ABSTRACT

The SPCC regulations entail numerous requirements for the storage of oil. The intent of this paper is to summarize several of the complex requirements associated with oil storage at a facility subject to the SPCC regulations.

KEYWORDS

SPCC Regulations, Bulk Oil Storage Tanks, Oil-filled Electrical Equipment

INTRODUCTION

The Spill Prevention, Control, and Countermeasure (SPCC) regulations are far reaching requirements promulgated by the Environmental Protection Agency under Section 311 of the Clean Water Act (CWA). The purpose of these regulations is to prevent the discharge of harmful quantities of oil/petroleum to waters of the United States. Originally issued in 1973, the regulations have recently been revised to clarify the regulatory language, provide flexibility in complying with the regulations by incorporating industry standards, and incorporate provisions to decrease the regulatory burden on many facility owner/operators. However, with this revision, compliance with many aspects of the regulations has become significantly more complex. As a result, revisions to these regulations continue as of this writing due to the complex and burdensome requirements stipulated in the regulations. Further, the EPA has issued regulatory guidance for its regional inspectors to assist in enforcing this complex set of regulations.

Integral to the SPCC regulations are provisions regarding the storage of oil. This includes the storage of oil in bulk as well as oil “in-use” such as electrical transformers or hydraulic systems. The provisions cover primary and secondary containment materials, measures for monitoring tanks, inspection requirements, and tank integrity testing.

SUMMARY

Facilities subject to the SPCC regulations are those that store oil in quantities greater than 1,320 gallons above ground or 42,000 gallons below ground. This provision applies to all containers with a capacity of 55 gallons or greater. As such, a facility needs to consider all oil storage vessels, whether it be 55-gallon drums, hydraulic systems, transformers or traditional oil storage tanks in determining the applicability and in complying with the SPCC regulations. The following is a summary of the issues facing the regulated community for storing oil at a facility.
**Bulk Storage Containers**

Bulk storage containers are defined in the regulations as “…any container used to store oil. These containers are used for purposes including but not limited to, the storage of oil prior to use, while being used, or prior to further distribution in commerce.” By definition, the regulations apply to any container with a capacity of 55 gallons or greater as the regulations exempt containers less than 55 gallons. These provisions also apply to tanks associated with vehicles that are not registered with the DOT.

Bulk storage containers are used for the storage of oil in bulk quantities. They include stationary tanks, mobile containers, such as totes, and drums. For facilities subject to the SPCC regulations, bulk storage containers are subject to the general provisions of the regulations as well as additional requirements for oil storage. For the purposes of this discussion, bulk storage containers are grouped into three categories: above ground storage tanks, portable containers, and underground storage tanks. Each is described further below.

**Above Ground Bulk Storage Tanks**

Above ground bulk storage tanks are permanent tank structures with capacities of greater than 55 gallons. Typically, these tanks have capacities of 275 gallons and greater. In general, there are two types of bulk storage tanks – shop fabricated and field fabricated. Shop fabricated tanks are tanks that are constructed off-site and shipped to a facility for installation. These tanks range in capacity from 275 gallons to 30,000 gallons. Field fabricated tanks are those that are constructed on-site and typically have a capacity of greater than 5,000 gallons.

The SPCC rule is a performance based standard and, therefore, the EPA relies upon “industry standards” in complying with the SPCC regulations. The EPA references these standards in the preamble to the final regulations as well as in guidance that has been published since promulgation of these regulations. Industry standards include but are not limited to the guidance and standards issued by the Steel Tank Institute (STI) and the American Petroleum Institute (API). Such standards may be considered de-facto regulations. Shop fabricated steel tanks are subject to the STI standards. This includes the standard for inspection of above ground storage tanks. Conversely, field fabricated tanks are subject to the requirements of API 653.

As indicated above, above ground bulk storage tanks are subject to the general SPCC provisions as well as more specific provisions stipulated in the regulations. The general SPCC provisions for above ground bulk storage tanks include the following:

- Containment/diversionary structures – Containment and/or diversionary structures are required at facilities to prevent a discharge to surface waters. Such systems should be designed to contain the maximum potential discharge.
- Inspections – All containers subject to the SPCC regulations are subject to routine inspections. Following industry standard for inspecting bulk storage tanks is required. More detail is provided below.
- Security measures – A facility, or tank system, must be fully fenced and adequately lighted to deter potential vandalism.
• Facility drainage – Drainage from facilities must be designed in a manner to prevent discharges of oil. Provisions must be incorporated into the design of drainage systems to allow for the release of accumulated runoff.

Specific requirements associated with bulk storage tanks include the following:

• Primary containment – The primary containment system must be compatible with the material stored and the conditions of storage, i.e. pressure and temperature. Additionally, certain bulk storage tanks need to be assessed if there is a change in use, e.g., a brittle fracture evaluation.

• Secondary containment – Secondary containment must be provided for the largest single container with adequate freeboard to contain precipitation. The secondary containment area needs to be sufficiently impervious with sufficient freeboard. The preamble to the regulation clarifies both these terms. Sufficiently impervious means that the secondary containment must be capable of containing a release from the primary containment until clean up occurs such that a discharge does not occur. Sufficient freeboard is considered to be volume capable of containing runoff from a 25-year, 24-hour storm event.

• Inspections – Visual inspections of tank systems are to be performed by the operator. The steel tank institute (STI) and American Petroleum Institute (API) both provide guidance regarding the inspection frequency, protocol, and level of certification/training required of the inspector. Typically, the minimum frequency of inspection is monthly.

• Integrity testing - In addition to visual inspections, above ground storage tanks are required to be integrity tested. Integrity testing is also covered by the applicable industry standards. Both the STI and API address integrity testing of tanks. Under STI standards, tanks are grouped into categories. The category defines the type and frequency of integrity testing required for the tank. Similar to inspections, integrity testing is a function of the size, construction, and containment provided for the tank system. (Industry standards regarding integrity testing are more fully covered by other authors in this program.)

• Overfill prevention – Each container is required to be equipped with a device to avoid discharges during filling operations. The tank needs to be equipped with one of the following devices:
  o High level alarm with audible or visual signal
  o High liquid level pump cutoff device
  o Direct audible or signal between the container gauger and pump station
  o Fast response system for determining the liquid level such as a digital computer, telepulse or direct visual gauge

These devices must be tested/inspected regularly to ensure proper operation.

**Portable Containers**

Portable containers are subject to the same provisions as other above ground storage tanks such as secondary containment, security provisions, and inspections as detailed above. Further, there is no specific regulatory exemption from integrity testing for portable containers. However, in the preamble to the SPCC regulations, it is stated that “for certain smaller shop-built containers in which there is minimal risk of failure….visual inspection alone might suffice, subject to good...
engineering practice.” In other words, smaller containers, such as 55-gallon drums are not required to be integrity tested. This is also consistent with the STI standards for which smaller containers, less than 5,000 gallons, under certain conditions are not required to be inspected by a certified inspector.

**Underground Storage Tanks**

One of the commonly misunderstood provisions of the SPCC regulations is the exemption for underground storage tanks (USTs). The regulations stipulate that, with the exception of the facility site plan, USTs are exempt from the SPCC regulations. The misconception is that all UST are exempt from the SPCC regulations. The revised SPCC regulations exempt completely buried storage tanks that are subject to all of the technical requirements of the UST regulations (40 CFR Parts 280 or 281). However, under the federal regulations (40 CFR Part 280), an underground tank “used for storing heating oil for consumptive use on the premises where stored” is exempted from the definition of UST. USTs used for storage of diesel fuel for on-site consumption by an emergency generator are also exempt from the federal UST regulations and, therefore, are subject to the SPCC regulations. Considering this, many USTs are in fact subject to the SPCC regulations, including the additional provisions for bulk storage containers, and, therefore, facilities need to comply with most of the SPCC provisions. These provisions, as described in more detail above, include adequate containment, security measures, overfill protection, and routine inspections.

The SPCC regulations include additional requirements for underground storage tanks. Specifically, buried metallic (emphasis added) storage tanks installed on or after January 10, 1974 must be protected from corrosion by coatings or cathodic protection. Metallic USTs subject to the SPCC regulations also must be regularly leak tested. Buried piping must also be protected against corrosion and buried piping that is replaced or installed must be equipped with a protective wrapping or coating.

**Oil-filled Equipment**

Oil-filled equipment is exempt, by definition, from the provisions of bulk storage containers. Oil-filled equipment includes electrical, operating, and manufacturing equipment that contains greater than 55 gallons of oil. Oil-filled operational/electrical equipment includes transformers, hydraulic systems, lubricating systems, gear boxes, and other similar equipment. Manufacturing equipment contains oil as an element of performing a mechanical or chemical operation. Some examples include reaction vessels and heat exchangers. While oil-filled equipment is not subject to the same level of scrutiny as bulk storage containers, oil-filled equipment is still subject to the general provisions of the SPCC regulations. Specifically, these containers require adequate secondary containment, need to be inspected periodically, need to be fenced in accordance with the security provisions, and need to be depicted on the site drainage map. The regulations also require an accurate depiction of the piping/hoses associated with the oil-filled equipment on the site plan. For some facilities with complex hydraulic systems and complicated process involving the use of oil, this can become fairly complex.
DISCUSSION

Compliance with the SPCC regulations may be difficult and complicated. There are various nuances associated with the regulations that are not clearly defined in the regulatory text. The EPA and various industry groups have issued numerous documents and publications to assist in guiding those who prepare and certify SPCC plans as well as those who are required to comply with these regulations. The provisions applicable to storage containers should be considered and well understood when preparing an SPCC plan for a facility.

REFERENCES

1 U.S. Environmental Protection Agency, SPCC Guidance for Regional Inspectors, Version 1.0, November 28, 2005
2 Steel Tanks Institute, Standard for Inspection of Aboveground Storage Tanks – SP001, 3rd Ed., July 2005