




▶ SPCC and GPP

Crash Course

SPEAKER Patricia A. Mason, P.E.	DATE February 10, 2015
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STATE OF Kentucky



Introduction


▶ **SPCC Plan = Spill Prevention, Control, and Countermeasure Plan**
GPP = Groundwater Protection Plan

Both require facilities to develop, implement, and maintain appropriate management practices for the handling and storage of oils.

The GPP regulation covers other potential pollutants as well.




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SPCC Background

- ▶ The Federal Oil Pollution Prevention regulations (aka the SPCC rules) were promulgated by EPA under the authority of Section 311 of the Clean Water Act (CWA).
- SPCC rule is published at 40 CFR Part 112
- Requires prevention of, preparedness for, and response to oil discharges at specific non-transportation related facilities.



SPCC rule was initially promulgated in 1973

Significant amendments published in 2002

EPA finalized additional revisions in 2006, 2008, 2009 and 2011.

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GPP Background

- ▶ The state regulation at 401 KAR 5:037 was published in 1994 under authority from KRS 224.01-010, KRS 224.10-100, KRS 224.70-100 and KRS 224.70-110.
- The regulation requires the preparation and implementation of a Groundwater Protection Plan for specific activities listed in the regulation.
- A GPP implements actions that protect groundwater for all current and future uses and to prevent groundwater pollution.



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Freedom Industries, Elk River, near Charleston, WV, January 2014.
10,000 gallon release of a mixture containing primarily MCHM (aka 4-methyl-cyclohexane-methanol).



Reference: <http://emergency.cdc.gov/chemical/MCHM/westvirginia2014/> Photo credit: NPR: Tom Hindman/Getty Images



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Freedom Industries, Elk River, Charleston, WV, January 2014.
Release of 4-methyl-cyclohexane-methanol (MCHM)

The WV Gazette reported that the spill was identified due to odor complaints from neighbors and that a 30,000 gallon tank and concrete block containment dike had failed. No measures to contain the release had been taken by Freedom Industries at the time of WVDEP and Kanawha Co. inspectors arrival.

Six people were charged with negligent discharge in violation of the Clean Water Act including the company President during the spill and three former owners (CNN 12/17/14).

The indictment alleges that the company approved funding for "only those projects that would result in increased business revenue for Freedom, or that were immediately necessary for required equipment maintenance."

Sources: <http://www.wvgazette.com/News/201401100100>, <http://www.cnn.com/2014/12/17/justice/west-virginia-water-contamination/>, http://www.huffpost.com/entry/2014/12/17/freedom-industries-employees-indicted_n_6341600.html?utm_hp_ref=west-virginia-chemical-spill

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People tend to think that incidents are unlikely, but.....

▶ Almost 14,000 oil spills are reported in the US each year, mobilizing thousands of specially trained emergency response personnel and challenging the best-laid contingency plans.

<http://www.epa.gov/oem/content/learning/response.htm>

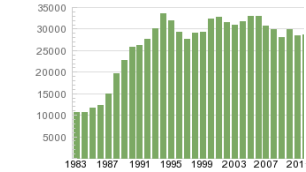
Emergency Response Notification System (ERNS) reports 433 incidents for Kentucky in 2013. ERNS incidents include chemical spills, accidents involving chemicals (such as fires or explosions), oil spills, transportation accidents that involve oil or chemicals, releases of radioactive materials, sightings of oil sheens on bodies of water, terrorist incidents involving chemicals, incidents where illegally dumped chemicals have been found, and drills intended to prepare responders to handle these kinds of incidents

http://www.rtknet.org/db/erns/erns.php?reptype=f&database=erns&reporting_year=2013&detail=-1&sortpr=i&datatype=T&loc_state=KY

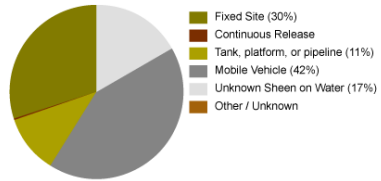
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ERNS 2013 Report for the Nation

▶ **Number of Incidents by Year**



Numbers of Incidents by Type, 2013



Approx. 30,000 incidents/year x 41% at fixed facilities, tanks, platforms, pipelines / (365 days/year)

≈ 33.7 incidents/day

EMERGENCY INCIDENTS ARE NOT THAT UNLIKELY!

<http://www.rtknet.org/db/erns>

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Potential causes of spills:

- ▶ Operator error
- Mechanical failures
- Structural failures
- Collisions from mobile equipment/vehicles
- Natural disasters
- Vandalism/environmental terrorism

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TIMES PAST

▶ 

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THE PRESENT

▶ 

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Other Spill Plans with overlapping content

▶ **SWPPP/BMP Plan** - Facilities with KDPEs permits for construction or industrial stormwater are required to have Stormwater Pollution Prevention Plans (SWPPP) or Best Management Practices Plans (BMP Plans).

SARA III/Tab Q-7 - If facility handles CERCLA “extremely hazardous substances” of 500 pounds or at the threshold planning quantity a SARA III Plan is required. In Kentucky we call this a Tab Q-7 Plan.

HMPC Plan (Louisville MSD) – For facilities using, storing or manufacturing hazardous materials above thresholds (refer to the Louisville Hazardous Material Ordinance).

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Management Strategies



- ▶ • **Avoidance** – Review operations and evaluate the need for storing quantities above regulatory thresholds, permanently close unused tanks and containers, consider indoor storage and covered transfer areas, eliminate floor drains, etc.
- **Consolidate efforts**- Many of these plans have overlapping requirements and duplicate content. They often contradict each other because one or more is out of date. Be consistent to save time and integrate the work. Note: If you do integrate plans, check for specific requirements and have a table for each regulation which cross references each specific requirement and the content location by page number in the plan.

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Management Strategies (cont.)



- ▶ • **Review and update on a regular basis.**
Set a quarterly reminder to review upcoming projects and facility changes. Regulatory requirements are 5 years for a SPCC Plan and 3 years for a GPP. Plant changes, however, often dictate changes sooner. (Consider whether or not the change requires recertification.)

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Management Strategies (cont.)



- ▶ **In addition to meeting regulatory requirements, consider that the plans will be referred to during emergencies.**
 - Present the information in a concise and easy to find way.
 - Design the plans to be user-friendly for the facility employees – include facility terminology and get employee input.

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- ▶ **GROUNDWATER PROTECTION PLAN (GPP)**
Refer to regulation 401 KAR 5:037

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GPP Compliance Steps



- ▶ 1. Determine applicability using definitions and reviewing specific listed activities
2. Review exclusions
3. Prepare your GPP
4. Implement your GPP
5. Review and revise your GPP as needed

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1. Applicability - Any person responsible for conducting any of the following activities shall prepare and implement a Groundwater Protection Plan




- ▶ • Refer to Section 2(2) of the regulation ▶ for the full list.
- Bulk pesticide or fertilizer storage, application and handling for commercial purposes or distribution to retail sales outlet.
- Land treatment or land disposal of a pollutant.
- Storage, treatment, disposal or handling of hazardous waste, solid waste, or special waste in landfills, incinerators, surface impoundments, tanks, drums, or other containers or in piles.




Photo credit: http://xn--d1-af4fd6v0b0h-an-p1a1d6z6noe-toplivo/Arak_godhosti_dirtgolva.php
https://www.health.ny.gov/environmental/air/air_quality/faq/04ny02.htm

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1. Applicability – Continued




- ▶ • Commercial or industrial storing or related handling in bulk quantities of raw materials, intermediate substances or products, finished products, substances held for recycling, or other pollutants held in tanks, drums, or other containers or in piles.
- Transmission in pipelines of raw materials, intermediate substances or products, finished products or other pollutants.
- Installation or operation of on-site sewage disposal systems.
- Storing or related handling of road oils, dust suppressants or deicing agents at a central location. Application of related handling of road oils, dust suppressants or deicing materials.
- Mining and associated activities.




<http://www.industry.com/>

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1. Applicability – Continued



- ▶ • Installation, construction, operation or abandonment of wells, bore holes, or core holes.
- Collection or disposal of pollutants in an industrial or commercial facility through the use of floor drains that are not connected to on-site sewage disposal systems, closed-loop collection or recovery systems, or a waste treatment system permitted under the KPDES.
- Impoundment or containment of pollutants in surface impoundments, lagoons, pits or ditches.
- Commercial or industrial transfer, including loading and unloading, in bulk quantities of raw materials, intermediate substance or products, finished products, substances held for recycling, or other pollutants.



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1. Applicability - Key Definitions



- ▶ **Pollutant** – defined by KRS 224.01-010(35) as dredged spoil, solid waste, incinerator residue, sewage, sewage sludge, garbage, chemical, biological or radioactive materials, heat, wrecked or discarded equipment, rock, sand, soil, industrial, municipal or agricultural waste, and any substance resulting from the development, processing, or recovery of any natural resource which may be discharged into water.

Bulk quantities - means undivided quantities of any substance equal to or greater than fifty-five (55) U. S. gallons liquid measure or 100 pounds net dry weight transported or held in an individual container.

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2. Exclusions - See Section 2(3) and section 2(4) of the regulation



▶ General Exclusions

Any person who conducts an activity identified in subsection (2) of this section shall not be required to prepare or to implement a Groundwater Protection Plan for that activity if that person can demonstrate by substantial evidence based on the factors set forth in this subsection, the activity has no reasonable potential of altering the physical, thermal, chemical, biological, or radioactive properties of the groundwater in a manner, condition, or quantity that will be detrimental to the public health or welfare, to animal or aquatic life, to the use of groundwater as present or future sources of public water supply or to the use of groundwater for recreational, commercial, industrial, agricultural, or other legitimate purposes.

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2. Exclusions (Continued)



▶ Specific Exclusions

The provisions of this administrative regulation shall not apply to the following activities:

- (a) Normal use or consumption of products sized and packaged for personal use by individuals;
- (b) Retail marketing of products sized and packaged for personal use or consumption by individuals;
- (c) Activities conducted entirely inside enclosed buildings if:
 1. The building has a floor sufficient to prevent the release of pollutants to groundwater; and
 2. There are no floor drains, or all floor drains within the building are connected to an on-site sewage disposal system, closed-loop collection or recovery system or a waste treatment system permitted under the Kentucky Pollutant Discharge Elimination System;
- (d) Storing, related handling, or transmission in pipelines of pollutants that are gases at standard temperature and pressure;
- (e) Storing municipal solid waste in a container located on property where the municipal solid waste is generated and which is used solely for the purpose of collection and temporary storage of that municipal solid waste prior to off-site disposal;
- (f) Installing and operating sewer lines or water lines approved by the cabinet

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2. Exclusions




▶ Specific Exclusions (Continued)

- (g) Storing water in ponds, lakes or reservoirs;
- (h) Impounding stormwater, silt, or sediment in surface impoundments;
- (i) Application of chloride-based deicing materials used on roads or parking lots;
- (j) Emergency response activities conducted in accordance with local, state, and federal law;
- (k) Fire fighting activities;
- (l) Conveyance or related handling by motor vehicle, rolling stock, vessel, or aircraft;
- (m) Agricultural activities at agriculture operations; or
- (n) Application by commercial applicators of fertilizers or pesticides on lands used for agriculture operations.

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3. Prepare your GPP GPP Elements



- ▶ Refer to Section 3.0 of 401 KAR 5:037 and refer to the DOW GPP page generic plans and templates (See supplemental info.)
- **General requirement:** Series of practices designed and implemented to prevent groundwater pollution.
- **Specific requirements:**
 - General Information
 - Identify all activities for which the plan is required.
 - Specify specific protective practices for each activity
 - Create implementation schedule
 - Create an inspection schedule
 - Certification

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3. Prepare your GPP Practice Selection




- ▶ (a) Equipment design;
- (b) Operational procedures;
- (c) Preventive maintenance techniques;
- (d) Construction techniques;
- (e) Personnel training;
- (f) Spill response capabilities;
- (g) Alternative materials or processes;
- (h) Implementation of new technology;



Photo Credit: Newpig.com

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3. Prepare your GPP Practice Selection - Continued



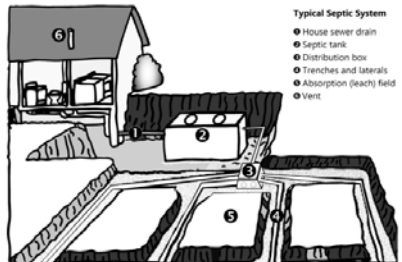
- ▶ (i) Modification of facility or equipment;
- (j) Spill Prevention Control and Countermeasure Plans;
- (k) Best Management Practices;
- (l) Hazardous waste contingency plans;
- (m) Other plans prepared pursuant to other programs which protect groundwater from pollution;
- (n) Runoff or infiltration control systems;
- (o) Citing considerations; and
- (p) Any other practice which will protect groundwater from pollution.

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Specific Practices



- ▶ On-site sewage disposal systems. No person shall install a new or replace an existing on-site sewage disposal system if a publicly - or privately-owned treatment works capable of treating the pollutants to be discharged is available.



Typical Septic System

- House sewer drain
- Septic tank
- Distribution box
- Trenches and laterals
- Absorption (leach) field
- Vent

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Specific Practices - Floor drains

- ▶ Any person using existing floor drains shall evaluate those floor drains to determine if they discharge to an on-site sewage disposal system, to a closed-loop collection or recovery system, or to a waste treatment system permitted under the Kentucky Pollutant Discharge Elimination System (KPDES).

If drains are identified which do not discharge to an on-site sewage disposal system, a closed-loop collection or recovery system, or a waste treatment system permitted under the KPDES, that person shall terminate the discharge or connect it to an on-site sewage disposal system, a closed-loop collection or recovery system, or a waste treatment system permitted under the KPDES.

No person shall install a floor drain unless it is connected to an on-site sewage disposal system, closed-loop collection or recovery system, or a waste treatment system permitted under the KPDES.

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Specific Practices - Loading and unloading areas

- ▶ Loading and unloading areas shall have spill prevention and control procedures and operation procedures designed to prevent groundwater pollution. Spill containment and cleanup equipment shall be readily accessible.



<http://www.interstateproducts.com/products/Railroad-Spill-Containment>

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Specific Practices

- ▶ **Tanks and sumps**
Any person using a tank or sump shall prepare and implement good housekeeping practices, operating procedures, operator training, and spill response procedures. In addition, any person using a tank or sump shall consider leak control devices, secondary containment, integrity testing, mechanical inspections, and overflow protection devices. Additional containment is not required for sumps and tanks that are used solely to provide secondary containment.

New surface impoundments, lagoons, pits or ditches
Any person who constructs a new surface impoundment, lagoon, pit or ditch which will contain a pollutant shall evaluate the site's hydrogeology and shall design and operate it to minimize discharges to soil.

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4. GPP Implementation – Section 4 of 401 KAR 5:037

- ▶ • GPP must be implemented “upon commencement of the regulated activity”
- Implement practices for each activity listed in the GPP
- Follow implementation schedule included in the GPP
- Follow inspection schedule
- Train personnel
- Keep records - 6 years
- Keep GPP onsite



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5. GPP Review and Revision – Section 4 of 401 KAR 5:037

- ▶ GPP must be amended prior to conducting a new or modified activity
- GPP must be reviewed in its entirety every 3 years, revised as needed, and recertified.
- If requested by the cabinet the GPP must be provided. Additional information may be requested. Revisions, if required, must be complete within 30 days.

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SPILL PREVENTION, CONTROL, AND COUNTERMEASURE (SPCC) PLANS

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Facility Risk Evaluation

This is also true as the throughput and number of tanks increase.

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SPCC Regulation Levels

Highest risk	“Substantial Harm” Facilities	SPCC rules + Facility Response Plan (Subpart D - §112.20 and §112.21)
	Other facilities	SPCC rules
	Qualified facilities	Modified SPCC rules §112.3(g) & §112.6
Lowest risk	Non-regulated facilities	Not regulated under SPCC

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SPCC Regulation Organization

- ▶ Subpart A- General information for all facilities 112.1-112.7
- Subpart B- Requirements for petroleum oils and non-petroleum oils except animal oils, marine mammal oils and vegetable oils
 - 112.8 Requirements for onshore facilities (excluding production facilities)
 - 112.9 Requirements for onshore oil production facilities
 - 112.10 Requirements for onshore oil drilling and workover facilities
 - 112.11 Requirements for offshore oil production, drilling and workover facilities
- Subpart C- Requirements for animal oils, marine mammal oils and vegetable oils 112.12
- Subpart D- Response Requirements (Facility Response Plans) 112.20 and 112.21

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High Risk - Facility Response Plan Triggers


- ▶ SPCC-regulated facilities may also be subject to Facility Response Plan (FRP) requirements if they could reasonably be expected to cause "substantial harm" to the environment by discharging oil into or on navigable waters or adjoining shorelines. The determination of a "substantial harm" facility is made on the basis of meeting of the following criteria:
 - Has a total oil storage greater than or equal to 42,000 gallons and it transfers oil over water to/from vessels; or
 - Has a total oil storage capacity greater than or equal to one million gallons and meets one of the following conditions:
 - Does not have sufficient secondary containment for each aboveground storage area.
 - Is located at a distance such that a discharge from the facility could cause "injury" to fish, wildlife, and sensitive environments.
 - Is located at a distance such that a discharge from the facility would shut down a public drinking water intake.
 - Has had, within the past 5 years, a reportable discharge greater than or equal to 10,000 gallons.

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High Risk - FRP Requirements

An emergency response action plan

- ▶
 - Identification of small, medium and worst-case scenarios and appropriate response actions;
 - A description of discharge detection procedures and equipment;
 - Detailed implementation plans for containment and disposal;
 - Facility diagrams that illustrate the surrounding layout, topography and evacuation paths; and
 - Employee training, and a drill and exercise program.



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Low Risk - Qualified Facilities

▶ If the facility total aboveground oil storage capacity is 10,000 gallons or less...

<p>And...</p> <p>In the three years before the SPCC Plan is certified, the facility has had no discharges to navigable waters or adjoining shorelines as described below:</p> <p>A single discharge of oil greater than 1,000 gallons, or</p> <p>Two discharges of oil each greater than 42 gallons within any 12-month period.</p>	<p>And the facility has...</p> <p>No individual aboveground oil containers greater than 5,000 gallons</p> <p>Any individual aboveground oil container greater than 5,000 gallons</p>	<p>Then the facility is a:</p> <p>Tier I Qualified Facility: Complete and self-certify Plan template (Appendix G to 40 CFR part 112) in lieu of a full PE-certified Plan or other self-certified SPCC Plan.</p> <p>Tier II Qualified Facility: Prepare a self-certified Plan in accordance with all applicable requirements of §112.7 and subparts B or C of the rule, in lieu of a PE-certified Plan.</p>
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SPCC Compliance Steps

- ▶ 1. Determine applicability using definitions
2. Review exclusions
3. Prepare your SPCC Plan
4. Implement your SPCC Plan 
5. Review and revise your SPCC as needed

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1. Applicability

▶ §112.1(b) ...this part applies to any owner or operator of a non-transportation-related onshore or offshore facility engaged in drilling, producing, gathering, storing, processing, refining, transferring, distributing, using, or consuming oil and oil products, which due to its location, could reasonably be expected to discharge oil in quantities that may be harmful, as described in part 110 of this chapter, into or upon the navigable waters of the United States or adjoining shorelines...

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1. Applicability - Aggregation and Facility Definition

▶ Example factors to determine the boundaries of a facility:

- Ownership, management, and operation of the buildings, structures, equipment, installations, pipes, or pipelines on the site;
- Similarity in functions, operational characteristics, and types of activities occurring at the site;
- Adjacency; or
- Shared drainage pathways (e.g., same receiving water bodies)

An owner or operator may not characterize a facility so as to simply avoid applicability of the rule.

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1. Applicability - Potential release to navigable waters

▶ “Navigable waters of the United States means “navigable waters” as defined in section 502(7) of the FWPCA, and includes:

- (1) All navigable waters of the United States, as defined in judicial decisions prior to passage of the 1972 Amendments to the FWPCA (Pub. L. 92-500), and tributaries of such waters;
- (2) Interstate waters;
- (3) Intrastate lakes, rivers, and streams which are utilized by interstate travelers for recreational or other purposes; and
- (4) Intrastate lakes, rivers, and streams from which fish or shellfish are taken and sold in interstate commerce.

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1 Applicability –Potential release in Harmful Quantities



- ▶ The Discharge of Oil regulation at 40 CFR part 110 (also referred to as the “sheen rule”) defines a discharge of oil into or upon the navigable waters of the United States or adjoining shorelines in quantities that may be harmful under the CWA as that which:
 - Causes a sheen or discoloration on the surface of the water or adjoining shorelines;
 - Causes a sludge or emulsion to be deposited beneath the surface of the water or upon adjoining shorelines; or
 - Violates an applicable water quality standard.

Note: A discharge meeting any of the above criteria triggers requirements to report to the National Response Center (NRC).

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Watersheds and discharge in harmful quantities to navigable waters



- ▶ See EPA Office of Wetlands, Oceans & Watersheds Website for up to date information or EPA MyWATERS mapper.

<http://cfpub.epa.gov/surf/locate/index.cfm>

<http://watersgeo.epa.gov/mwm/>

You may not take into account manmade features, such as dikes, equipment, or other structures that might prevent, contain, hinder, or restrain the flow of oil. Assume these manmade features are not present when making your determination of whether or not a spill may harm navigable waters.



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2. Exemptions



- ▶ • Completely buried oil storage capacity is 42,000 U.S. gallons or less
- Aggregate aboveground oil storage capacity is 1,320 U.S. gallons or less
- Any container with an oil storage capacity less than 55 U.S. gallons (55 Gallon drums must be included in capacity calculations)
- Permanently closed oil containers
- Motive power containers (those which support the vehicle or vehicle equipment)
- Any facility or part thereof used exclusively for wastewater treatment
- Completely buried oil tanks and associated piping and equipment that are subject to all of the technical requirements under 40 CFR Part 280 or 281.

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2. Exemptions (Continued)




- ▶ • Any hot mix asphalt container
- Containers storing heating oil used solely at a single family residence
- Pesticide application equipment or related mix containers
- Intra-facility oil gathering lines subject to the regulatory requirements of 49 CFR Part 192 or 195
- Any milk and milk product container and associated piping and appurtenance
- New Tanks that are brought on site without any oil added are not counted towards the 1,320-gallon threshold.

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2. Exclusions - "Permanently Closed"



- ▶ SPCC rule exempts any oil storage container that is permanently closed.
- Permanently closed means any container or facility for which:
 - All liquid and sludge has been removed from each container and connecting line; and
 - All connecting lines and piping have been disconnected from the container and blanked off, all valves (except for ventilation valves) have been closed and locked, and conspicuous signs have been posted on each container stating that it is a permanently closed container and noting the date of closure.
- Definition of "permanently closed" does not require a container to be removed from a facility.

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Applicability/Exclusion Summary



▶

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    graph TD
      Q1[Is the facility, or part of the facility, considered non-transportation-related?] -- YES --> Q2[Is the facility engaged in drilling, producing, gathering, storing, processing, refining, transferring, distributing, using, or consuming oil?]
      Q1 -- NO --> R1[The facility IS NOT subject to SPCC]
      Q2 -- YES --> Q3[Could the facility be expected to discharge oil in quantities that may be harmful into navigable waters or adjoining shorelines?]
      Q2 -- NO --> R1
      Q3 -- YES --> Q4[Is the total aggregate capacity of aboveground oil storage containers greater than 1,320 gallons?]
      Q3 -- NO --> R1
      Q4 -- YES --> R2[The facility, or part of the facility, IS subject to SPCC]
      Q4 -- NO --> Q5[Is the total aggregate capacity of completely buried storage tanks greater than 42,000 gallons?]
      Q5 -- YES --> R2
      Q5 -- NO --> R1
      
```

Do not include containers with a capacity less than 50 gallons, permanently closed containers, storage containers used exclusively in wastewater treatment, hot mix asphalt or hot mix asphalt containers, pesticide application equipment and related mix containers, residential heating oil containers, or milk and milk product containers.

Do not include completely buried tanks subject to all of the technical requirements of 40 CFR part 280 or 40 CFR part 281, underground oil storage tanks that supply emergency diesel generators at a nuclear power station, permanently closed containers, and single family residential heating oil containers.

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3 SPCC Plan Requirements



- ▶ Regulated facilities must prepare a plan and meet all requirements of the regulation.
 - Provide general facility data
 - Identify **spill potential** (oil storage and handling areas)
 - Identify **prevention** provisions (training, inspection, testing, maintenance, security)
 - Identify **control** provisions (secondary containment (active and passive), overflow devices, berms, dikes, facility drainage systems)
 - Identify **countermeasures** (response, reporting)

Except that Tier 1 Qualified Facilities may use an SPCC template

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3 SPCC Plan Preparation – Identify Spill Potential




- ▶ Address each regulated container or area in the plan. Include information about capacity, contents and materials of construction.
 - Bulk storage tanks
 - Piping
 - Transfer areas
 - Mobile tanks
 - Oil filled equipment
 - Other areas with spill potential (pits, lagoons, etc.)



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3 SPCC Plan Preparation Identify Spill Potential - Facility Diagram



- ▶ **The following items are required by §112.7(a)(3):**
 - Aboveground storage tanks;
 - Underground storage tanks. This includes those that are subject to the SPCC rule or those that are exempt;
 - Storage area(s) where mobile or portable containers are located;
 - Transfer stations such as oil transfer areas including loading/unloading racks and loading/unloading areas;
 - Oil-filled equipment such as hydraulic operating systems or manufacturing equipment;
 - Oil-filled electrical transformers, circuit breakers, or other equipment;

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3 SPCC Plan Preparation Identify Spill Potential - Facility Diagram



- ▶
 - Connecting piping;
 - Oil pits or ponds (at production facilities);
 - Production facility stock tanks, separation equipment and produced water containers;
 - Any other bulk storage or oil-filled operational equipment at a production facility; and
 - Flow lines and intra-facility gathering lines at a production facility (including exempt intra-facility gathering lines).

Note that the streamlined requirements for Tier I qualified facilities exclude the requirement for a facility diagram.

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Facility Diagram Example SPCC Guidance for RI


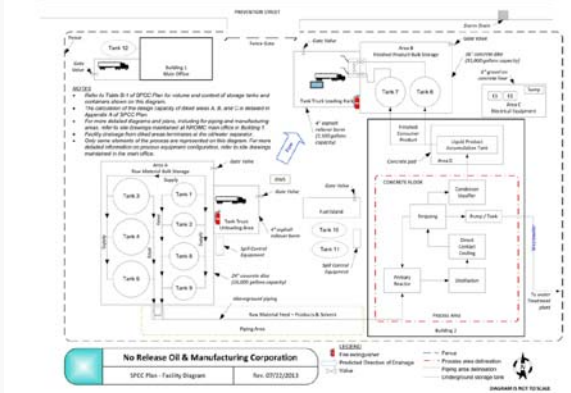



Figure 6-4: Example facility diagram, including oil-filled equipment, complex piping, and completely buried storage tanks.



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3 SPCC Plan Preparation Prevention - Training



- ▶
 - Facility personnel are critical to preventing releases
 - Facility personnel are typically the first responders

Train oil-handling personnel

- Operation/maintenance of prevention equipment
- Discharge procedure protocols
- Applicable pollution control laws, rules and regulations
- General facility operations
- Contents of the facility SPCC Plan
- Designate person accountable for discharge prevention and who reports to facility management
- Schedule/conduct at least one briefing/year
- Known discharges and failures, malfunctioning components, new precautionary measures



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3 SPCC Plan Preparation Prevention – Maintenance Program



- ▶ SPCC rule requires a maintenance program, including written procedures and other measures to prevent corrosion or other conditions that could cause a discharge
 - The frequency and type of inspections and/or tests must allow for the implementation of the contingency plan. Any discharges, potential problems will be promptly discovered.
 - Scope and frequency of inspections, tests, and preventive maintenance must be established based on industry standards, manufacturer's recommendations, and other sources of good engineering practice.

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3 SPCC Plan Preparation – Prevention – Inspection/Testing



- ▶ The SPCC rule has two distinct inspection requirements for bulk storage containers:
 - Test or inspect each container for integrity on a regular schedule and whenever material repairs are made; 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 includes the container's supports and foundations.

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3 SPCC Plan Preparation – Prevention – Inspection/Testing



- ▶ Integrity testing – formal evaluation by qualified inspector:
 - Determines whether the tank is suitable for continued use until the next formal inspection.
 - Helps plan for routine maintenance and any associated repairs.

The frequency and type of testing and inspections, and qualifications for personnel performing tests and inspections, must be determined in accordance with applicable industry standards.

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3 SPCC Plan Preparation – Prevention – Inspection/Testing



- ▶ If the SPCC Plan indicates the use of 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).


If the standard is more stringent than federal regulations (e.g., for recordkeeping retention requirements), the standard would take precedent.



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3 SPCC Plan Preparation Prevention – Inspection/Testing




▶ If an owner/operator has yet to implement the integrity testing program, the SPCC Plan should establish and document a schedule 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 industry standards

- Establish appropriate inspection priorities among multiple containers at a facility
- Higher priority containers may be targeted for inspection before other aboveground containers where the baseline information is known

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3 SPCC Plan Preparation – Prevention – Inspection/Testing




▶

Onshore Facilities (Excluding Oil Production Facilities) ⁷⁰			
Diked areas	112.8(b)(1) & 112.8(b)(2) or 112.12(b)(1) & 112.12(b)(2) ⁷⁰	Inspect Record	Visually inspect content for presence of oil when draining into a watercourse. <i>Prior to draining.</i> Keep adequate records of such events.
Diked areas for bulk storage containers	112.8(c)(3) & 112.8(c)(3)	Inspect Record	Inspect retained rainwater to ensure that it will not cause a discharge as described in §112.1(b) when draining to storm sewer or open watercourse, lake or pond. <i>Prior to draining.</i> Keep adequate records of such events.
Buried metallic storage tank installed on or after January 10, 1974	112.8(c)(4) or 112.12(c)(4)	Test	Leak test. Regularly
Aboveground bulk storage container	112.8(c)(6) or 112.12(c)(6)	Test or Inspect	Test or inspect each container for integrity. Following a regular schedule and whenever material repairs are made. Determine scope, frequency of testing and qualification of personnel performing the test or inspection, in accordance with industry standards. Tests include, but are not limited to, visual inspection, hydrostatic testing or other non-destructive testing.
Aboveground bulk storage container	112.8(c)(6) or 112.12(c)(6)	Inspect	Inspect outside of container for signs of deterioration and discharges. <i>Frequently.</i>
Aboveground bulk storage container supports and foundations	112.8(c)(6) or 112.12(c)(6)	Inspect	Inspect container's supports and foundations. <i>Following a regular schedule and whenever material repairs are made.</i>

Partial inspection table from SPCC Guidance for Regional Inspectors, Figure 7-1.

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3 SPCC Plan Preparation - Prevention Piping Inspection and Testing (SPCC Guidance for RI)



▶


Table 3-4: Summary of inspection and leak testing elements of an API-570 program for unprotected buried piping – additional inspection and testing requirements are specified in API 570 (refer to the full text of API 570 for details).⁷⁴

Inspection and Leak Testing Elements	Summary
Above-grade Visual Surveillance	Inspect the surface of the ground covering the piping for discoloration of the soil, softening of asphalt pavement, formation of pools, bubbling water puddles, and noticeable odor. The inspection should be performed at approximately six month intervals and may be performed by the owner/operator.
Pipe-to-Soil Potential Survey	Conduct pipe-to-soil potential survey along the pipe route to assess corrosion potential. Excavate sites where active corrosion cells are located to determine the extent of corrosion damage.
Pipe Coating Holiday* Survey	Conduct pipe coating holiday survey based on results of other evaluations.
Soil Corrosivity	Perform soil corrosivity evaluation at a five-year interval for piping buried in lengths greater than 100 feet that is not cathodically protected.
Cathodic Protection	Monitor at intervals in accordance with Section 10 of NACE RP0169 ⁷⁵ or API RP651 ⁷⁶ when piping cathodically protected.
External and Internal Inspection Intervals	Determine external condition of buried piping that is not cathodically protected by either pigging or by excavating according to frequency indicated in Table 5 of API-570. Adjust inspection of buried piping based on results of inspections of above-grade portion.
Leak Testing Intervals	Alternatively, or in addition to inspection, perform leak testing with pressure at least 10 percent greater than maximum operating pressure at an interval half the length of intervals in API 570 Table 5 for buried piping that is not cathodically protected. Alternatively, perform temperature-corrected volumetric or pressure test methods, use acoustic emission examination, or addition of tracer fluid.

Holiday means any discontinuity, bare, or thin spot in a painted area.

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Industry Standards – Piping SPCC guidance for RI Table 7-3




▶

	API 570 ¹³⁵	API RP 574 ¹³⁶	API RP 1110 ¹³⁷	ASME B31.3 ¹³⁸	ASME B31.4 ¹³⁹
Equipment covered	In-service aboveground and buried metallic piping	Piping, tubing, valves and fittings in petroleum refineries and chemical plants	Steel pipelines for the transportation of gas, petroleum liquids, hazardous liquids, highly volatile liquids or carbon dioxide (pressure testing)	New process piping for oil, petrochemical, chemical, and other industries	Pressure piping for liquid hydrocarbons and other liquids
Scope	Inspection, repair, alteration, and rerating procedures	Inspection practices, intervals and records.	Planning, implementation and records and drawings for pressure testing	Safety requirements for design, construction and testing	Safe design, construction, inspection, testing, and maintenance
Inspection interval	Based on possible forms of degradation and consequence of failure, maximum of 10 years	Based on five factors including consequences of a failure as classified by API 570	Not specified	As part of quality assurance function. Differentiates between inspection and examination	Not specified
Inspection performed by	Authorized piping inspector	Authorized piping inspector	Qualified by both training and experience, considering six factors	Qualified Inspector, as defined in standard	Qualified Inspector, as defined in standard

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Industry Standards - ASTs SPCC guidance for RI Table 7-2



	API 653 ¹³¹	STI SP001 ¹³²	API RP 575 ¹³³	API RP 12R1 ¹³⁴
Equipment covered	Field-fabricated, welded, or riveted ASTs operating at atmospheric pressure and built according to API 650 and API 12C.	ASTs including shop-fabricated and field-erected tanks and portable containers and containment systems with contents at atmospheric pressure and up to 200°F (93.3°C).	Atmospheric and low-pressure ASTs that have been in service.	Atmospheric ASTs employed in oil and gas production, treating, and processing.
Scope	Inspection and design; fitness for service; repair and alterations; risk.	Inspection and evaluation of ASTs.	Inspection and repair of tanks.	Setting, connecting, maintaining, operating, inspecting, and repairing tanks.
Inspection interval	Certified inspections: Dependent on tank's service history. Intervals from 5 to 30 years. Owner inspections: monthly.	Certified inspections: Inspection intervals and scope based on tank size and configuration. Owner inspections: monthly, quarterly, and yearly.	Same as API 653 and API RP 12R1.	Scheduled and unscheduled internal and external inspections conducted as per Table 1 and Table 2 of the Recommended Practice, based on tank conditions.
Inspection performed by	Authorized inspector, tank owner.	Certified inspector (either by API 653 with STI adjunct certification or STI) or owner's inspector.	Same as API 653.	Competent person or qualified inspector, as defined in recommended practice.

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3 SPCC Plan Preparation Prevention - Security (§112.7(g))




▶ A facility owner/operator is required to describe in the SPCC Plan how he will:

- Secure and control access to all oil handling, processing and storage areas;
- Secure master flow and drain valves;
- Prevent unauthorized access to started controls on oil pumps;
- Secure out-of-service and loading/unloading connections of oil pipelines; and
- Address the appropriateness of security lighting to both prevent acts of vandalism and assist in the discovery of oil discharges.

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3 SPCC Plan Preparation – Prevention/Controls




▶ Address prevention and control methods in the plan. Include:

- Corrosion protection
- Monitoring devices and gages
- Overfill valves, devices, and alarms
- Secondary containment
- Other specific requirements of the regulation

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3 SPCC Plan Preparation Controls - Secondary Containment




▶ General secondary containment: Containment where sizing is not dictated by the rule provisions. Sized to address the most likely oil discharge from any part of a facility where oil is handled.

Specific (sized) secondary containment: Containment where sizing is dictated by specific rule provisions. Sized to address the worst case discharge for bulk containers and loading racks.

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3 SPCC Plan Preparation Controls - Secondary Containment



- ▶ One of the following preventive systems or its equivalent should be used as a minimum for onshore facilities:
 - Dikes, berms or retaining walls sufficiently impervious to contain spilled oil
 - Curbing or drip pans
 - Sumps and collection systems
 - Culverting, gutters or other drainage systems
 - Weirs, booms or other barriers
 - Spill diversion ponds
 - Retention ponds
 - Sorbent materials

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Secondary Containment Bulk Storage Containers



- ▶ Specific sized secondary containment for bulk storage containers equal to 55 gallons or larger: **§112.8(c)(2) and 112.12(c)(2)**
Construct all bulk storage container installations (except mobile refuelers and other non-transportation-related tank trucks) so that you provide a secondary means of containment for the entire capacity of the largest single container and sufficient freeboard to contain precipitation. You must ensure that diked areas are sufficiently impervious to contain discharged oil.




Photo courtesy: Insitecote Products



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3 SPCC Plan Preparation Controls – Active or Passive




- ▶ Either active or passive measures are acceptable for general secondary containment
 - Active measures are those that require deployment or a specific action by an operator.
 - These may be deployed either before an activity involving the handling of oil starts, or in reaction to discharge
 - Must be implemented in time to prevent the spilled oil from reaching surface waters
 - Active measures may be difficult to implement at an unmanned facility or after normal operating hours
 - Passive measures do not require action other than initial installation and periodic maintenance.

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Active Measures (Examples)




- ▶
 - Placing a properly designed storm drain cover over a drain to contain a potential spill in an area where a transfer occurs, prior to the transfer activity.
 - Placing a storm drain cover over a drain in reaction to a discharge, before the oil reaches the drain.
 - Using spill kits in the event of an oil spill or leak (and/or beginning of a discharge to minimize impact).
 - Use of spill response capability (spill response teams) in the event of an oil discharge.



<http://products.enpac.com/1-36-x-36-spill-protector-drain-cover>

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3 SPCC Plan Preparation Controls - Transfer Areas



▶ All areas with the potential for a discharge as described in §112.1(b) are subject to the general secondary containment provision, §112.7(c).


Loading/Unloading Racks have additional Specific Secondary Containment Requirements §112.7(h)(1)

Loading/unloading rack means a fixed structure (such as a platform, gangway) necessary for loading or unloading a tank truck or tank car. It includes a loading/unloading arm and may include piping, valves, etc.



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3 SPCC Plan Preparation Controls - Impracticability



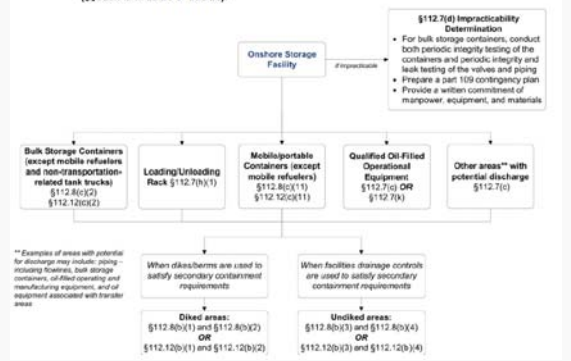
▶ Unless he or she has submitted a Facility Response Plan under §112.20, an owner or operator who determines that secondary containment is impracticable must include with the SPCC Plan an oil spill contingency plan following the provisions of 40 CFR part 109 and a written commitment of manpower, equipment, and materials required to expeditiously control and remove any quantity of oil that may be harmful (§112.7(d)).

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3 SPCC Plan Preparation Controls – Secondary Containment



▶ **Figure 4-1: Secondary containment provisions in 40 CFR part 112 related to onshore storage facilities (§§112.7 and 112.8 or 112.12).**



Examples of areas with potential for discharge may include: piping, loading facilities, bulk storage containers, oil-filled operating and manufacturing equipment, and oil equipment associated with transfer areas.


When dikes/bunds are used to satisfy secondary containment requirements:
 Diked areas: §112.8b(1) and §112.8b(2) OR §112.12b(1) and §112.12b(2)

When facilities drainage controls are used to satisfy secondary containment requirements:
 Uncollected areas: §112.8b(3) and §112.8b(4) OR §112.12b(3) and §112.12b(4)

Source: USEPA SPCC Guidance for Regional Inspectors 12/16/2013 From SPCC Guidance for Regional Inspectors, Figure 4-10.

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3 SPCC Plan Preparation Controls - Transfer Area Evaluation



▶ **Scenario:** A fuel truck is loading oil into a heating oil tank at a regulated facility, with an attendant present throughout the operation.

Details:

- The truck is loading at a rate of 150 gallons per minute.
- The typical failure mode expected is a ruptured hose connection.
- A shutoff valve, present on the loading line, and the pump control are accessible to the attendant.
- An evaluation determines that the discharge will not impede the attendant's access to the shutoff valve and pump control. The attendant can safely shut down the pump and close the valve within 10 seconds of the hose connection rupture, based on past experience under similar circumstances; 15 seconds is assumed to be a conservative estimate of the response time.

Calculations:
 With a flow rate of 150 gal/min and a reaction time of 15 seconds, the most likely discharge is calculated to be 37.5 gallons:
 $[(150 \text{ gal/min}) \times (1 \text{ min}/60 \text{ sec}) \times (15 \text{ sec})] = 37.5 \text{ gallons}$

Conclusion:
 Secondary containment volume should be at least 37.5 gallons. A larger volume for secondary containment would be needed if time required to safely close the shutoff valve takes longer than 15 seconds.
 To determine if an active containment measure would be appropriate then the owner or operator also needs to consider the time it would take the discharge to impact navigable waters or adjoining shorelines.

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3 SPCC Plan Preparation Countermeasures



- ▶ Include in the SPCC Plan a description of planned countermeasures for:

- Discharge discovery,
- Response, and
- Cleanup



<http://epaosoc.org/files/8502/files/P3310008.JPG>

Consider both the facility's capability and those that might be required of a contractor.

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<http://www.newspic.com/>

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3 SPCC Plan Preparation Countermeasures



- ▶ Countermeasures Details

- Onsite contact information
- Contacts for contract emergency response team (if applicable)
- Initial notification and reporting procedures
- Initial response actions and procedures
- Emergency equipment list and location
- Response supplies list and location
- Cleanup and disposal procedures and supplies list/location

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3 SPCC Plan Preparation Countermeasures - Reporting



- ▶ Report all oil discharges to waters of the United States or adjoining shorelines in harmful quantities to NRC at 1-800-424-8802 (NRC=Federal government's centralized reporting center, which is staffed 24 hours a day by U.S. Coast Guard personnel)

- A harmful quantity is any quantity of discharged oil that violates state water quality standards, causes a film or sheen on the water's surface, or leaves sludge or emulsion beneath the surface.
- Any person in charge of a vessel or an onshore or offshore facility must notify NRC immediately after he or she has knowledge of the discharge
- Some discharges must also be reported to EPA- Requirements found in 112.4(a). Some circumstances also require a report to the EPA Regional Administrator (RA).

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3 SPCC Plan Preparation Certification




- ▶ 1. Management Approval & Site Certification of Substantial Harm Criteria
- 2. Licensed Professional Engineer Certification* that:
 - (i) he is familiar with the requirements;
 - (ii) he or his agent has visited the facility;
 - (iii) the Plan has been prepared in accordance with good engineering practice, including consideration of applicable industry standards, and with all requirements;
 - (iv) procedures for required inspections and testing have been established; and
 - (v) the Plan is adequate for the facility.

*If planning to self-certify, check state law/policy first.

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4 Implementation

- ▶ All of the prevention, control, and countermeasures documented in the plan require implementation.

Recordkeeping:
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.

*Note that the GPP record retention requirement is 6 years. So if a record documents compliance for both regulations keep it at least 6 years.


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5 - Plan Review

- ▶ Complete review and evaluation of SPCC Plan
 - Once every 5 years from the date facility becomes subject to the rule
 - Amend plan within 6 months to include more effective prevention and control technology
 - Implement ASAP, but no later than 6 months of amendment
 - Does not always require a PE (administrative v. technical amendments)

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References

- ▶ Commonwealth of Kentucky EEC, DEP, Division of Water, <http://water.ky.gov/groundwater/Pages/GroundwaterProtectionPlans.aspx>
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