



## Spill Prevention, Control and Countermeasure Plan (SPCC) Program

### *Bulk Storage Container Inspection Fact Sheet*

The inspection requirements of the SPCC rule are designed to detect oil leaks, spills, or other potential integrity or structural issues before they can result in a discharge of oil to navigable waters of the U.S. or adjoining shorelines. Regularly scheduled inspections, evaluations, and testing of bulk oil storage containers by qualified personnel are critical parts of discharge prevention. A container integrity inspection and/or testing program may involve one or more of the following: an external visual **inspection** of containers, foundations, and supports; non-destructive **testing** (examination) to evaluate integrity of certain containers; and additional **evaluations**, as needed, to assess the containers' fitness for continued service. The type of inspection program and its scope will depend on site specific condition and the application of good engineering practices and this can be accomplished by following applicable industry standards.

#### **What oil storage containers do I have to inspect at my facility?**

Conduct integrity testing and routinely inspect the following aboveground bulk storage containers with a capacity of 55 gallons or more:

- Large (field-constructed or field-erected) and small (shop-built) bulk storage containers;
- Containers located on, partially in (partially buried, bunkered, or vaulted tanks), and off the ground wherever located; and
- Double-walled containers.

Oil filled equipment is not a bulk storage container and, therefore, not subject to the integrity testing requirements of the SPCC rule.

#### **How do I inspect aboveground bulk storage containers?**

The SPCC rule requires that you:

- Test or inspect **each** container for integrity on a regular schedule and whenever you make material repairs; and
- Frequently inspect the outside of the container for signs of deterioration, discharges, or accumulation of oil inside diked areas. This visual inspection is intended to be a routine walk-around and include the container's supports and foundations.
- Identify in your SPCC Plan the type and frequency of testing and inspection for each container and the appropriate qualifications of personnel performing the tests and inspections. You must retain testing and inspection records for 3 years. EPA recommends that formal test records or reports be retained for the life of the container.

Integrity testing is required for all aboveground bulk storage containers located at onshore facilities (except oil production facilities). Integrity testing is necessary to determine if the container (e.g. a tank) is suitable for continued use until the next formal inspection.

#### **§§112.8(c)(6), 112.12(c)(6)(i)**

Test or inspect each aboveground container for integrity on a regular schedule and whenever you make material repairs. You must determine, in accordance with industry standards, the appropriate qualifications for personnel performing tests and inspections, the frequency and type of testing and inspections, which take into account container size, configuration, and design (such as containers that are: shop-built, field-erected, skid-mounted, elevated, equipped with a liner, double-walled, or partially buried). Examples of these integrity tests include, but are not limited to: visual inspection, hydrostatic testing, radiographic testing, ultrasonic testing, acoustic emissions testing, or other systems of non-destructive testing. You must keep comparison records and you must also inspect the container's supports and foundations.

In addition, you must frequently inspect the outside of the container for signs of deterioration, discharges, or accumulation of oil inside diked areas. Records of inspections and tests kept under usual and customary business practices satisfy the recordkeeping requirements of this paragraph.

Note: The above text is an excerpt of the SPCC rule. Refer to the full text of 40 CFR part 112.

Depending on the type of container, integrity testing may be as simple as an external visual inspection or may involve more complicated methods of non-destructive testing such as Magnetic Flux Leakage (MFL) or ultrasonic thickness (UT) measurements, vacuum box testing, and weld inspection in order to adequately assess the container condition.

While frequent external visual inspections can often be completed by trained facility personnel, the requirement to conduct regular integrity tests or inspections may involve hiring specialized personnel (as specified by the applicable industry standard). For example, integrity testing of field-erected aboveground storage tanks in accordance with API 653 involves formal in-service external inspections and formal out-of-service internal inspections to be conducted by an API 653 certified inspector. A formal in-service external inspection involves visual inspection and UT measurements of the shell. A formal out-of-service internal inspection determines the condition of the tank's floor, walls and structure, but should also include the shell, roof, nozzles, and tank appurtenances. The out-of-service inspection typically includes non-destructive testing such as MFL scanning of the floor, vacuum box testing floor welds, helium leak testing, UT measurements, and tank bottom settlement measurements.

### **How do I develop a program for inspecting and/or testing my containers?**

First, you, or a registered Professional Engineer (PE), determine which industry standards are applicable. Then, in accordance with the industry standards determine:

- The appropriate qualifications for personnel performing tests and inspections; and
- The frequency and type of testing and inspections. This must take into account the aboveground container size, configuration, and design (i.e., shop-built, field-erected, skid-mounted, elevated, equipped with a liner, double-walled, or partially buried).

Industry standards describe procedures to identify the condition of the container through formal internal and external inspections conducted by certified personnel. For internal inspections, the container must typically be taken out of service, cleaned, and made ready for personnel to enter the container. Examples of these integrity tests include, but are not limited to: visual inspection, radiographic examination, UT, MFL scanning, helium leak testing, magnetic particle examination, liquid penetrant examination, acoustic emissions-testing, hydrostatic testing, inert gas leak testing or other methods of non-destructive examination. Acoustic emission testing and UT robotic measurement are non-destructive examination methods that can be used while the tank is in-service. Acoustic emission testing is used to determine if there is a leak but does not determine if there is corrosion or metal loss. Hydrostatic testing is typically performed on new tanks and on existing tanks that have had major repairs or alterations. Industry standards may use one, or a combination, of these non-destructive examination methods or tests as part of an integrity testing program.

#### **What are industry standards?**

Industry standards are technical guidelines created by experts in a particular industry for use throughout that industry. Standards-developing organizations use a consensus process to establish the minimum accepted industry practice. The SPCC rule requires that the Plan be prepared in accordance with good engineering practice. Standards play a role in determining good engineering practice when developing spill prevention procedures and an inspection program for an SPCC-regulated facility.

Implementing an inspection program based on a particular industry standard is ultimately up to the owner/operator. When an owner/operator indicates in the SPCC Plan that he intends to use a standard to comply with a particular rule requirement (e.g. integrity testing), then it is mandatory to implement the relevant portions of the standard (i.e. those that address integrity testing of the container).

The American Petroleum Institute (API) Standard 653, "Tank Inspection, Repair, Alteration, and Reconstruction" and the Steel Tank Institute (STI) "SP001 Standard for the Inspection of Aboveground Storage Tanks" (STI SP001) are two commonly used inspection standards for aboveground bulk storage

If you have containers that have never been inspected for integrity then, depending on their size and configuration, industry standards may require that you assess baseline conditions for these containers.

The industry standard you or your PE identifies in your SPCC Plan outlines the specific inspection and integrity testing protocol for the containers at your facility. These protocols may vary depending on the size and configuration of your containers. For example, portable containers (e.g. a drum) have fewer inspection requirements than shop-built and field-erected containers.

### **Who can help me establish an integrity inspection and/or testing program for my bulk storage containers?**

If your SPCC Plan will be certified by a Professional Engineer (PE) then the PE will work with you to establish an inspection and/or testing program that is appropriate for the types of containers at your facility. The PE may consider industry standards and consult with tank inspectors to determine the frequency, type of testing and inspections and the appropriate qualifications for personnel performing the tests and inspections.

If you have a qualified facility and are planning to self-certify your SPCC Plan, then you can develop your inspection and/or testing program by following the protocols identified in the industry standards applicable for your oil storage containers or by contacting tank inspection professionals. Industry standards, such as API 653 and STI SP001 contain requirements to inspect aboveground containers.

If you deviate from the requirements of the standards, then you can do so in accordance with the environmental equivalence provision in §112.7(a)(2) and have a PE certify that portion of your SPCC Plan.

### **How often do I have to perform inspections or tests?**

Testing on a 'regular schedule' means testing per industry standards or at a frequency sufficient to prevent discharges. Industry standards establish the scope and frequency for inspections that considers the particular conditions of the aboveground container. These conditions may include the age, service history, original construction specifications (e.g., shop-built vs. field-erected, welded steel vs. riveted steel), prior inspection results, and the existing condition of the container. It may also consider the degree of risk of a discharge to navigable waters or adjoining shorelines, e.g. containers that are located near saltwater where an accelerated corrosion rate would be expected. The frequency of inspections is based on changing conditions of the container (e.g., corrosion rates, settling, etc.) and the interval between inspections may vary over the lifetime of the container.

Once you determine an inspection schedule for your aboveground containers (based on applicable industry standards), document the schedule in your Plan and conduct inspections according to that schedule. You should also include a description of the conditions of the container that led to the specific inspection schedule identified in the Plan.

#### **More information on industry standards:**

##### **API Standard 653 (API-653)–Tank Inspection, Repair, Alteration, and Reconstruction**

API-653 covers steel storage tanks built to design specifications in the API 650 standard and its predecessor API12. It provides minimum requirements for maintaining the integrity of tanks after they have been placed in service and addresses inspection, repair, alteration, relocation, and reconstruction. This standard is typically used to establish an integrity testing program for field-erected tanks.

Go to the API website for more information on their standards: <http://www.api.org/>

##### **STI Standard SP001 (STI SP001)–Standard for the Inspection of Aboveground Storage Tanks**

This standard focuses primarily on inspection of welded, metal, shop-fabricated and small field-erected tanks. Also included is the inspection of smaller, portable containers such as 55-gallon drums, intermediate bulk containers (IBCs) and other such containers that may be of metal or plastic construction.

Go to the STI website for more information on the SP001 standard: <http://www.steeltank.com/>

**How do I establish a baseline condition for my aboveground container?**

Industry standards, such as API 653 and STI SP001, contain minimum requirements to inspect aboveground containers and criteria to assess each container's suitability for continued service. The baseline and suitability evaluation provides information on the container's existing condition relative to the design metal thickness and the rate of metal loss from corrosion as well as the anticipated remaining service. In some cases, where baseline information is not known, the testing program may include two data collection periods, one to establish a baseline of the container's existing shell and bottom plate thicknesses, and a second inspection to establish corrosion rates in order to develop the next inspection interval. These inspection intervals establish the frequency of the 'regular schedule' required for testing under the SPCC rule.

When no or only partial baseline information is available for a container(s) at the facility, then the owner/operator should schedule integrity testing in accordance with industry standards as soon as possible and in accordance with both good engineering practice and the judgment of the certifying PE. Because the SPCC Plan must be reviewed at the facility every five years in accordance with §112.5(b), you should consider to begin collecting inspection data during the next five year period. As an example, a facility owner/operator is scheduling upcoming inspections for bulk storage containers at a facility he recently purchased. The owner/operator has no records of inspections or information on the in-service date (i.e. original construction date) for a 10,000-gallon aboveground storage container at the facility. The SPCC Plan was last amended on November 10, 2011. Therefore, in order to establish a baseline for the 10,000-gallon AST, the facility owner schedules the first (baseline) container inspection or integrity test by November 10, 2016.

The implementation of the testing program should be in accordance with industry standards and establish appropriate inspection priorities among multiple containers at a facility. For instance, special consideration may be discussed in the Plan for containers for which the age and existing condition is not known (no baseline or only partial information exists); older containers; or those in more demanding service. These higher priority containers may be targeted for inspection in the schedule before other aboveground containers where the baseline information is known.

Section 112.7 of the rule states that if the Plan calls for additional facilities or procedures, methods, or equipment not yet fully operational, you must discuss these items in separate paragraphs, and must explain separately the details of installation and operational start-up. Therefore, if an owner or operator has yet to implement the integrity testing program, the SPCC Plan should establish and document a schedule (in accordance with good engineering practice and the introductory paragraph of 112.7) that describes the projected implementation of the integrity testing program for the aboveground bulk storage containers at the facility. The owner or operator must then implement the inspection program in accordance with the SPCC Plan.

**Do I need to establish a baseline when the standard requires only visual inspections?**

No, if the industry standard only requires visual inspections for the container (e.g., certain shop-built containers) then a baseline is not necessary. The standard establishes a frequency for visual inspections rather than basing the interval on the container's corrosion rate. On the other hand, a baseline is necessary for most non-destructive testing protocols, because the container's corrosion rate impacts the frequency/interval of future formal integrity testing inspections.

Owners and operators need to refer to the particular industry standard identified in the SPCC Plan to determine the scope of inspection and testing requirements. For example under the STI SP001 standard, visual inspection is allowed for portable containers such as drums and totes. A baseline determination of metal thickness of a portable container is not required prior to implementing the visual-only integrity testing inspection protocol.

**How do I demonstrate in my SPCC Plan that I have an inspection and/or testing program for containers that I have not yet inspected?**

The introductory paragraph of §112.7 of the SPCC rule allows for the owner or operator to describe procedures, methods, or equipment that are not yet operational in the SPCC Plan and in this event, requires the owner or operator to include a discussion of the details.

The Plan preparer must provide details in the Plan including a timeline to gather the necessary baseline data to establish a regular schedule of integrity testing in accordance with §§112.8(c)(6) and 112.12(c)(6). The Plan preparer may need to consult with a tank professional and/or PE to determine the scope of the integrity testing program for the containers. Include in your Plan a description of the inspection program including:

- The type of integrity inspection that will be conducted (i.e., visual or another non-destructive method),
- The applicable industry standard that the serves as the basis for program
- The implementation schedule for inspecting containers, and
- Any other considerations that went into the development of the inspection program.

Ensure that your containers fall within the scope of the industry inspection standard that you elect to follow and include a description of the inspection procedures in the SPCC Plan. Finally, include information on recordkeeping procedures in the Plan.

**What are my recordkeeping requirements?**

The facility integrity testing and inspection program must be documented in the Plan, including the schedule for conducting inspections and tests. The SPCC rule requires that you keep a record of the inspections and tests, signed by the appropriate supervisor or inspector, for a period of three years. However, industry standards often advise that records for formal inspections and tests be maintained for the life of the container.

EPA strongly recommends that you keep comparison records of integrity inspections and tests as directed in the standard, but no less than three years in accordance with the SPCC record retention requirement, in order to identify changing conditions of the oil storage container. Records of inspections and tests kept under usual and customary business practices satisfy the recordkeeping requirements.

**Can I visually inspect large shop-built oil storage containers to satisfy the integrity inspection and testing requirements of the SPCC rule?**

Yes, under certain circumstances visual inspection alone may suffice. However, the SPCC rule requires that inspections be in accordance with industry standards. For tanks larger than 5,000 gallons, most industry standards require more than a visual inspection by the owner or operator.

The SPCC Guidance for Regional Inspectors<sup>1</sup> published in 2005 described an example that may be environmentally equivalent to the integrity testing requirements of the SPCC rule at that time. The example indicated that visual inspection plus certain additional actions to ensure the containment and detection of leaks may be appropriate for bulk oil storage containers with a capacity up to 30,000 gallons. This example was based on a policy that described the environmental equivalence flexibility available to a PE with respect to integrity testing in a letter to the Petroleum Marketers Association of America (PMAA).<sup>2</sup> This example was established at a time when the rule specifically required that integrity testing include more than just a visual inspection. While the approach for the use of environmental equivalence described in this letter is still valid, EPA revised the integrity testing provision in 2008 to allow inspection requirements outlined in industry standards to be used without the need for environmental equivalence determinations certified by a PE. A major industry standard for integrity testing (STI SP001) was modified since the letter to PMAA was written to outline “good

<sup>1</sup> *SPCC Guidance for Regional Inspectors*, November 28, 2005. The guidance was updated August 28, 2013 [http://www.epa.gov/emergencies/content/spcc/spcc\\_guidance.htm](http://www.epa.gov/emergencies/content/spcc/spcc_guidance.htm).

<sup>2</sup> Letter to Daniel Gilligan, President, Petroleum Marketers Association of America, from Marianne Lamont Horinko, Assistant Administrator, Office of Solid Waste and Emergency Response, EPA, May 25, 2004.

engineering practice” for integrity testing of shop-built containers. This may affect a PE’s decision whether to certify an environmentally equivalent approach as described in the PMAA letter, or to follow an industry standard without having to certify the measures described in the PMAA letter as an environmentally equivalent method of integrity testing.

If an owner or operator wants to deviate from applicable industry standards to develop an integrity testing program, then a PE must certify an environmentally equivalent alternative in the SPCC Plan. Furthermore, the Plan must provide the reason for the deviation, describe the alternative approach (e.g. a site-specific or “hybrid” inspection program), and explain how it achieves environmental protection equivalent to the applicable industry standard.<sup>3</sup>

### **How do I inspect mobile or portable bulk storage containers?**

Industry standards (such as STI SP001) refer to specific conditions for which visual inspection alone is an appropriate method for verifying the integrity of certain smaller shop-built containers (e.g., portable containers such as drums and totes). These conditions include container type, size, and configuration (such as whether the container is in contact with the ground or has appropriate secondary containment). For example, according to STI SP001, when portable containers have adequate secondary containment then visual inspection of these containers is acceptable and will satisfy the integrity testing requirements of the rule.

### **Can I use a site-specific (hybrid) inspection program instead of an industry standard?**

Yes. Although the rule requires that you consider industry standards when developing an inspection program, you can incorporate an environmentally equivalent inspection program when you and the certifying PE decide that another inspection approach would be more appropriate or cost effective, based on site-specific factors. You can use an environmentally equivalent alternative when you include in your SPCC Plan the reason for deviating from the rule requirements and describe the alternative method in detail, including how it is environmentally equivalent.

An environmentally equivalent approach to following the applicable industry standard may be a site-specific (i.e., hybrid) inspection program that is based on elements designed to minimize the risk of container failure and allow detection of leaks before they impact navigable waters or adjoining shorelines. These elements may be based on a combination of various industry standards and good engineering practice.

If you are the owner or operator of a Tier II qualified facility and you choose to develop an alternative inspection program rather than follow an applicable industry standard, then you must have a PE certify the environmentally equivalent measures as described in §112.6(b)(4). You cannot deviate from applicable industry standards if you are the owner or operator of a Tier I qualified facility when following the requirements for Tier I qualified facilities in §112.6(a).<sup>3</sup>

### **Can I use a site-specific (hybrid) inspection program to deviate from portions of an industry standard?**

Yes, under certain circumstances it may be appropriate to deviate from portions of an industry standard. As you develop your inspection and/or testing program, you must determine, in accordance with industry standards, the appropriate qualifications for personnel performing tests and inspections, the frequency and type of testing and inspections, which take into account container size, configuration and design. However, you and the certifying PE can decide to deviate from a portion of a standard when another approach would be more appropriate or cost effective, based on site-specific factors.

Your Plan should describe what industry standard applies, how the site-specific (hybrid) inspection program deviates from the applicable industry standard, and how the inspection program meets the minimal recommended elements of a hybrid inspection program.

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<sup>3</sup> For more information on how to document an inspection program in your SPCC Plan see Section 7.6.2 of the *SPCC Guidance for Regional Inspectors* at [http://www.epa.gov/emergencies/content/spcc/spcc\\_guidance.htm](http://www.epa.gov/emergencies/content/spcc/spcc_guidance.htm).

If you are the owner or operator of a Tier II qualified facility and you choose to deviate from a portion of an applicable industry standard, then you must have a PE certify the environmentally equivalent measures as described in §112.6(b)(4). You cannot deviate from applicable industry standards if you are the owner or operator of a Tier I qualified facility when following the requirements for Tier I qualified facilities in §112.6(a).<sup>4</sup>

### **Can I use a site-specific (hybrid) inspection program if no industry standard applies to my container?**

Yes. However, it is likely that at least one industry standard will apply in most circumstances. Two commonly used steel tank inspection standards are STI SP001 and API 653. The scope of these two standards addresses many of the steel storage tanks in service at SPCC-regulated facilities and it is likely that one of these inspection standards can be applied.

If in the judgement of a PE or qualified facility owner/operator, no industry standard applies to a particular container, then the Plan preparer should consider the manufacturer's specifications and instructions for the proper use and maintenance of the equipment, appurtenance, or container. If no industry standards or manufacturer's instructions apply, the Plan preparer may also call upon his/her professional experience and/or consult with tank inspection professionals to develop site-specific inspection and testing requirements for the facility or equipment that are in accordance with good engineering practice and document them in the Plan.

 **Tip**

Although existing industry standards are not specific to integrity testing of AFVO bulk storage containers or tanks operated at elevated temperatures (e.g. asphalt), facilities with these storage containers can follow API Standard 653, "Tank Inspection, Repair, Alteration, and Reconstruction" because the scope is written broadly to include any steel tank constructed in accordance with a tank specification.

A customized, site-specific (i.e., hybrid) inspection program should be based on relevant industry standards (in whole or in part) and other good engineering principles. The hybrid inspection program should be designed to measure the structural soundness of a container shell, bottom, and/or floor to contain oil, and may include leak testing to determine whether the container will discharge oil. API 653 and STI SP001 provide the foundation for integrity testing and inspecting containers, and in many cases it may still be appropriate to consider these standards when developing a hybrid inspection program.

A PE does not need to provide and certify an environmental equivalence justification for implementing a hybrid inspection program when industry standards do not apply to a container or the container is outside the scope of the standard. However, you must describe the procedures for this inspection program in your SPCC Plan and keep a record of inspections and tests for three years. EPA recommends that formal test records or reports be retained for the life of the container. These records can be helpful to inform changes in the inspection program.<sup>4</sup>

It is unlikely that qualified facility owner/operators will have bulk storage containers for which no industry standard applies. However, if you are the owner or operator of a qualified facility and you determine that no industry standard applies, then you should follow the procedures described above to develop an inspection program for bulk storage containers. No environmental equivalence determination is necessary in this case and a PE does not need to certify the hybrid inspection program; however, you should consider consulting with a tank inspection professional or a PE. You should also clearly explain why current industry standards do not apply and how the hybrid inspection program meets the minimal recommended elements described below.

### **What are some recommended elements for a site-specific integrity inspection and/or testing program (hybrid inspection program)?**

<sup>4</sup> For more information on how to document an inspection program in your SPCC Plan see Section 7.6.2 of the *SPCC Guidance for Regional Inspectors* at [http://www.epa.gov/emergencies/content/spcc/spcc\\_guidance.htm](http://www.epa.gov/emergencies/content/spcc/spcc_guidance.htm).

The hybrid program should be designed to measure the structural soundness of a container shell, bottom, and/or floor to contain oil, and may include leak testing to determine whether the container will discharge oil. The components of a hybrid inspection program would likely include frequent visual inspections by the owner, as well as periodic inspections (plus testing as appropriate) by a certified inspector. Alternatively, the PE can recommend an inspection program following a specific standard, even when the standard does not specifically identify the container in its scope, if he believes that the inspection elements of that standard are appropriate for the container(s) at the facility and in accordance with good engineering practices.

Any hybrid inspection program should include an evaluation of the principal elements that would cause a tank to fail, and how the inspection program addresses finding such conditions, or prevents such conditions from continuing to the point of failure. For example, internal and external corrosion conditions must be considered, and a testing method developed to assure that the condition is identified and measured. Conditions that may lead to a structural failure should be identified, for example a failing foundation, and evaluation methods developed to identify the condition.

In all cases, careful consideration should be given to discovering such conditions that may not be identifiable from visual examination, such as the bottom of floor plates. Hybrid programs should also include evaluation of container modifications made since last examination that may degrade integrity or lead to failure.

For more information on how to document an inspection program in your SPCC Plan see *Section 7.6.2* of the *SPCC Guidance for Regional Inspectors* at [http://www.epa.gov/emergencies/content/spcc/spcc\\_guidance.htm](http://www.epa.gov/emergencies/content/spcc/spcc_guidance.htm).

#### **Recommended Elements for a Hybrid Inspection Program**

Here is a partial list of items to consider regarding the elements of a hybrid inspection program.

##### For shop-built tanks:

- Visually inspect exterior of tank;
- Evaluate external pitting;
- Evaluate hoop stress and longitudinal stress risks where corrosion of the shell is present;
- Evaluate condition and operation of appurtenances;
- Evaluate welds;
- Establish corrosion rates and determine the inspection interval and suitability for continued service;
- Evaluate tank bottom where it is in contact with ground and no cathodic protection is provided;
- Evaluate the structural integrity of the foundation;
- Evaluate anchor bolts in areas where required; and
- Evaluate the tank to determine it is hydraulically sound and not leaking.

##### For field-erected tanks:

- Evaluate foundation;
- Evaluate settlement;
- Determine safe product fill height;
- Determine shell corrosion rate and remaining life;
- Determine bottom corrosion rate and remaining life;
- Determine the inspection interval and suitability for continued service;
- Evaluate welds;
- Evaluate coatings and linings;
- Evaluate repairs for risk of brittle fracture; and
- Evaluate the tank to determine it is hydraulically sound and not leaking.



## How do I inspect and/or test containers that store animal fats or vegetable oils (AFVO)?

The inspection and/or testing requirements for AFVO at §112.12(c)(6)(i), are identical to those described above at §112.8(c)(6). The SPCC rule also provides differentiated, more flexible, alternative requirements at §112.12(c)(6)(ii) for AFVO containers that meet certain criteria to address differences in the way certain AFVOs may be stored and handled at a facility.

Facility owners with AFVO containers that meet the following criteria can conduct visual inspections of their containers when the following criteria are met:

- Are subject to the Food and Drug Administration (FDA) regulations in 21 CFR part 110, *Current Good Manufacturing Practice in Manufacturing, Packing or Holding Human Food*;
- Are elevated;
- Are made from austenitic stainless steel;
- Have no external insulation; and
- Are shop-built.

The owner or operator is required to document the procedures for inspections and testing in their SPCC Plan, including those for AFVO bulk storage containers that are eligible for these differentiated requirements.

### §§112.12(c)(6)(ii)

For bulk storage containers that are subject to 21 CFR part 110, are elevated, constructed of austenitic stainless steel, have no external insulation, and are shop-fabricated, conduct formal visual inspection on a regular schedule. In addition, you must frequently inspect the outside of the container for signs of deterioration, discharges, or accumulation of oil inside diked areas. You must determine and document in the Plan the appropriate qualifications for personnel performing tests and inspections. Records of inspections and tests kept under usual and customary business practices satisfy the recordkeeping requirements of this paragraph (c)(6).

Note: The above text is an excerpt of the SPCC rule. Refer to the full text of 40 CFR part 112.

A facility owner/operator with AFVO bulk storage containers may follow an applicable industry standard, such as API 653, to conduct inspections in accordance with the requirements of §112.12(c)(6)(i), follow the requirements of §112.12(c)(6)(ii) (if applicable), or provide an environmentally equivalent measure in the SPCC Plan in accordance with §112.7(a)(2) of the SPCC rule. If a hybrid inspection program is used to meet the integrity testing requirements in §112.12(c)(6), the Plan must state the reasons for nonconformance and explain how the hybrid inspection program provides equivalent environmental protection. The Plan should also address how the program effectively minimizes the risk of container failure and allows detection of leaks before they become significant.

A PE must review and certify the environmental equivalence determination. If a PE develops a hybrid inspection program for a facility, rather than uses an applicable industry standard, then the PE must describe why the hybrid inspection program does not follow the applicable industry consensus standard and how the hybrid inspection program is environmentally equivalent to the industry standard and meets the minimal recommended elements for a hybrid inspection program (described above).

## What are the requirements to test completely buried tanks?

You must regularly leak test completely buried metallic storage tanks installed on or after January 10, 1974. "Regular testing" means testing in accordance with industry standards or at a frequency sufficient to prevent leaks. Appropriate methods of testing should be selected based on good engineering practice and tests conducted in accordance with 40 CFR part 280 or a State program approved under 40 CFR part 281 are acceptable.

Leak testing is often referred to as “tank tightness testing.” Tank tightness tests include a wide variety of methods. Other terms used for these methods include "precision," "volumetric," and "nonvolumetric" testing. The features of tank tightness testing vary by method, as described in EPA Guidance on meeting UST system requirements:

- Many tightness test methods are "volumetric" methods in which the change in product level in a tank over several hours is measured very precisely (in milliliters or thousandths of an inch).
- Other methods use acoustics or tracer chemicals to determine the presence of a hole in the tank. *With such methods, all of the factors in the following bullets may not apply.*
- For most methods, changes in product temperature also must be measured very precisely (thousandths of a degree) at the same time as level measurements, because temperature changes cause volume changes that interfere with finding a leak.
- For most methods, a net decrease in product volume (subtracting out volume changes caused by temperature) over the time of the test indicates a leak.
- The testing equipment is temporarily installed in the tank, usually through the fill pipe.
- The tank must be taken out of service for the test, generally for several hours, depending on the method.
- Many test methods require that the product in the tank be a certain level before testing, which often requires adding product from another tank on-site or purchasing additional product.
- Some tightness test methods require all of the measurements and calculations to be made by hand by the tester.
- Other tightness test methods are highly automated. After the tester sets up the equipment, a computer controls the measurements and analysis.
- A few methods measure properties of the product that are independent of temperature, such as the mass of the product, and so do not need to measure product temperature.
- Some automatic tank gauging systems are capable of meeting the regulatory requirements for tank tightness testing and can be considered as an equivalent method.

#### §§112.8(c)(4), 112.12(c)(4)

Protect any completely buried metallic storage tank installed on or after January 10, 1974 from corrosion by coatings or cathodic protection compatible with local soil conditions. You must regularly leak test such completely buried metallic storage tanks.

Note: The above text is an excerpt of the SPCC rule. Refer to the full text of 40 CFR part 112.

Describe the method and schedule for testing your completely buried tanks in the SPCC Plan. For more information on tank tightness testing, see: <http://www.epa.gov/oust/ustsystem/inventor.htm>. For more information on preventing and detecting underground storage tank system leaks see <http://epa.gov/oust/prevleak.htm>.

### What are the requirements to inspect bulk storage containers at an onshore oil production facility?

You must periodically and upon a regular schedule visually inspect each bulk storage container (e.g. oil stock tanks<sup>5</sup>, flow-through process vessels, and produced water containers) for deterioration and maintenance needs in accordance with §112.9(c)(3), including the foundation and support of each container that is on or above the surface of the ground. This inspection is intended to be a routine walk-around where you look at the

#### §112.9(c)(3)

...periodically and upon a regular schedule visually inspect each container of oil for deterioration and maintenance needs, including the foundation and support of each container that is on or above the surface of the ground.

Note: The above text is an excerpt of the SPCC rule. Refer to the full text of 40 CFR part 112.

<sup>5</sup> A stock tank is storage tank for oil production after the oil has been treated (Schlumberger Oil Field Glossary <http://www.glossary.oilfield.slb.com/default.cfm>)

container and supports and foundations for any evidence of damage, corrosion, or leaks. Document the inspection procedures and schedule in the Plan and conduct inspections in accordance with the Plan.

EPA recommends that the inspection occur on an ongoing routine basis and be conducted by qualified personnel. Before the PE certifies the SPCC Plan in accordance with §112.3(d), he must consider applicable industry standards when developing the Plan and establishing procedures for inspections and tests. API has developed Recommended Practice 12R1 “Recommended Practice for Setting, Maintenance, Inspection, Operation and Repair of Tanks in Production Service” that includes inspection procedures for tanks employed in onshore oil production service.

Additionally, the owner or operator of an onshore oil production facility must conduct *integrity testing* for any bulk storage containers for which he determines secondary containment is impracticable. The Plan must follow the provision of §112.7(d) and clearly explain why such measures are not practicable; for bulk storage containers, conduct both periodic integrity testing of the containers and periodic integrity and leak testing of the valves and piping; and, unless you have submitted a response plan under §112.20, provide the following in the Plan:

- An oil spill contingency plan following the provisions of part 109 of this chapter, and
- A written commitment of manpower, equipment, and materials required to expeditiously control and remove any quantity of oil discharged that may be harmful.

#### More information on industry standards:

##### API RP 12R1

API RP 12R1 (R2008) Recommended Practice for Setting, Maintenance, Inspection, Operation and Repair of Tanks in Production Service contains recommendations for good practices in:

- The collection of well or lease production,
- Gauging,
- Delivery to pipeline carriers for transportation, and
- Other production storage and treatment operations.

This recommended practice is intended primarily for applications to tanks fabricated to API Specs 12B, 12D, 12F, and 12P when employed in on-land production service; but its basic principles are applicable to atmospheric tanks of other dimensions and specifications when they are employed in similar oil and gas production, treating, and processing services. API 12R1 is available for purchase at:

#### For More Information

**Review the Oil Pollution Prevention regulation (40 CFR part 112):**

<http://www.gpoaccess.gov/cfr/>

**SPCC Guidance for Regional Inspectors**

[http://www.epa.gov/emergencies/content/spcc/spcc\\_guidance.htm](http://www.epa.gov/emergencies/content/spcc/spcc_guidance.htm)

**Call the Superfund, TRI, EPCRA, RMP, and Oil Information Center:**

(800) 424-9346 or (703) 412-9810

TDD (800) 553-7672 or (703) 412-3323

<http://www.epa.gov/superfund/resources/infocenter>

**To Report an Oil or Chemical Spill Call the National Response Center:**

(800) 424-8802 or (202) 267-2675

TDD (202) 267-4477