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Simplifying Secondary Containment at SPCC-Regulated Facilities

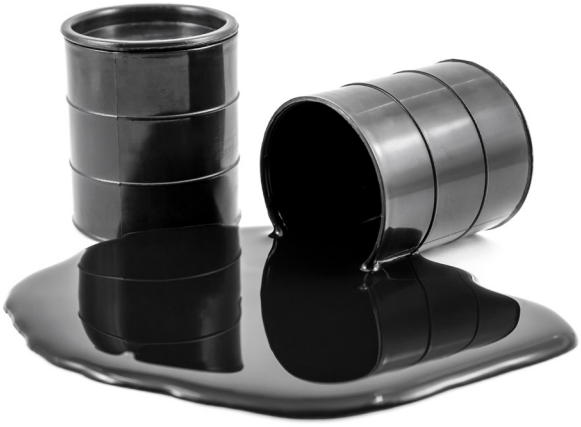
SIMPLIFYING SECONDARY CONTAINMENT AT SPCC-REGULATED FACILITIES

Owners and operators of all Spill Prevention, Control, and Countermeasure (SPCC)-regulated facilities must ensure that they have adequate secondary containment to prevent oil spills from reaching navigable waters and adjoining shorelines. The regulations call for secondary containment systems to be described in detail in SPCC Plans.

At first glance, it appears to be a simple enough requirement, but in practice, the U.S. Environmental Protection Agency (EPA) is very specific about secondary containment at regulated facilities and will be looking to see that it is properly implemented and documented. Inadequate secondary containment is one of the top SPCC violations found during an inspection, and fines can be large.

Why is secondary containment required?

Secondary containment systems are the most important ways to keep a failure of an oil container (known as primary containment) in control and to prevent the pollution of waterways. Primary containment includes bulk storage containers, mobile or portable containers, pipes or flowlines, or other oil-filled operational equipment. Secondary containment systems provide temporary containment of spilled oil until a response action plan is activated to stop the discharge and prevent oil from moving to navigable waters and adjoining shorelines.



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What are the secondary containment requirements?

The SPCC regulations contain general and specific provisions for secondary containment and detail requirements that apply to different types of facilities.

Type of Facility	Secondary Containment	Rule
All Facilities	General containment (areas with potential for discharge)	112.7(c)
	Mobile refuelers and other non-transportation-related tank trucks	112.7(c)
	Loading/unloading racks	112.7(h)(1)
	Qualified oil-filled operational equipment	112.7(c) or alternative measures in 112.7(k)
Onshore storage	Bulk storage containers	112.8(c)(2) or 112.12(c)(2)
	Mobile or portable oil containers	112.8(c)(11) or 112.12(c)(11)
Onshore production	Bulk storage containers, including tank batteries, separation, and treating facility installations	112.9(c)(2)
Onshore oil drilling and workover	Mobile drilling or workover equipment	112.10(c)
Offshore oil drilling, production, and workover	Oil drilling, production, or workover equipment	112.7(c)

General provisions address the potential for oil discharges from all regulated parts of a facility, including bulk storage containers; mobile/portable containers; production tank batteries, treatment, and separation installations; pieces of oil-filled operational or manufacturing equipment; loading/unloading areas; and piping. The general secondary containment requirements:

- Do not prescribe a size for a secondary containment structure but require that the containment system prevent the spilled oil from escaping the system before cleanup.

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- Require appropriate containment and/or diversionary structures or equipment to prevent a discharge to navigable waters or adjoining shorelines.
- Allow for the use of certain types of active containment measures that prevent a discharge to navigable waters or adjoining shorelines.
- The entire containment system, including walls and floor, must be capable of containing oil and must be constructed so that any discharge from a primary containment system will not escape the containment system before cleanup occurs.

Specific provisions address the potential of oil discharges from specific parts of a facility where oil is stored or handled, and require that specific containment design, sizing, and freeboard requirements be met in order to handle major container failure. While all parts of an SPCC-regulated facility with a potential for a discharge are, at a minimum, subject to the general secondary containment requirements, areas where certain types of containers, activities, or equipment are located are subject to these additional, more stringent containment requirements, including specifications for minimum capacity.

The SPCC rule specifies a required minimum size for secondary containment for the following areas:

- Bulk storage containers;
- Loading/unloading racks;
- Mobile or portable bulk storage containers; *and*
- Production facility bulk storage containers, including tank batteries, separation, and treating vessels/equipment.

In general, provisions for sized secondary containment require that the chosen containment method be sized to contain the largest single oil compartment or container plus “sufficient freeboard” to contain precipitation.

How should appropriate secondary containment be selected?

Because the EPA does not dictate specific types of secondary containment to be used in specific situations, owners and operators of SPCC-regulated facilities should use professional judgment to determine reasonable secondary containment requirements that fit each individual circumstance. Multiple factors should be considered to determine what needs secondary containment (i.e., what areas present a potential for discharge).

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First, to assess spill risks, the area and its surroundings should be evaluated and possible discharge scenarios considered. Ask the following questions:

- What are the potential sources of failure that may cause a discharge?
- How quickly can oil be discharged?
- How will discharges be detected?
- How will personnel react to a discharge?

Location, type, and quantity of stored materials should be taken into account along with the topography (slope and gradient) and the proximity to water or other environmentally sensitive areas to determine whether a spill could reach a navigable water.

This table provides scenarios where specific secondary containment methods may best be used.

Secondary Containment Method	Area of Use
Dikes, berms, or retaining walls sufficiently impervious to contain oil	Used in areas with potential for large discharges, such as single or multiple aboveground storage tanks and certain piping
Curbing	Can be used where only small spills are expected and also used to direct spills to drains or catchment areas
Culverting, gutters, or other drainage systems	Ideal for situations where spill containment structures cannot or should not be immediately adjacent to the potential spill source
Weirs	Best used in combination with skimmers to remove oil fromthe surface of water
Booms	Used for the containment, exclusion, or deflection of oil floating on water, and are usually associated with an oil spill contingency plan or facility response plan (FRP) to address spills that have reached surface waters
Barriers	Used to block or prevent the flow of oil before or after discharges
Spill diversion ponds and retention ponds	Used for permanent containment of stormwater or capturing and holding oil or runoff and preventing it from entering surface water bodies. Also used for temporary containment after a discharge has been discovered.
Sorbent materials	Used with material-handling equipment, such as valves and pumps, to isolate and contain small drips or leaks until the source of the leak is repaired. Also used asan active containment measure to contain and collect small discharges before they reach waterway.
Drip Pans	Used with product-dispensing containers (usually drums), when uncoupling hoses during bulk transfer operations, and for pumps, valves, and fittings
Sumps and collection systems	Used to catch small oil leakage around pumps, glands, valves, flanges, expansion joints, hoses, drain lines, separators, treaters, and tanks

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How should secondary containment capacity be determined?

The SPCC rule does not specifically define the term “freeboard,” nor does it describe how to calculate the volume. Two generally accepted methods for determining sufficient freeboard for a containment device include:

- Using historical data from the past 25 years to calculate the volume based on the worst 24-hour storm event in the area, *and*
- Ensuring that the secondary containment is capable of holding 110 percent of the volume stored.

What if secondary containment isn’t practicable?

In some cases, a Professional Engineer (PE) may determine that secondary containment is not practicable. If this determination is made, the owner or operator must clearly explain the reason for the determination in the SPCC Plan and describe how alternative measures will be implemented. For bulk storage containers, periodic integrity testing must be conducted of the containers and any associated valves and piping. Also, an impracticability determination requires the preparation of an oil spill contingency plan and a written commitment of manpower, equipment, and materials to expeditiously control and remove any quantity of oil discharged that may be harmful.

How do EPA inspectors evaluate secondary containment?

EPA inspectors will evaluate whether the secondary containment system is adequate for the facility, and whether it is properly maintained to contain any oil discharges to navigable waters and adjoining shorelines.

To determine whether secondary containment is sufficient, an EPA inspector may:

- Verify that the Plan specifies the capacity of secondary containment along with supporting documentation, such as calculations for comparing freeboard capacity to the volume of precipitation in an expected storm event.

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- If calculations are not included with the Plan, and the inspector suspects the secondary containment is inadequate, the inspector may request supporting documentation from the owner/operator.
- If diked area calculations appear inadequate, review local precipitation data such as data from airports or the National Weather Service, as needed.
- Review operating procedures, storage tank design, and/or system controls for preventing inadvertent overfilling of oil storage tanks that could affect the available capacity of the secondary containment structure.
- Confirm that the secondary containment capacity can reasonably handle the contents of the largest tank on an ongoing basis.
- During the inspection, verify that the containment structures and equipment are maintained and that the SPCC Plan is properly implemented.

For a dike, berm, or other engineered secondary containment systems, an inspector may review:

- Capacity of the system to contain oil as determined by the PE in accordance with good engineering practice and the requirements of the rule;
- Cracks in containment system materials (e.g., concrete, liners, coatings, earthen materials);
- Discoloration;
- Presence of spilled or leaked material (standing liquid);
- Corrosion of the system;
- Erosion of the system;
- Level of precipitation in diked area and available capacity versus design capacity;
- Dike or berm permeability;

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- Presence of debris;
- Operational status of drain valves or other drainage controls;
- Location/status of pipes, inlets, and drainage around and beneath containers;
- Excessive vegetation that may inhibit visual inspection and assessment of berm integrity;
- Large-rooted plant systems (e.g., shrubs, cacti, trees) that could affect the berm integrity;
- Holes or penetrations to the containment system created by burrowing animals; *and*
- Drainage records for rainwater discharges from containment areas.

For retention and drainage ponds, an EPA inspector may examine:

- Capacity of the system to contain oil as determined by the PE in accordance with good engineering practice and the requirements of the rule;
- Erosion of the system;
- Cracks in containment system materials (e.g., concrete, liners, coatings, earthen materials);
- Discoloration;
- Design capacity versus available capacity;
- Presence of spilled or leaked liquid;
- Presence of debris;
- Stressed vegetation;
- Evidence of water seeps from the system; *and*
- Operational status of drain valves or other drainage controls.

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