Secondary Containment

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Goals

- Identify Secondary Containment Requirements for Hazardous Waste
  - Who is subject
  - What secondary containment is required
  - General performance standards
  - Common secondary containment issues

Hazardous Waste Secondary Containment

- Hazardous waste secondary containment is required for:
  - Large quantity generators of hazardous waste
  - Small quantity generators of hazardous waste if accumulating more than 1000 kg of hazardous waste (~ 5 drums) at any time
  - Treatment, storage, and/or disposal facilities (TSDFs) accepting fully regulated hazardous waste
  - Sites accepting Conditionally Exempt Small Quantity Generator Hazardous waste accumulating more than 1000 kg of hazardous waste (~ 5 drums) at any time
- Installing secondary containment may
  - Limit potential release liabilities
  - Help meet secondary containment required for polluting materials under other regulations
  - See guidebook Chapter 4 at www.michigan.gov/ehsguide for details on storage of polluting materials and requirements that apply under water regulations for storing oil or other polluting materials
- Same for SQGs and LQGs
  - For Small Quantity Generator Part 111, Rule 306(4)(b) refers to 40 CFR 264.175
  - For Large Quantity Generator Part 111, Rule 306(1)(a) refers to 40 CFR 264.175

Volume of Secondary Containment Required:

- Whichever is the greater amount…
  - 10% of the TOTAL volume of containers/tanks in storage
  - OR
  - 100% of the volume of the LARGEST container/tanks
- Example:
  - Total volume of containers in the secondary containment is 500 gallons. 10% of 500 gallons is 50 gallons
  - Largest container in the secondary containment is a 250 gallon tote
  - The larger volume is 100% of the largest container (250 gallons)
  - 250 gallons of secondary containment is required

Secondary Containment Basics

- Volume of containment
- Impervious base, free of cracks
- Prevent run-on unless sufficient capacity is present
- Remove accumulated liquids in a timely manner to prevent overflow
- Sloped or otherwise designed to elevate/protect containers from liquids

- Required for 90-day or 180-day accumulation containers
- Not required for satellite containers at or near the point of generation and under the operator control
- Impervious compatible coating must be compatible with the chemical makeup of the waste.
- If accumulating a SOLID hazardous waste (other than F020, F021, F022, F023, F026 or F027) the secondary containment only has to be sloped, designed or containers elevated to protect from contact with liquids.
- Bare concrete is not considered impervious

Secondary Containment Designs for Specific Hazard Types - D001 (ignitable)

- Consider designs that limit expansion of the source, if released
- Understand where and how vapors and particulates may accumulate
- Are the materials of construction compatible, fire resistant, or fire retardant
- Consult NFPA 30, and follow recommendations

Secondary Containment Designs for Specific Hazard Types - D001 D002 (corrosive)

- Separate acids from bases in storage using distance and physical barriers, curbing, bays
- If treating, be sure to treat in areas separated and insulated from stored wastes
- Control release sources to limit expansion
- Account for air space in confined or enclosed spaces

Secondary Containment Designs for Specific Hazard Types - D001 D003 (reactive)

- Separate wastes using physical barriers to help reduce the potential for chemical interactions
- Be sure that secondary containment is isolated from incompatible releases from other wastes
- If treatment is conducted, be sure secondary containment for treatment area is also isolated from storage containment

Secondary Containment Designs for Specific Hazard Types - Toxic wastes (D004-D039, etc.)

- Be aware of hazard classification and design to maximize exposure prevention
- Consider designs that promote ease of handling during storage and transport
- Consider designs that promote minimal handling time
- Design for personnel evacuation and emergency rescue access

Secondary Containment Designs for Specific Hazard Types - Multiple Waste Types

- Review DOT Hazard Classifications
- Design secondary containment to physically segregate based on the primary characteristics of the waste.
- Consider all specifications noted above for the other hazard types discussed

Repair of Secondary Containment

- Plan ahead to follow manufacturer specifications for maintenance and replacement.
- Plan ahead for any required licenses/permits to complete maintenance work.
- Plan ahead for needed maintenance budget.

Tank Storage and Secondary Containment Basics

- Tank system must be constructed of compatible material of sufficient strength
- Adequate foundation/base
- Leak detection system designed and operated to detect leaks within 24 hours or earliest practical time.
- Sloped or drained and all liquids removed within 24 hours or a in a timely manner

- A tank system must have one or more of the following:
  - Liners
    - An external liner with a capacity equal to 100% of the largest tank
    - Prevent run-on or infiltration unless there is excess capacity
    - Free of cracks or gaps
    - Cover any area waste may come in contact with if released
  - Cement Liners
    - Chemical resistant water stops in place at all joints
    - Impermeable, compatible interior lining or coating
  - Vault System
    - 100% capacity of the largest tank within its boundary
    - Prevent run on or infiltration of precipitation unless there is an excess of capacity
    - Constructed with chemical resistant water stops in place at all joints
    - Impermeable, compatible interior lining or coating
    - If holding ignitable or reactive waste, prevent vapor formation and ignition
    - Exterior moisture barrier
  - 3—Double Walled Tanks
    - Designed as integral structure (inner tank with outer shell)
    - Protect metal surface from corrosion, both interior and exterior
    - Capable of detecting releases within 24 hours
    - Tank Storage and Secondary Containment Basics
    - Ancillary Equipment
    - Ancillary equipment must be provided with full secondary containment

Tank Storage and Secondary Containment Assessment

- Written assessment required for a tank system
  - Reviewed and certified by a professional engineer and includes:
    - Design standards and considerations
    - Hazard characteristics of the waste(s) to be handled
    - Determination by a corrosion expert (if the external shell of a metal tank or a metal part is in contact with soil or water)
    - If a UST, design considerations for the UST affected by vehicular traffic.
    - Was the new tank or components backfilled with non-corrosive, porous, homogenous material that was carefully compacted?
    - All new tanks and ancillary equipment tested for tightness before being covered, enclosed and/or put into use?
    - Ancillary equipment must be supported or protected from damage and stress
    - Corrosion protection must be provided
  - Written statement must be kept on file at the site and certified.