which previously held an incompatible waste or material unless subsection (g)(2) is complied with.

(z) *Hazardous waste management permit program.*

(1) This subsection sets forth specific requirements for the Hazardous Waste Management (HWM) Permit Program.

(2) Any person or municipality who owns or operates an existing hazardous waste storage or treatment facility shall be regarded as having interim status provided that:

(i) the notification requirements of § 75.267 (relating to notification of hazardous waste activities) have been complied with;

(ii) Part A of the permit application has been submitted; and

(iii) this section has been complied with.

(3) A person or municipality who owns or operates an existing hazardous waste disposal facility shall be regarded as having interim status provided that:

(i) the facility has a current solid waste permit issued by the Department; and

(ii) the requirements of paragraph (2) are complied with.

(4) For an existing facility, notification completed pursuant to section 3010 of the Resource Conservation and Recovery Act (42 U.S.C.A. § 6930) and submission of Part A of the Consolidated Permit Application forms to EPA pursuant to 40 C.F.R. Part 122, Federal Register May 19, 1980 shall be deemed to satisfy the requirements of paragraph (2)(i) and (ii).

(5) HWM facility owners or operators having interim status shall be treated as having been issued a permit until such time as final Departmental action on Part A of the permit application is made. During the Department's revision or subsequent review of Part A of the permit application, if it is determined that the HWM facility fails to meet the standards under this section or if the application is deficient, the Department will notify the owner or operator of the determination and may notify the HWM facility that it is no longer entitled to interim status.

(6) At any time after promulgation of § 75.264, the owner or operator of an existing HWM facility may be required to submit Part B of the permit application. An owner or operator shall be allowed at least six months from the date of request to submit Part B of the application before the application is due to the Department. Any owner or operator of an existing HWM facility may voluntarily submit Part B of the application at any time. In no instance shall a HWM facility owner or operator continue to store or treat hazardous waste under interim status without obtaining a HWM permit from the Department before September 5, 1982.

(7) Failure to furnish a requested Part A or Part B application on time, or to furnish in full the information required by the Part A or Part B application, shall be grounds for termination of interim status.

(8) Not later than 30 days after the effective date of any revisions to § 75.261, listing or designating additional wastes as hazardous, the owner or operator of a HWM facility treating, storing, or disposing of such wastes shall file a Part A or an amended Part A application with the Department. The owner or operator of

a HWM facility who fails to comply with this requirement shall not received interim status as to the wastes not covered by a duly filed Part A permit application.

(9) No person or municipality shall begin physical construction on a new HWM facility without having submitted Part A and Part B of the permit application and received a HWM permit from the Department. An application for a permit for a new HWM facility including both Part A and Part B shall be filed with the Department any time after promulgation of § 75.264.

(10) Applications for a permit shall be made by a person or municipality who is required to have a permit, including new applicants and permittees with expiring permits, and shall complete, sign, and submit an application to the Department as described in paragraph (13). Persons or municipalities currently authorized with interim status under the act shall apply for permits when required by the Department. Publicly owned treatment works meeting the requirements of paragraph (14) need not apply.

(11) All applicants for HWM permits shall at a minimum provide all the information required in the Part A and Part B application forms. The Department may require additional information. The Department will return incomplete applications to the applicant.

(12) Applicants shall keep records of all data used to complete Part A and Part B permit applications for a period of at least three years from the date the application is signed.

(13) It shall be the operator's duty to obtain a permit and the owner and operator shall sign the permit application.

(i) All permit applications shall be signed as follows:

(A) by a principal executive officer of at least the level of vice-president for a corporation;

(B) by a general partner or the proprietor, for a partnership or sole proprietorship, respectively; or

(C) by either a principal executive officer or ranking elected official for a municipal, State, Federal, or other public agency.

(ii) All reports required by permits and other information requested by the Department shall be signed by a permittee or municipality described in subparagraph (13)(i), or by an authorized representative. The Department shall be notified in writing of any change in authorization.

(iii) For certification, any person signing a document under subparagraph (13)(i) of this section shall certify as follows:

"I certify under penalty of law that I have personally examined and am familiar with the information submitted in this document and all attachments and that, based on my inquiry of those individuals immediately responsible for obtaining the information, I believe that the information is true, accurate, and complete. I am aware that there are significant penalties for submitting false information, including the possibility of fine and imprisonment."

(14) A publicly owned treatment works (POTW) which accepts hazardous waste for treatment shall be deemed to have a HWM permit if the following conditions are met:

(i) has an NPDES permit;

(ii) complies with the conditions of that permit; and

(iii) complies with the following provisions:

(A) Section 75.246(b) (relating to identification number);

(B) Section 75.246(j) (relating to use of manifest system);

(C) Section 75.246(k) (relating to operating records); and

(D) Section 75.264(m) (relating to quarterly facility report and additional reports).

(iv) The waste meets all Federal, State and local pretreatment requirements which would be applicable to the waste if it were being discharged into the POTW through a sewer, pipe, or similar conveyance.

(15) A HWM permit shall be effective for a fixed term not to exceed ten years. The Department may issue a permit for a duration that is less than the full allowable term.

(16) Confidentiality of information.

(i) Information submitted to the Department pursuant to this subsection may be claimed as confidential by the applicant. Any such claim shall be asserted at the time of submission in the manner prescribed in paragraph (ii) and the application form or instructions by stamping the words "confidential business information" on each page containing such information. If no claim is made at the time of submission, the Department shall make the information available to the public without further notice.

(ii) Claims of confidentiality for permit application information shall be substantiated at the time the application is submitted and shall address the following:

(A) the portions of the information claimed to be confidential;

(B) the length of time the information is to be treated as confidential;

(C) the measures taken to guard against undesired disclosure of the information to others;

(D) the extent the information has been disclosed to others and the precautions taken in connection with that disclosure;

(E) a copy of any pertinent confidentiality determinations by EPA or other Federal agency;

(F) the nature of the substantial harm to the competitive position by disclosure of the information, the reasons it should be viewed as substantial, and the relationship between the disclosure and the harm.

(iii) The Department will keep confidential information in a secure repository and shall not make such information available for inspection by the general public.

(iv) The Department will make confidential information available to any State or Federal agency for the purpose of administration of any State or Federal law.

(17) The owner or operator of an elementary neutralization unit or a wastewater treatment unit shall be deemed to have an HWM permit if the following requirements are complied with:

(i) the facility is a captive facility and the only waste treated is generated on-site;

(ii) has an NPDES permit if required and complies with the conditions of that permit;

(iii) subsections (b), (d), (e), (h), (i), (k), and (m) of sections 75.264 and 75.265(y)(2) — (10).

(18) The following general information, at a minimum, shall accompany the submission of all Part B applications for new and existing HWM facilities:

(i) A written report describing the operational concept of treatment, storage, or disposal. This report shall be organized by addressing all applicable sections and subsections of these regulations. The report shall include all applicable written operational plans required by regulations, a description explaining the daily operational methodology of the proposed facility, expected waste types, sources, and volumes, and detailed descriptions of

all unit processes of all treatment, storage, and/or disposal facilities.

(ii) Maps and design drawings, including a title sheet, a 7.5 minute USGS topographic map showing the site location, site plan, and general arrangement plans and elevations. Adequate plans and maps shall be submitted in the number prescribed by the Department and shall be drawn to the scale of one inch equals 200 feet or larger for plan views and shall contain ten-foot contour intervals. Maps shall be limited in physical size to no greater than 30" vertical height and 36" horizontal width and be clear and legible. Sections and elevations shall have a horizontal scale of not more than 200 feet to the inch and vertical scale of not more than 10 feet to the inch. A grid and/or coordinate control system for the entire site shall also be included on the design drawings. This horizontal control system shall consist of a grid not to exceed two hundred foot square sections. The grid shall be controlled and tied to a permanent, physical marker or other object located on site. The vertical control shall be tied to a benchmark elevation established for the permanent marker. Further information may be required by the Department to insure that the proposed hazardous waste management facility complies with the provisions of this chapter.

(iii) Construction and manufacturing design specifications and supporting design calculations. These specifications shall include quality control methods, procedures, and tests to be used during construction of the HWM facility.

(iv) An environmental assessment report presented on forms specified by the Department.

(v) A compliance history of the site owner and operator presented on forms provided by the Department.

(19) All drawings, reports, and specifications shall bear the imprint of the seal of the registered professional engineer, and the title sheet shall bear the imprint of the seal and the engineer's signature. All design drawings shall show the scale in feet, the title, the north point, date prepared, date revised, datum, and sheet number.

(20) The following specific information is required to be submitted with Part B of the application for all landfills, surface impoundments, and land treatment facilities. For these HWM facilities, the application shall be submitted in two phases (Phases I and II) for written Department approval. These phases may be submitted separately or together.

(i) Phase I application requirements:

(A) Information on topographic maps shall include as a minimum the following:

(I) Borrow areas, on-site or off-site. Borrow shall be the material excavated for the construction of fills, use as cover material, or other construction purposes.

(II) Location of public and private water supplies, wells, springs, streams, swamps, or other bodies of water within one-quarter mile of the proposed landfill surface impoundment, or land treatment site property lines.

(B) Certain factors may serve to limit HWM facility operations and information pertaining to these factors on-site and within one-quarter mile of the landfill surface impoundment, or land treatment site property lines shall be included as follows:

(I) Location of underground and surface mines and maps showing the extent of deep mine workings, elevation of the mine pool, and location of mine pool discharges.

(II) Location of gas and oil wells.

(III) Location of high-tension power line rights-of-way.

(IV) Location of pipeline rights-of-way.

(V) Location of geologic and hydrologic features.

(C) A soils, geologic, and ground water report of the characteristics of the site shall be included as required by the Department. This report shall be based on a soils, geology, and hydrology investigation and on a published standard soil survey or equivalent data, and shall encompass the criteria below:

(I) A sufficient number of excavations and borings or wells shall be provided to validly and conclusively determine the soil, geology, and ground water characteristics of the site. Exploratory borings or wells shall be provided. These borings or wells shall be drilled ten feet into the ground water or bedrock; or in the absence of ground water or bedrock, a distance equal to at least twice the planned depth of hazardous waste to be deposited. A minimum of three borings or wells shall be drilled 10 feet into the ground water to delineate ground-water flow systems. A water table contour map shall be interpreted and drawn based on these borings or wells that will accurately depict the depth and directions of ground-water movement and contour elevations based on the benchmark elevation established under subparagraph (18)(ii). Any boring not cased and capped or used for groundwater monitoring purposes shall be filled with grout.

(II) Detailed soil descriptions taken from on-site test excavations and those from any other source of soil material proposed for use at the facility. Descriptions shall be written by professionals knowledgeable in the field of soil morphology and classification, and shall be written following the format generally accepted for soil descriptions in this field, and at a minimum shall include for each horizon: depth and thickness, matrix color, texture, structure, consistence, degree of mottling if present, mottle colors if present, and coarse fragment content. All classifications and interpretations on soil materials shall be based on criteria as specified in soil taxonomy and the USDA Soil Survey Manual. Locations of all test excavations shall be indicated on the plans. Detailed soil descriptions from all test excavations shall be provided.

(D) An environmental assessment report upon forms specified by the Department.

(E) A written description of the general operations, methods, and practices to be utilized at the facility.

(F) Such further information as necessary or as may be required by the Department to insure the proposed facility complies with the provisions of this chapter.

(G) When the Department has determined that the information required under this subparagraph is verified and complete, the applicant shall be notified in writing that the Phase I site evaluation has shown the site is acceptable or unacceptable. If the site is shown to be acceptable under the Phase I evaluation, this shall not assure that a hazardous waste facility permit will be issued. Written Phase I approval shall serve to notify the applicant that he may proceed with the development of the Phase II application, subject to any conditions addressed in the Phase I evaluation.

(ii) Phase II Application. Design drawings, reports, and specifications shall include:

(A) Design drawings or specifications that include details relative to:

(I) Compaction of solid waste.

(II) Application of daily cover material.

(III) Elevations and grades of final cover.

(IV) Management of surface water.

(V) Erosion control.

(VI) Revegetation procedures to be used.

(VII) Schedule of fillings.

(VIII) Site preparations.

(IX) Monitoring and measuring devices.

(X) Location and limits of areas previously filled.

(XI) Cross sections indicating the interface details between areas previously filled and areas to be filled, where applicable.

(XII) Limits of construction defined by grid controls.

(XIII) Borrow areas on-site defined by grid controls.

(XIV) Location, description, and purpose of all easements existing on-site and a definition of all title, deed, or usage restrictions relative to the site.

(XV) Location of gas, oil and other wells and all utilities on-site.

(XVI) Location of public and private water supplies on-site.

(XVII) Location of underground and surface mines on-site.

(XVIII) Cross sections shown on the plans and referenced to the grid system for horizontal location, whenever applicable.

(XIX) Grades required for required drainage of the facility.

(XX) Cross sections of the access roads and all weather roads, identifying construction materials, slopes, grades, and distances.

(XXI) Cross sections, grades and/or profiles of surface drainage diversion ditches, capacities and calculations for ditch volume.

(XXII) Grades indicating the depth of soil available at the site for suitable cover material.

(XXIII) A construction schedule in a format established by the Department.

(XXIV) Process and instrumentation diagrams for unit processes to be employed at the facility.

(XXV) Ground water contour map.

(XXVI) Other drawings, diagrams, or maps as necessary or as required by the Department to fully detail the operation of the facility provided that such additional information is pertinent to protection of human health and/or the environment.

(B) Reports or narratives and specifications that fully detail:

(I) The operations, methods and practices, and all unit processes to be employed at the facility.

(II) Waste types, volumes, and sources.

(III) All plans required by these regulations that affect the proposed facility and its operations.

(IV) Quality control methods, procedures, and tests to be used during construction.

(V) Specifications including, but not limited to, all construction information not shown on the drawings but which is necessary to inform the contractor and Department in detail of the design requirements as to the quality of materials, workmanship of fabrication of the project, and the type, size, strength, operating characteristics, and ratings of all major mechanical and electrical equipment. After completion of construction or installation and prior to operation of the facility, specifications shall be submitted to the Department showing all "as-built" specifications, including any and all modifications to the design and operation as originally submitted in the Phase II application. These "as-built" specifications shall be subject to Department review and be approved in writing by the Department before operation of the HWM facility shall begin.

(VI) Other reports, narratives, or specifications as necessary or as required by the Department, provided that the additional information is pertinent to protection of human health and/or the environment.

(21) The following specific information is required to be submitted with Part B of the application for all incinerators, waste piles, tanks, thermal treatment facilities, chemical, physical, and biological treatment facilities, and storage facilities.

(i) Information on topographic maps shall include as a minimum the following that occur within one-quarter mile of the facility's property lines.

(A) Location of public and private water supplies, wells, springs, streams, swamps or other bodies of water.

(B) Location of gas and oil wells.

(C) Location of high-tension power line rights-of-ways.

(D) Location of pipeline rights-of-ways.

(E) Location of geologic and hydrologic features.

(F) Such further information as necessary or as required by the Department to insure the proposed facility complies with the provisions of this chapter.

(ii) Detailed information on design drawings and specifications relative to:

(A) Management of surface water.

(B) Erosion control.

(C) Revegetation procedures to be used.

(D) Site preparation.

(E) Monitoring and measuring devices.

(F) Location and limits of construction defined by grid controls.

(G) Location, description, and purpose of all easements existing on-site and a definition of all title, deed, or usage restrictions relative to the site.

(H) Location of gas, oil and other wells and all utilities on-site.

(I) Location of public and private water supplies on-site.

(J) Cross sections shown on the drawings and referenced to the grid system for horizontal location, whenever applicable.

(K) Grades required for required drainage of the facility.

(L) Cross sections of the access roads and all weather roads, identifying construction materials, slopes, grades, and distances.

(M) Cross sections, grades and/or profiles of surface drainage diversion ditches, capacities and calculations for ditch volume.

(N) Process and instrumentation diagrams for unit processes to be employed at the facility.

(O) Such further information as necessary or as required by the Department to insure the proposed facility complies with the provisions of this chapter.

(iii) Reports or narratives, and specifications that fully detail:

(A) The operations, methods and practices, and all unit processes to be employed at the facility.

(B) Waste types, volumes, and sources.

(C) All plans required by these regulations that affect the proposed facility and its operations.

(D) Quality control methods, procedures, and tests to be used during construction.

(E) Specifications including, but not limited to, all construction information

not shown on the drawings but which is necessary to inform the contractor and Department in detail of the design requirements as to the quality of materials, workmanship of fabrication of the project, and the type, size, strength, operating characteristics, and ratings of all major mechanical and electrical equipment. After completion of construction or installation and prior to operation of the facility, specifications shall be submitted to the Department showing all "as-built" specifications, including any and all modifications to the design and operation as originally submitted in the Phase II application. These "as-built" specifications shall be subject to Department review and be approved in writing by the Department before operation of the HWM facility shall begin.

(F) Other reports, narratives, or specifications as necessary or as required by the Department provided that the additional information is pertinent to protection of human health and/or the environment.

(22) All facilities shall be constructed, operated, and maintained according to the design and specifications approved by the Department, and said design standards and specifications shall be incorporated as part of the permit.

(23) Any modification to the design or operation that the Department deems does not need a permit amendment shall be shown on "as-built" drawings and indicated in the report required by subsection (z)(21)(iii)(E) and shall be made available to the Department upon request. All such modifications shall require approval of the Department in writing.

(24) Any modification to the design or operation shall require a permit amendment except as otherwise provided in paragraph (23).

(25) The Department shall amend the permit or impose additional permit conditions whenever it determines there is a need to further protect the public health or the environment.

(26) Applications for a permit for hazardous waste storage, treatment, and disposal facilities shall be accompanied by a check payable to the Commonwealth of Pennsylvania according to the following schedule:

(i) Storage facilities — $1000.

(ii) Surface impoundments — $3500.

(iii) Waste piles — $1000.

(iv) Land treatment — $3500.

(v) Landfills — $5000.

(vi) Thermal treatment — $2000.

(vii) Chemical, physical, and biological treatment — $2500.

(viii) Incinerators — $2500.

§ 75.267. Notification of hazardous waste activities.

(a) *Scope.* This section applies to any person or municipality who generates, transports, stores, treats, or disposes of hazardous waste within the Commonwealth.

(b) *Notification requirements.*

(1) Not later than 90 days after promulgation or revision of regulations under § 75.261 (relating to criteria, identification, and listing of hazardous wastes) a person or municipality generating or transporting hazardous waste or owning or operating a facility for treatment, storage, or disposal of hazardous waste shall file with the Department a notification of such activity on a form designated by the Department.

(2) Not more than one such notification shall be required to be filed with respect to the same waste substance.

(3) No identified or listed hazardous waste shall be transported, treated, stored, or disposed of unless notification has been given as required in paragraph (1).

(4) A person or municipality who begins to generate hazardous waste within the Commonwealth after the initial notification period shall file with the Department a completed notification for such hazardous waste before the waste is transported, treated, stored, or disposed of.

(5) A person or municipality who owns or operates a facility where hazardous waste is treated, stored, or disposed and has not filed a notification during the 90 day period following the promulgation or revision of § 75.261 (relating to criteria, identification, and listing of hazardous waste) shall not continue hazardous waste activities until a hazardous waste permit has been obtained. Similarly, a person or municipality who plans to open a new hazardous waste treatment, storage, or disposal facility, shall obtain a hazardous waste permit before commencing operations. Owners or operators of new facilities need not submit a notification, since the permit application will fulfill the notification requirements.

(6) No person or municipality shall transport hazardous waste within the Commonwealth after the initial notification period without filing a notification form with the Department.

(7) A person or municipality who modifies hazardous waste identification characteristics, ceases production of hazardous waste, changes his status from a small quantity generator to a large quantity generator or vice-versa, or whose waste is removed from a listing in § 75.261 (relating to criteria, identification and listing of hazardous wastes) shall file a notification form with the Department.

(8) A notification to the Department will provide the following information:

(i) Name and mailing address of installation.

(ii) Location of installation.

(iii) Name, title, and phone number of installation contact.

(iv) Name of installation's legal owner.

(v) Type of hazardous waste activity.

(vi) Description of hazardous waste.

(vii) Such other information as the Department may require.

(9) Notification completed pursuant to Section 3010 of the Resource Conservation and Recovery Act of 1976 (42 U.S.C. § 6930) shall be deemed to satisfy the requirements of this section when furnished to the Department upon request.

(10) Upon receiving the notification, the Department shall assign an identification number.

Appendix I — Recordkeeping Instructions

The recordkeeping provisions of subsection (k) specify that an owner or operator shall keep a written operating record at his facility. This appendix provides additional instructions for keeping portions of the operating record.

The following information shall be recorded, as it becomes available, and maintained in the operating record until closure of the facility in the following manner:

Records of each hazardous waste received, treated, stored, or disposed of at the facility which include the following:

(1) A description by its common name and the Hazardous Waste Number from § 75.261 (relating to criteria, identification, and listing of hazardous waste) which apply to the waste. The waste description also shall include: the waste's physical form, that is, liquid, sludge, solid, or contained gas. If the waste is not listed in § 75.261(h)

(relating to criteria, identification, and listing of hazardous waste), the description also shall include the process that produced it, for example, solid filter cake from the production of _____, Hazardous Waste Number D007.

Each hazardous waste listed in § 75.261 (relating to criteria, identification, and listing of hazardous waste) and each hazardous waste characteristic defined in § 75.261 (relating to criteria, identification, and listing of hazardous waste) has a four-digit Hazardous Waste Number assigned to it. This number shall be used for recordkeeping and reporting purposes. Where a hazardous waste contains more than one listed hazardous waste, the waste description shall include all applicable Hazardous Waste Numbers.

(2) The estimated or manifest-reported weight or volume and density, where applicable, in one of the units of measure specified in Table 1 of this Appendix I.

(3) The methods — by handling codes as specified in Table 2 of this Appendix I — and dates of treatment, storage, or disposal.

Table 1

Units of Measure	*Symbol**	*Density*
Pounds	P	
Short tons (2,000 lbs)	T	
Gallons (U.S.)	G	P/G
Cubic Yards	Y	T/Y
Kilograms	K	
Tonnes (1,000 kg)	M	
Liters	L	K/L
Cubic meters	C	M/C

*Single-digit symbols are used here for data processing purposes.

Table 2 — Handling Codes for Treatment, Storage, and Disposal Methods

Enter the handling codes listed below that most closely represent the techniques used at the facility to treat, store, or dispose of each quantity of hazardous waste received.

(1) *Storage*

S01	Container (barrel, drum, and the like)
S02	Tank
S03	Waste pile
S04	Surface impoundment
S05	Other (specify)

(2) *Treatment*

(a) *Thermal Treatment*

T06	Liquid injection incinerator
T07	Rotary kiln incinerator
T08	Fluidized bed incinerator
T09	Multiple hearth incinerator
T10	Infrared furnace incinerator
T11	Molten salt destructor
T12	Pyrolysis
T13	Wet air oxidation
T14	Calcination
T15	Microwave discharge
T16	Cement kiln
T17	Lime kiln
T18	Other (specify)

(b) *Chemical Treatment*

T19	Absorption mound
T20	Absorption field
T21	Chemical fixation
T22	Chemical oxidation
T23	Chemical precipitation
T24	Chemical reduction
T25	Chlorination
T26	Chlorinolysis
T27	Cyanide destruction
T28	Degradation
T29	Detoxification
T30	Ion exchange
T31	Neutralization
T32	Ozonation
T33	Photolysis
T34	Other (specify)

(c) *Physical Treatment*

(i) *Separation of Components*

T35	Centrifugation
T36	Clarification
T37	Coagulation
T38	Decanting
T39	Encapsulation
T40	Filtration
T41	Flocculation
T42	Flotation
T43	Foaming
T44	Sedimentation
T45	Thickening
T46	Ultrafiltration
T47	Other (specify)

(ii) *Removal of specific components*

T48	Absorption-molecular sieve
T49	Activated carbon
T50	Blending
T51	Catalysis
T52	Crystallization
T53	Dialysis
T54	Distillation
T55	Electrodialysis
T56	Electrolysis
T57	Evaporation
T58	High gradient magnetic separation
T59	Leaching
T60	Liquid ion exchange
T61	Liquid-liquid extraction
T62	Reverse osmosis
T63	Solvent recovery
T64	Stripping
T65	Sand filter
T66	Other (specify)

(d) *Biological Treatment*

T67	Activated sludge
T68	Aerobic lagoon
T69	Aerobic tank
T70	Anaerobic lagoon
T71	Composting
T72	Septic tank
T73	Spray irrigation
T74	Thickening filter
T75	Trickling filter
T76	Waste stabilization pond
T77	Other (specify)
T78-79	(Reserved)

(3) *Disposal*

D80	Underground injection
D81	Landfill
D82	Land treatment
D83	Ocean disposal
D84	Surface impoundment (to be closed as a landfill)
D85	Other (specify)

Appendix II — EPA Interim Primary Drinking Water Standards

Parameter	*Maximum Level (mg/l)*
Arsenic	0.05
Barium	1.0
Cadmium	0.01
Chromium	0.05
Fluoride	1.4 — 2.4
Lead	0.05
Mercury	0.002
Nitrate (as N)	10.
Selenium	0.01
Silver	0.05
Endrin	0.0002
Lindane	0.004
Methoxychlor	0.1
Toxaphene	0.005
2,4-D	0.1
2,4,5-TP (Silvex)	0.01
Radium	5 pCi/l
Gross Alpha	15 pCi/l
Gross Beta	4 millirem/yr
Turbidity	1/TU
Coliform Bacteria	1/100 ml

Appendix III — Tests for Significance

The owner or operator shall use the Student's t-test to determine statistically significant changes in the concentration or value of an indicator parameter in periodic ground water samples when compared to the initial background concentration or value of that indicating parameter. The comparison shall consider individually each of the wells in the monitoring system. For four of the indicator parameters — specific conductance, total organic carbon, total organic halogen, and total dissolved solids — a single-tailed Student's t-test shall be used to test at the 0.01 level of significance for significant increases over background. The difference test for pH shall be a two-tailed Student's t-test at the overall 0.01 level of significance.

The Students' t-test involves calculations of the value of a t-statistic for each comparison of the mean —

average — concentration or value — based on a minimum of four replicate measurements — of an indicator parameter with its initial background concentration or value. The calculated value of the t-statistic shall then be compared to the value of the t-statistic found in a table for t-test of significance at the specified level of significance. A calculated value of "t" which exceeds the value of "t" found in the table indicates a statistically significant change in the concentration or value of the indicator parameter.

Formulae for calculation of the t-statistic and tables for t-test significance can be found in most introductory statistics texts.

Appendix IV — Examples of Potentially Incompatible Waste

Many hazardous wastes, when mixed with other wastes or materials, can produce effects which are harmful to human health or the environment, such as (1) heat or pressure, (2) fire or explosion, (3) violent reaction, (4) toxic dusts, mists, fumes, or gases, or (5) flammable fumes or gases.

Below are examples of potentially incompatible wastes, waste components, and materials, along with the harmful consequences which result from mixing materials in one group with materials in another group. The list is intended as a guide to owners or operators of treatment, storage, and disposal facilities, and to enforcement and permit granting officials, to indicate the need for special precautions when managing these potentially incompatible waste materials or components.

This list is not intended to be exhaustive. An owner or operator shall, as the regulations require, adequately analyze his wastes so that he can avoid creating uncontrolled substances or reactions of the types listed below, whether they are listed below or not.

It is possible for potentially incompatible wastes to be mixed in a way that precludes a reaction — such as adding acid to water rather than water to acid — or that neutralizes them — such as a strong acid mixed with a strong base — or that substances produced are controlled — such as by generating flammable gases in a closed tank equipped so that ignition cannot occur, and burning the gases in an incinerator.

In the lists below, the mixing of a Group A material with a Group B material may have the potential consequences as noted:

Group 1-A	*Group 1-B*
Acetylene sludge	Acid sludge
Alkaline caustic liquids	Acid and water
Alkaline cleaner	Battery acid
Alkaline corrosive liquids	Chemical cleaners
Alkaline corrosive battery fluid	Electrolyte, acid
Caustic waste water	Etching acid liquid or solvent
Lime sludge and other corrosive alkalies	Pickling liquor and other corrosive acids
Lime wastewater	Spent acid
Lime and water	Spent mixed acid
Spent caustic	Spent sulfuric acid

Potential consequences: Heat generation; violent reaction.

Group 2-A	*Group 2-B*
Aluminum	Any waste in Group 1-A or 1-B
Beryllium	
Calcium	
Lithium	
Magnesium	
Potassium	
Sodium	
Zinc powder	
Other reactive metals and metal hydrides	

Potential consequences: Fire or explosion, generation of flammable hydrogen gas.

Group 3-A	*Group 3-B*
Alcohols	Any concentrated waste in Groups 1-A or 1-B
Water	Calcium
	Lithium
	Metal hydrides
	Potassium
	SO_2, Cl_2, $SOCl_2$, PCl_3, CH_3SiCl_3
	Other water-reactive waste

Potential consequences: Fire, explosion, or heat generation of flammable or toxic gases.

Group 4-A	*Group 4-B*
Alcohols	Concentrated Group 1-A or 1-B wastes
Aldehydes	Group 2-A wastes
Halogenated hydrocarbons	
Nitrated hydrocarbons	
Unsaturated hydrocarbons	
Other reactive organic compounds and solvents	

Potential consequences: Fire, explosion, or violent reaction.

Group 5-A	*Group 5-B*
Spent cyanide and sulfide solutions	Group 1-B wastes

Potential consequences: Generation of toxic hydrogen cyanide or hydrogen sulfide gas.

Group 6-A	*Group 6-B*
Chlorates	Acetic acid and other organic acids
Chlorine	Concentrated mineral acids
Chlorites	Group 2-A wastes
Chromic acid	Group 4-A wastes
Hypochlorites	Other flammable and combustible wastes
Nitrates	
Nitric acid, fuming	
Perchlorates	
Permanganates	
Peroxides	
Other strong oxiders	

Potential consequences: Fire, explosion, or violent reaction.

APPENDIX V, TABLE 3. MINIMUM LINER DESIGN AND PERFORMANCE STANDARDS

Liner Material*	Liner Function**	Field/Lab Liner Permeability (cm/sec)	Liner Thickness (minimum)	Liner Density # (test as noted)	Remarks***
Natural clays or in-place confining layers	Primary	NA	NA	NA	Field verification of continuity of confining layer shall be evaluated through borings or backhoe pits.
	Secondary	1×10^{-7}	4 ± 0.5 ft.	NA	
	Cap	NA	NA	NA	
Hydraulic Asphalt Concrete	Primary	1×10^{-7}	4 inches	$\geq 96\%$	Minimum asphalt content shall be 6.5 — 9.0% by weight. All asphalt liners and joints shall be sealed with a seal coat of AC-20 or equivalent, applied in one or more applications for a total rate of at least 0.6 gallons/yd^2, and applied with at least a one foot wide overlap. Sections of asphalt shall be joined to adjacent sections by cutting a
	Secondary	1×10^{-7}	2 inches	$\geq 96\%$	
	Cap	1×10^{-7}	4 inches	$\geq 96\%$ (Marshall method)	

Liner Material*	Liner Function**	Field/Lab Liner Permeability (cm/sec)	Liner Thickness (minimum)	Liner Density# (test as noted)	Remarks***
					new edge on the existing section, coating the new edge with AC-20 or equivalent, butting the new section of asphalt against the coated edge, and sealing with AC-20 or equivalent.
Soil Cement	Primary	1×10^{-7}	12 inches	≥97%	Minimum cement content shall be 10% by weight. Wet-dry and freeze-thaw cycle tests (ASTM D559 and ASTM D560) shall be performed to determine optimum cement content. The type of cement used shall be the type best suited to the type of soil to be used. A seal coat of AC-20 or equivalent shall be applied.
	Secondary	1×10^{-7}	6 inches	≥97%	
	Cap	1×10^{-7}	12 inches	≥97% (standard Proctor method)	
Soil Asphalt	Primary	NA	NA	NA	A seal coat of AC-20 or equivalent shall be applied at a minimum total rate of 0.6 gal/yd² in two applications of 0.3 gal/yd² each. No cut back asphalt shall be used as a liner material. Sealer shall be applied with a minimum one foot overlap.
	Secondary	1×10^{-7}	6 inches	≥96% (Marshall method)	
	Cap	NA	NA	NA	
Sprayed Asphalt	Primary	NA	NA	NA	Liner shall be AC-20 or equivalent applied in at least 3 applications of 0.5 gal/yd², with two-foot overlap. MC-30 shall be applied to the subbase at a minimum rate of 0.5 gal/yd², with one-foot overlap.
	Secondary	1×10^{-7}	1.5 gal/yd² (0.25 inch)	3 applications 0.5 gal/yd² each	
	Cap	NA	NA	NA	
Fabric Asphalt Emulsion	Primary	1×10^{-7}	NA	NA	MC-30 shall be applied to the subbase at a minimum rate of 0.5 gal/yd², with one-foot overlap.
	Secondary	1×10^{-7}	0.3 inch	NA	
	Cap	1×10^{-7}	NA	NA	
Natural Remolded Clay	Primary	1×10^{-7}	2 feet	≥95%	
	Secondary	1×10^{-7}	1 foot	≥95%	
	Cap	1×10^{-7}	2 feet	≥95% (standard Proctor method)	
Bentonite and Bentonite-like Materials	Primary	1×10^{-7}	12 inches	≥95%	
	Secondary	1×10^{-7}	6 inches	≥95%	
	Cap	1×10^{-7}	12 inches	≥95% (standard Proctor method)	
Flexible Synthetic Polymeric Materials	Primary	1×10^{-7}	50 mil	NA	
	Secondary	1×10^{-7}	20 mil	NA	
	Cap	1×10^{-7}	50 mil	NA	

*All liner materials and liner construction shall meet manufacturer's specifications unless a more stringent specification is given in this table.
**Liner shall be compatible with waste it will contain.
***Other tests relevant to the type of liner shall be performed if required by the Department.
#Percentage is of maximum theoretical density when using Marshall method, and percentage of maximum density when using standard Proctor method.
NA — Not Applicable.

[Pa. B. Doc. No. 82-1301. Filed September 3, 1982, 9:00 a.m.]

Proposed Rulemaking

DEPARTMENT OF ENVIRONMENTAL RESOURCES

ENVIRONMENTAL QUALITY BOARD

[25 PA. CODE CH. 75]

Solid Waste and Hazardous Waste Management

Notice is hereby given that the Environmental Quality Board, under the authority of the Pennsylvania Solid Waste Management Act, act of July 7, 1980 (P. L. 380, No. 97) (35 P. S. § 6018.101 *et seq.*) proposes to amend 25 Pa. Code Chapter 75 by amending § 75.265, as set forth in Annex A hereto.

The proposed new subsection (z)(27) would allow the Department to issue a permit to an applicant who wishes to use a new, unique or innovative way of storing, treating or disposing of hazardous waste where the applicant can show that the technology will not pose a threat to ground water, surface water, air or subsoil. The permit may embody terms different from Chapter 75 regulatory standards, but may be no less stringent than the Federal Resource Conservation and Recovery Act would allow.

The proposed new subsection (z)(28) would allow existing facilities to receive a permit, even if not in compliance with all Chapter 75 regulations, by demonstrating that past operations have not caused, and are expected not to cause, pollution of air, water or subsoil or other adverse effect on public health or the environment. Such permits must be no less stringent than allowed by the Federal Resource Conservation and Recovery Act. The demonstration must be carried out by a study performed while the facility is shut down.

Editor's Note: The adoption of 25 Pa. Code Chapter 75 appears at 12 Pa. B. 2982 (September 4, 1982).

Fiscal Impact and Paperwork Requirements

Commonwealth

No significant adverse impact.

Political Subdivisions

No significant adverse impact.

Private Sector — General Public

No significant adverse impact. There may be a reduction in costs to the private sector.

Public Hearing

A public hearing on the proposed amendments will be held at a time and place to be announced in a later issue of the *Pennsylvania Bulletin*.

Persons interested in testifying at the hearing are invited to appear at the hearing.

Contact Person — Comments; Objections

Interested persons are invited to submit written comments, suggestions or objections regarding the proposed amendments to the Environmental Quality Board, P. O. Box 2063, Harrisburg, Pa. 17120 with a copy to Gary Galida, Chief, Division of Hazardous Waste Management, Bureau of Solid Waste Management, Department of Environmental Resources, P. O. Box 2063, Harrisburg, Pa. 17120 within 30 days following publication in the *Pennsylvania Bulletin.*

In addition to the written comments, interested persons may submit a summary of their comments to both the Board and Mr. Galida. The summary will be distributed to each member of the Board in the agenda packet distributed prior to each meeting. The summary shall not exceed one page in length and must also be received within 30 days following publication in the *Pennsylvania Bulletin.*

Additional information may be obtained from Mr. Galida's office at (717) 787-7381.

PETER S. DUNCAN,
Chairman

Fiscal Note: EQB 82-8. No fiscal impact; (8) recommends adoption. These proposed regulations are intended to accommodate new technology without allowing the kind of uncontrolled experimentation which would endanger public health and safety.

Annex A

TITLE 25. ENVIRONMENTAL RESOURCES

PART I. DEPARTMENT OF ENVIRONMENTAL RESOURCES

Subpart C. PROTECTION OF NATURAL RESOURCES

ARTICLE I. LAND RESOURCES

CHAPTER 75. SOLID WASTE MANAGEMENT

§ 75.265. Interim status for hazardous waste management facilities and permit program for new and existing hazardous waste management facilities.

* * * * *

(z) *Hazardous waste management permit program.*

* * * * *

(27) The Department may issue a demonstration permit to an applicant demonstrating a new, unique, or innovative technology in the storage, treatment, or disposal of hazardous waste; and, in issuing such permits, the Department may specify requirements which alter § 75.264 (relating to new and existing hazardous waste management facilities applying for a permit) and this section.

(i) All storage, treatment, or disposal facilities demonstrating a new, unique, or innovative technology shall be located, designed, constructed, operated, maintained, and closed in a manner that will assure protection of human health and the environment. Protection of human health and the environment shall include, where applicable, but not be limited to all of the following:

(A) Prevention of adverse effects on ground-water quality considering:

(I) the volume and physical and chemical characteristics of the waste in the facility, including its potential for migration through soil or through liner materials;

(II) the hydrogeological characteristics of the facility and surrounding land;

(III) the quantity, quality, and direction of ground-water flow;

(IV) the proximity and withdrawal rates of ground-water users;

(V) the existing quality of ground water, including other sources of contamination and their cumulative impact on the ground water;

(VI) the potential for health risks caused by human exposure to waste constituents;

(VII) the potential damage to wildlife, crops, vegetation, and physical structures caused by exposure to waste constituents; and

(VIII) the persistence and permanence of the potential adverse effects.

(B) Prevention of adverse effects on surface-water quality considering:

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

(II) the hydrogeological characteristics of the facility and surrounding land, including the topography of the area around the facility;

(III) the quantity, quality, and direction of ground-water flow;

(IV) the patterns of rainfall in the region;

(V) the proximity of the facility to surface waters;

(VI) the uses of nearby surface waters and any water quality standards established for those surface waters;

(VII) the existing quality of surface water, including other sources of contamination and their cumulative impact on surface water;

(VIII) the potential for health risks caused by human exposure to waste constituents;

(IX) the potential damage to wildlife, crops, vegetation, and physical structures caused by exposure to waste constituents; and

(X) the persistence and permanence of the potential adverse effects.

(C) Prevention of adverse effects on air quality, considering:

(I) the volume and physical and chemical characteristics of the waste in the facility, including its potential for volatilization and wind dispersal;

(II) the existing quality of the air, including other sources of contamination and their cumulative impact on the air;

(III) the potential for health risks caused by human exposure to waste constituents;

(IV) the potential damage to wildlife, crops, vegetation, and physical structures caused by exposure to waste constituents; and

(V) the persistence and permanence of the potential adverse effects.

(D) Prevention of adverse effects due to migration of waste constituents in the subsurface environment, considering:

(I) the volume and physical and chemical characteristics of the waste in the facility, including its potential for migration through soil;

(II) the geologic characteristics of the facility and surrounding land;

(III) the patterns of land use in the region;

(IV) the potential for migration of waste constituents into subsurface physical structures;

(V) the potential for migration of waste constituents into the root zone of food-chain crops and other vegetation;

(VI) the potential for health risks caused by human exposure to waste constituents;

(VII) the potential damage to wildlife, crops, vegetation, and physical structures caused by exposure to waste constituents; and

(VIII) the persistence and permanence of the potential adverse effects.

(ii) All applications for a demonstration permit shall be submitted on forms provided by the Department and shall specify such information as the Department shall require.

(iii) All applications for a demonstration permit shall demonstrate to the satisfaction of the Department that suspension of a provision of § 75.264 (relating to new and existing hazardous waste management facilities applying for a permit) and this section will, on the basis of conditions unique and peculiar to the applicant's particular situation, result in a level of protection of the environment and public health equivalent to that which would have resulted from compliance with the suspended provisions of § 75.264 (relating to new and existing hazardous waste management facilities applying for a permit) and this section.

(iv) All applications for a demonstration permit shall include provisions for storage, treatment, or disposal of hazardous waste in conformance with the requirements of § 75.264 (relating to new and existing hazardous waste management facilities applying for a permit) and this section in the event that the new, unique, or innovative technology proves infeasible or the operation of the facility results in adverse effects upon public health or the environment.

(v) In issuing any demonstration permit, the Department may impose specific conditions, including but not limited to bench or pilot scale construction and operation, reasonably necessary to assure that the subject activity will result in a level of protection of the environment and public health equivalent to that which would have resulted from compliance with the suspended provisions. Any demonstration permit issued under this section will be no less stringent than the requirements of the Resource Conservation and Recovery Act of 1976 (42 U.S.C.A. §§ 6901 — 6986) and regulations adopted thereunder.

(28) The following provisions govern variance permits:

(i) Any applicant for a permit for a hazardous waste storage, treatment, or disposal facility in existence on November 19, 1980 may apply for a variance permit. Such application shall be submitted together with Part B of the permit application as required by this subsection, shall be on forms provided by the Department, and shall specify such information as the Department shall require.

(ii) All existing storage, treatment, or disposal facilities applying for a variance permit shall demonstrate through an assessment and evaluation conducted by an independent registered professional engineer that the facility is located, designed, constructed, and operated and will be maintained and closed in a manner that will assure protection of human health and the environment. The assessment and evaluation shall be conducted according to terms and conditions specified by the Department and shall be of such duration as the Department determines is necessary. Protection of human health and the environment shall include, where applicable, but not be limited to — and the assessment and evaluation shall demonstrate, where applicable, but not be limited to — all of the following:

(A) Prevention of adverse effects on upgradient and downgradient groundwater quality considering:

(I) the volume and physical and chemical characteristics of the waste in the facility including past, existing, or potential migration through soil or through liner materials;

(II) the hydrogeological characteristics of the facility and surrounding land;

(III) the quantity, quality, and directions of ground-water flow;

(IV) the proximity and withdrawal rates of ground-water users;

(V) the existing quantity and quality of ground water, including other sources of degradation and their cumulative impact on the ground water;

(VI) past, existing, or potential health risks caused by human exposure to waste constituents;

(VII) past, existing, or potential damage to wildlife, crops, vegetation, and physical structures caused by exposure to waste constituents; and

(VIII) the persistence and permanence of past, existing, or potential adverse effects.

(B) Prevention of adverse effects on upgradient and downgradient surfacewater quality considering:

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

(II) the hydrogeological characteristics of the facility and surrounding land, including the topography of the area around the facility;

(III) the quantity, quality, and directions of ground-water flow;

(IV) the patterns of rainfall in the region;

(V) the proximity of the facility to surface waters;

(VI) the uses of nearby surface waters and any water quality standards established for those surface waters;

(VII) the existing quality of surface water, including other sources of dis-

charge and their cumulative impact on surface water;

(VIII) past, existing, or potential health risks caused by human exposure to waste constituents;

(IX) past, existing, or potential damage to wildlife, crops, vegetation, and physical structures caused by exposure to waste constituents; and

(X) the persistence and permanence of past, existing, or potential adverse effects.

(C) Prevention of adverse effects on air quality, considering:

(I) the volume and physical and chemical characteristics of the waste in the facility including past, existing, or potential volatilization and wind dispersal;

(II) the existing quality of the air, including other sources of emission and their cumulative impact on the air;

(III) past, existing, or potential health risks caused by human exposure to waste constituents;

(IV) past, existing, or potential damage to wildlife, crops, vegetation, and physical structures caused by exposure to waste constituents; and

(V) the persistence and permanence of past, existing, or potential adverse effects.

(D) Prevention of adverse effects due to migration of waste constituents in the subsurface environment, considering:

(I) the volume and physical and chemical characteristics of the waste in the facility including past, existing, or potential migration through soil;

(II) the geologic characteristics of the facility and surrounding land;

(III) the patterns of land use in the region;

(IV) past, existing, or potential migration of waste constituents into subsurface physical structures;

(V) past, existing, or potential migration of waste constituents into the root zone of food-chain crops and other vegetation;

(VI) past, existing, or potential health risks caused by human exposure to waste constituents;

(VII) past, existing, or potential damage to wildlife, crops, vegetation, and physical structures caused by exposure to waste constituents; and

(VIII) the persistence and permanence of past, existing, or potential adverse effects.

(E) The facility's compliance with the Solid Waste Management Act (35 P. S. §§ 6018.101 — 6018.1003), the act of June 22, 1937 (P. L. 1987, No. 394) (35 P. S. §§ 691.1 — 691.1001), the Surface Mining Conservation and Reclamation Act (52 P. S. §§ 1396.1 — 1396.21), the Air Pollution Control Act (35 P. S. §§ 4001 — 4015), and the Dam Safety and Encroachments Act (32 P. S. §§ 693.1 — 693.27) and with this title.

(iii) All applications for a variance permit shall include provisions for storage, treatment, or disposal of hazardous waste at a facility in conformance with the requirements of § 75.264 (relating to new and existing hazardous waste management facilities applying for a permit) and this section during the conduct of the assessment and evaluation; and no storage, treatment, or disposal of hazardous waste shall be conducted at an existing facility which is undergoing such an assessment and evaluation.

(iv) If the assessment and evaluation demonstrate to the satisifaction of the Department assurance of protection of human health and the environment at a level equivalent to that which would have resulted from compliance with § 75.264 (relating to new and existing hazardous waste management facilities applying for a permit) and this section, the Departments altering § 75.264 (relating to new and existing hazardous waste management facilities applying for a permit) and this section.

(v) In issuing any such permit, the Department may impose specific conditions reasonably necessary to assure that the subject activity will result in a level of protection of the environment and public health equivalent to that which would have resulted from compliance with the suspended provisions. Any permit issued under this section will be no less stringent than the requirements of the Federal Resource Conservation and Recovery Act of 1976 (42 U.S.C.A. §§ 6901 — 6986), and regulations adopted thereunder.

(vi) If the assessment and evaluation do not demonstrate assurance of protection of human health and the environment as set forth in this paragraph, the existing facility shall be closed in accordance with all applicable requirements of § 75.264 (relating to new and existing hazardous waste management facilities applying for a permit) and this section.

[Pa. B. Doc. No. 82-1295. Filed September 3, 1982, 9:00 a.m.]