

Overcome These Five Common Secondary Containment Misconceptions



By
Chris Jimieson

Project Manager/Senior
Geological Engineer

SCS Engineers

Secondary containment is a basic engineering control to prevent a chemical or oil spill. There are some misconceptions, though, regarding secondary containment requirements. In terms of oil-based storage, these misconceptions can lead to not enough containment capacity, significantly more containment capacity than necessary, or simply not providing the right level of containment when containers are grouped.

The Environmental Protection Agency's Spill Prevention, Control and Countermeasure (SPCC) rule does not specifically quantify the requirements for secondary containment; it simply specifies that a facility needs to "provide a secondary means of containment for the entire capacity of the largest single container and sufficient freeboard to contain precipitation." The EPA determined that, for freeboard, the more appropriate method of secondary containment is a matter of engineering practice, and did not quantify a percentage or specific storm event for engineers to calculate freeboard when completing secondary containment designs. The containment capacities provided in the table below are based on industry guidance and best practices.

I have visited dozens of facilities and seen several misconceptions during facility walk-throughs over the years. Here are some of the common mistakes people make when selecting containment systems, and how to correct them:

Common Secondary Containment Misconception	A Path to Secondary Containment Compliance
Any pre-fabricated containment pallet has sufficient secondary containment for a 55-gallon drum.	<i>Often times, these pre-fabricated containment pallets have a spill capacity of 20 to 30 gallons. Secondary containment needs to be at least the capacity of the container and sufficient freeboard¹ for precipitation. For indoor storage, the industry standard is 110 percent of the container's capacity. For a single drum, that would be 66 gallons of containment capacity.</i>
Each 55-gallon drum stored indoors needs to have its own 66-gallon capacity secondary containment pallet.	<i>While you can always go above and beyond what is required, you really only need to size a secondary containment system to contain the single largest container plus freeboard for precipitation. Four 55-gallon drums stored together indoors on a single containment pallet would still only need 66-gallons of containment capacity.</i>
A facility's outdoor tank has sufficient secondary containment with a concrete containment system capable of containing 100 percent of the tank's capacity.	<i>For outdoor containers, you have to account for precipitation in sizing your secondary containment systems. Unless a more stringent local or state regulation presides, engineers typically use a rule of thumb for determining appropriate outdoor containment capacity. The most common methods to provide freeboard for precipitation are either 125 percent of the container's capacity OR the container's capacity plus volume that would be collected over the containment device's footprint during a 25-year, 24-hour storm event.</i>
A facility can store several drums within a concrete containment structure where other equipment and containers are stored.	<i>While this may be an acceptable practice, storing additional items within the secondary containment structure reduces the structure's containment capacity. If the structure was designed with the minimum 110 percent containment capacity (when indoors), storing extra items within the containment structure could reduce the containment capacity below the needed amount.</i>
A facility has sufficient containment if a berm/curb is around the entire oil storage area on a sloped floor.	<i>For a sloped floor or grade, determining the actual containment capacity is important. If the height of the berm/curb does not account for the slope, the capacity of the secondary containment system may be much smaller than you think. A large portion of the containment volume can be lost due to the slope on the floor. Also, maintaining the curb/berm elevation is critical to maximizing the containment system's capacity.</i>

¹ Freeboard is the additional volume within a secondary containment structure to contain precipitation.

Remember to review your state rules and local ordinances to ensure you are fully compliant with your facility's requirements. Now that you better understand common secondary containment misconceptions, you will make better decisions about secondary containment that help you save money and remain in compliance.

Chris Jimieson has more than 18 years of experience helping industrial, commercial, military, federal, state, municipal, and solid waste companies with environmental compliance. Contact Chris at cjimieson@scsengineers.com or (608) 216-7367.