KEY (for internal Agency use only)
▶ = Permitting/Corrective Action
▶ = Engineering
▶ = Chemistry
▶ = Financial Assurance
▶ = Geology

Hazardous Waste "Part B" Operating Permit Application
Containment Building Module

The following link to guidance is for informational purposes only. Please do not include guidance with the permit application submittal.

Resource Conservation and Recovery Act (RCRA) Training Module about Containment Buildings | US EPA

C. ▶ WASTE CHARACTERISTICS

C-2h Additional Requirements Pertaining to Containment Buildings: 40 CFR 264.1100

If the containment building is not designed to manage liquids, demonstrate that wastes do not contain free liquids (e.g., through use of Paint Filter Liquids Test, Method 9095B in "Test Methods for Evaluating Solid Wastes, Physical/Chemical Methods, " EPA Publication No. SW-846 or other appropriate methods).

D. ▶ PROCESS INFORMATION

D-10 Containment Buildings: 40 CFR 260.10, 264.1100, 264.1101, 264.1102

D-10a Containment Building Description: 40 CFR 264.1100(a), 264.1101(a)

D-10a(1) Construction: 40 CFR 264.1100(a), 264.1101(a)

Provide a description of the unit including dimensions and materials of construction. The containment building must be completely enclosed with a floor, walls and a roof to prevent exposure to the elements, and to assure containment of managed wastes. The unit must be constructed of manmade materials of sufficient strength and thickness to support themselves, the waste contents, and any personnel and heavy equipment that operate within the unit. The unit must be constructed to prevent failure due to pressure gradients, settlement, compression, uplift, physical contact with the wastes, climatic conditions, or the stresses of daily operation.

D-10a(2) Strength Requirements: 40 CFR 264.1100(a), 264.1101(a)

Provide the results of calculations defining the maximum loads or stresses that will be placed on the containment building system, including:

- Both static and dynamic loads;

- Stresses due to installation and construction operations;
- Stresses due to the maximum quantity of waste;
- Stresses due to personnel and heavy equipment that operate within the unit;
- Stresses from settlement, compression, or uplift;
- Internal and external pressure gradients; and
- Climatic conditions (freeze-thaw stress).

D-10a(3) Design Requirements for Units Not Managing Liquids: 40 CFR 264.1100(b), 264.1101(a)

D-10a(3)(a) Primary Barrier: 40 CFR 264.1100(a), 264.1100(b), 264.1101(a)(4)

Provide a detailed description of the primary barrier, and demonstrate that it is sufficiently durable to withstand the movement of personnel, wastes, and handling equipment within the unit. Demonstrate that the primary barrier is appropriate for the physical and chemical characteristics of the waste to be managed.

D-10a(4) Design Requirements for Units Managing Liquids: 40 CFR 264.1100(c), 264.1101(a)(4), 264.1101(b)

Containment buildings used to manage hazardous wastes containing free liquids or treated with free liquids (the presence of which is determined by the Paint Filter Liquids Test, Method 9095B, a visual examination, or other appropriate means), must include the following features.

D-10a(4)(a) Primary Barrier: 40 CFR 264.1100(c)(1), 264.1101(b)(1)

Describe how the primary barrier is designed and constructed to prevent migration of hazardous constituents into the barrier (e.g., geomembrane covered by a concrete wear surface). For synthetic liners identify:

- Thickness;
- Type;
- Material; and
- Brand name and manufacturer.

Demonstrate that the primary barrier is constructed of materials of sufficient strength and thickness to prevent collapse under the pressure exerted by overlaying materials and by any equipment used in the containment building.

D-10a(4)(b) Liquid Collection System: 40 CFR 264.1100(c)(2), 264.1101(b)(3)

Describe in detail the liquid collection system that must be designed and constructed of materials to minimize the accumulation of liquid on the primary barrier.

Demonstrate that the primary barrier is sloped to drain liquids to the associated collection system. Provide design and operating details of the associated collection system. Describe procedures to ensure that all liquids and waste in the collection system will be promptly removed to minimize hydraulic head on the containment system.

Demonstrate that the liquid collection system is constructed of materials of sufficient strength and thickness to prevent collapse under the pressure exerted by overlaying materials and by any equipment used in the containment building.

D-10a(4)(c) Secondary Containment System: 40 CFR 264.1100(c)(3)

Describe in detail the secondary containment system including a secondary barrier, which must be designed and constructed to prevent migration of hazardous constituents into the secondary barrier. The secondary containment system must also include a leak detection system that is capable of detecting failure of the primary barrier and collecting accumulated wastes and liquids at the earliest possible time.

D-10a(4)(c)(i) Leak Detection System: 40 CFR 264.1100(c)(3), 264.1101(a), 264.1101(b)(3)

Describe the design and operating features of the leak detection system, which must be located between the primary and secondary barriers. Demonstrate that the leak detection component of the secondary containment system is, at a minimum, constructed with a bottom slope of 1% or more.

Describe the leak detection system drainage material. Demonstrate that the detection system is constructed of granular drainage material with a hydraulic conductivity of 1×10^{-2} cm/sec or more and a thickness of 12 inches (30.5 cm) or more or constructed of synthetic or geonet drainage materials with a transmissivity of 3×10^{5} m^2/sec or more.

Provide complete details of the piping system, sumps, pumps, etc. and demonstrate that the pipes and pipe perforations are sized sufficiently to handle the expected flow of leachate. Provide sufficient piping to provide for rapid and timely detection of any leakage. The leak detection system must be separate from any containment building liquid collection system sumps.

Demonstrate that the leak detection system is constructed of materials of sufficient strength and thickness to prevent collapse under the pressure exerted by overlaying materials and by any equipment used in the containment building.

D-10a(4)(c)(ii) Secondary Barrier: 40 CFR 264.1100(b)(3), 264.1101(b)(3)

Describe how the secondary barrier is designed and constructed to prevent migration of hazardous constituents in the barrier. Provide the following information:

- Thickness;
- Type;
- Material; and
- Brand name and manufacturer.

Demonstrate that the secondary barrier is constructed of materials of sufficient strength and thickness to prevent collapse under the pressure exerted by overlaying materials and by any equipment used in the containment building.

D-10a(4)(d) Reserved

D-10a(4)(e) Waiver of Secondary Containment Requirements: 40 CFR 264.1101(e)

If requesting a waiver from secondary containment requirements, demonstrate that the only free liquids that will be in the unit will be a limited amount of dust suppression liquids required to meet occupational health and safety requirements. Describe in detail how containment of managed wastes and liquids can be assured without a secondary containment system.

D-10a(5) Design of Units Managing Both Liquids and Non-Liquids in the Same Unit: 40 CFR 264.1101(d)

Identify the areas of the containment building that are constructed both with and without secondary containment, if applicable. Demonstrate that the unit is constructed in accordance with the requirements of 264.1101(a) (see checklist Sections D-10a(3), and D-10a(4) above).

D-10a(6) Compatibility of Structure with Wastes: 40 CFR 264.1101(a)(2), 264.1101(b)(3)(iii)

Demonstrate that all surfaces in contact with hazardous wastes, collected liquids, or leachate must be chemically compatible with those wastes. For those units that manage liquids, demonstrate the secondary containment system is constructed of materials that are chemically resistant to the waste and liquids managed in the containment building.

D-10a(7) Fugitive Dust Emissions: 40 CFR 264.1100(d), 264.1101(c)(1)(iv), Part 60 Appendix A

Describe in detail the system used to prevent fugitive dust emissions such that any opening (e.g., doors, windows, vents, cracks, etc.) exhibit no visible emissions (as defined in 40 CFR Part 60 Appendix A Method 22). Describe the design, operation, and maintenance of particulate collection devices that will be used in the unit to control air pollution.

D-10a(8) Structural Integrity Requirements: 40 CFR 264.1101(a)(2)

Describe the professionally recognized standards (e.g., American Concrete Institute [ACI], American Society of Testing Materials [ASTM], etc.) that were or will be used to judge and meet the structural integrity requirements of the unit (as described in checklist Section D-10a(2)).

If appropriate to the nature of the waste management operations, an exception to the structural strength requirement may be made for light-weight doors and windows, provided that: (1) they provide an effective barrier against fugitive emissions, and (2) the unit is designed and operated in a fashion that assure wastes will not actually come in contact with these openings. Identify any portions of the unit that do not meet the structural strength requirements (see checklist Section D-10a(2)).

D-10a(9) Certification of Design: 40 CFR 264.1101(c)(2)

Provide a certification by a qualified registered professional engineer that the containment building design meets the requirements of 264.1101(a) through 264.1101(c) [see checklist Sections D-10a(1) through D10a(7)].

D-10b Containment Building Operations: 40 CFR 264.1101(c)

D-10b(1) Primary Barrier Integrity: 40 CFR 264.1101(c)(1)(i), 264.1101(b)(2)(ii)

Describe how the owner/operator will maintain the primary barrier to be free of significant cracks, gaps, corrosion, or other deterioration that could cause hazardous waste to be released from the primary barrier.

To minimize the accumulation of liquids on the primary barrier of the containment building, describe how liquids and waste that may accumulate in the liquid collection system will be removed at the earliest practical time to minimize hydraulic head.

D-10b(2) Volume of Waste: 40 CFR 264.1101(c)(1)(ii)

Describe how the owner/operator will maintain the level of the stored and/or treated hazardous waste within the containment walls of the unit so that the height of any containment wall is not exceeded.

D-10b(3) Tracking of Waste out of Unit: 40 CFR 264.1100(e), 264.1101(c)(1)(iii)

Describe how owner/operator will prevent the tracking of hazardous waste out of the unit by personnel or by equipment used in handling the waste.

D-10b(4) Liquids Removal: 40 CFR 264.1101(b)(2)(ii), 264.1101(b)(3)

Describe the sumps and liquid removal methods of the liquids collection and leak detection systems sufficient to collect and remove liquids from sumps and prevent liquids from backing up into the drainage layer. Indicate the fate of the collected liquids and leachates, which are considered hazardous wastes.

D-10b(5) Management of Incompatible Wastes: 40 CFR 264.1101(a)(3)

Indicate whether incompatible wastes or treatment reagents will be placed in the unit or its secondary system. If incompatible wastes or treatment reagents are placed in the unit, describe procedures to ensure that the incompatible wastes will not cause the unit or secondary containment system to leak, corrode, or otherwise fail.

D-10b(6) Management of Liquids and Non-Liquids in the Same Unit: 40 CFR 264.1101(d)(2), 264.1101(d)(3)

For containment buildings that contain areas both with and without secondary containment, describe measures to prevent the release of liquids or wet materials into areas without secondary containment.

Indicate that the facility's operating log will include a written description of operating procedures used to maintain the integrity of areas of the containment building that do not have secondary containment.

D-10b(7) Fugitive Dust Emissions: 40 CFR 264.1100(d), 264.1101(c)(1)(iv), Part 60 Appendix A

Describe the controls used to prevent fugitive dust emissions such that any opening (e.g., doors, windows, vents, cracks, etc) exhibit no visible emissions (as defined in 40 CFR Part 60 Appendix A Method 22). Describe the design, operation, and maintenance of particulate collection devices that will be used in the unit to control air pollution. Describe how the state of no visible emissions will be effectively always maintained during routine operating and maintenance conditions, including when vehicles and personnel are entering and exiting the unit.

D-10b(8) Treatment of Wastes: 40 CFR 264.1101(b)(3)(ii)

If treatment of wastes is conducted in the containment building, describe how treatment will be conducted to prevent the release of liquids, wet materials, or liquid aerosols to other portions of the building.

D-10b(9) Equipment Decontamination: 40 CFR 264.1101(c)(1)(iii)

Identify the area used to decontaminate equipment and collect and manage any rinsate from decontamination. Identify the fate of the decontamination residues.

D-10c Containment Buildings as Tank Secondary Containment: 40 CFR 264.1101(b)(3)(iii)

Indicate whether the containment building is intended to serve as a secondary containment system for a tank placed in the building. The unit can serve as an acceptable external liner system for a tank, provided it meets the requirements of 264.193(d)(1), 264.193(b), 264.193(c)(1), and 264.193(c)(2). [See checklist Sections D-2d(1)(b) and D-2d(1)(c).]

F. ▶ ▶ PROCEDURES TO PREVENT HAZARDS

F-2b(10) Containment Building Inspection: 40 CFR 264.1101(c)(3), 264.1101(c)(4)

Demonstrate that the owner/operator will inspect, at least every seven days, all monitoring equipment, leak detection equipment, the containment building, and the area immediately surrounding the containment building for evidence of release of hazardous waste. This information must be recorded in the facility's operating record.

F-5o Management of Incompatible Wastes in Containment Buildings: 40 CFR 264.1101(a)(3)

If incompatible wastes or treatment reagents will be placed in the unit or its secondary containment system, describe procedures to ensure that the incompatible wastes will not cause the unit or secondary containment system to leak, corrode, or otherwise fail.

G. ▶ CONTINGENCY PLAN

G-4l Containment Building Leaks: 40 CFR 264.1101(c)(3)

G-4l(1) Repair of Containment Building: 40 CFR 264.1101(c)(3)

Any condition that could lead to or has caused a release of hazardous waste must be promptly repaired in accordance with the following:

- Enter the record of discovery in the facility operating record;
- Immediately remove from service that portion of the containment building affected by the condition;
- Determine what steps must be taken to repair the unit, remove leakage from the secondary collection system, and establish a schedule for cleanup and repair;
- Notify IDEM's Office of Land Quality, Hazardous Waste Permit Section, of the condition within 7 days of the discovery, and provide a written plan and schedule describing repair procedures within 14 days of discovery; and
- Indicate that the containment building will be completely or partially removed from service if required by IDEM.

G-4l(2) Certification Following Repair: 40 CFR 264.1101(c)(3)(iii)

Indicate that upon completion of all repairs and cleanup, the owner/operator will notify IDEM's Office of Land Quality, Hazardous Waste Permit Section, and provide a written verification, signed by a qualified registered professional engineer, that all repairs and cleanup has been completed in accordance with the written repair workplan.

I. CLOSURE PLANS, POST-CLOSURE PLANS, AND FINANCIAL REQUIREMENTS:

I-1e(13) ▶ ▶ ▶ Closure of Containment Buildings: 40 CFR 264.1102

Show that at closure all hazardous wastes, hazardous waste residues, contaminated containment system, contaminated subsoils, and all structures and equipment contaminated with waste and leachate will be removed. If any wastes, wastes residues, contaminated components, subsoils, structures or equipment remain after closure, provide plans for closing the containment building as a landfill and provide a post-closure care plan.