Welcome to Oil Pollution Prevention – Oil Handling training.

Here is the agenda for today. We will discuss the purpose behind oil pollution prevention, the objectives will cover what you will know by the end of class. Then we get into the heart of what we're here to discuss – the Spill Prevention Control and Countermeasures Plan, the SPCC Plan. We will go through the definitions and responsibilities, some specifics of the plan, and finally we will discuss the EERAP (the plan within the plan).

Purpose

PURPOSE

- Prevent oil spills
- Response to oil spills
- Remediation of oil spills

The purpose behind oil pollution prevention is to prevent oil pollution by preventing spills, responding promptly and properly, and providing thorough remediation of spills.

As you know, we use oil in many ways here: lubricants, dielectrics, detectors, etc. On site we currently have more than 590,000 gallons of oil being used or stored. There are also three creeks that run through site: Ferry, Kress and Indian Creeks. So there is potential that some portion of 590,000 gallons could be released into one of those creeks causing ecological damage, damage to drinking water, not to mention the public relations mess it would make.
So first of all, we worry about it because we are good stewards of the land we use. Secondly, we have to in order to comply with federal regulations: facilities that use/store >1320 gallons of oil in containers of 55 gallons or more. Because of that, we have to have an SPCC Plan and train all personnel that handle oil.

Objectives

Objectives

- Review the terminology of Oil Pollution Prevention
- Review the contents of the *SPCC Plan* and understand the purpose and how to comply.
- Review the *EERAP*
- Review oil sources subject to the *SPCC Plan* and the associated inspections
- Review the proper response in the event of an oil spill

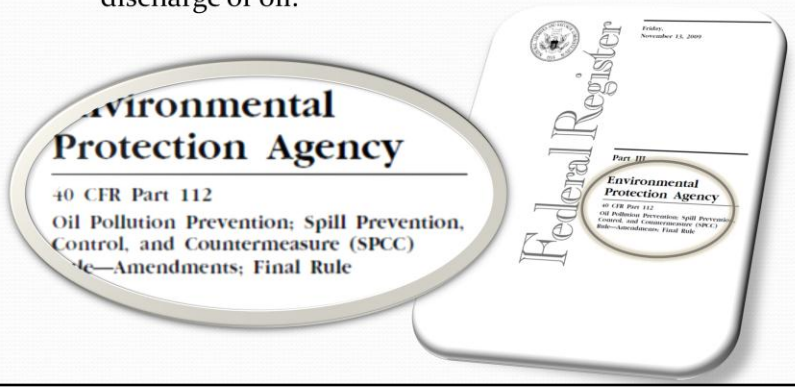
Our goals today include a review of: the terminology of oil pollution prevention, the purpose and how to comply with the SPCC Plan and the EERAP, what oil sources are subject to the SPCC and EERAP, and the proper response in the event of an oil spill

Definitions

FESHM 8031 – Oil Pollution Prevention

DEFINITIONS

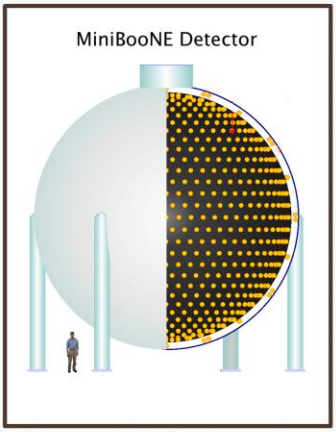
- **Spill Prevention, Control and Countermeasures (SPCC) Plan** The document that is required by 40 CFR 112.3 that details the equipment, workforce, procedures, and steps to prevent, control and provide adequate countermeasures to a discharge of oil.



[read definition]
[read definition]

DEFINITIONS, cont.

- **Oil** ***Oil of any kind or in any form***, including, but not limited to: fats, oils, or greases of animal, fish, or marine mammal origin; vegetable oils, including oils from seeds, nuts, fruits, or kernels; and, other oils and greases, including petroleum, fuel oil, sludge, synthetic oils, mineral oils, oil refuse, or oil mixed with wastes other than dredged spoil.
  - Examples of oil used at Fermilab: Diala oil, mineral oil, grease, diesel fuel, motor oil, vegetable oil, etc.



The MiniBooNE detector contains 350,000 gallons of ultra-pure mineral oil.

Let's go through the definitions. I will go through the important ones, and gloss over the less important ones.
First off…what is oil? The safe bet is: if you think it might be oil, then it's oil. [read definition]

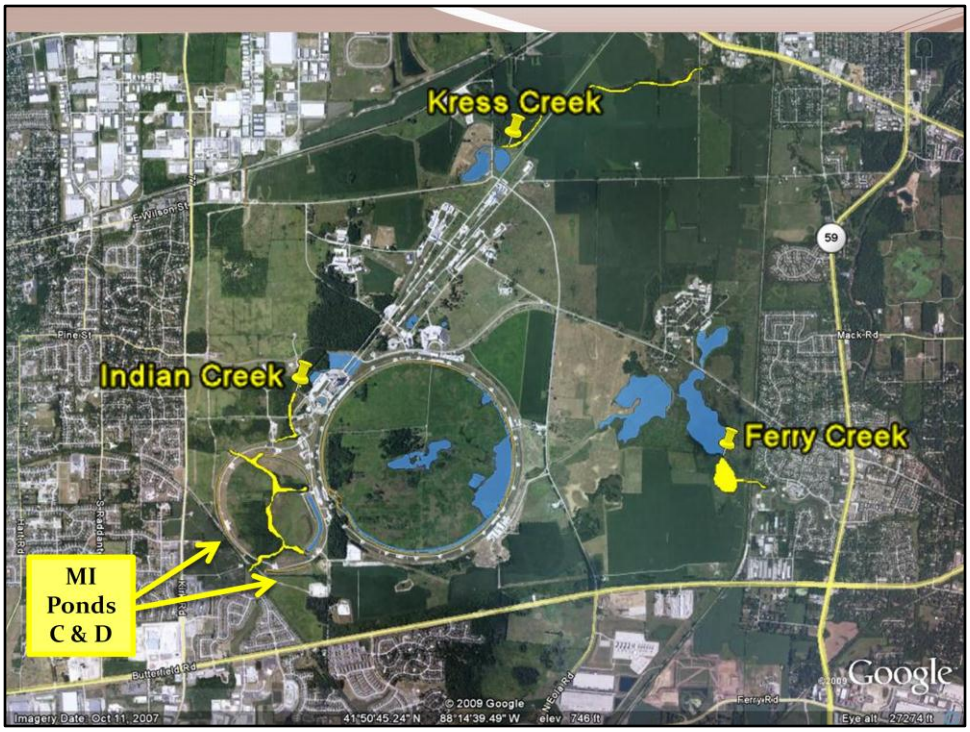
NOT OILS: Ethylene or propylene glycol, isopropyl alcohol, latex paint, acids/bases, volatile materials such as propane/natural gas, etc.

DEFINITIONS, cont.

- **Navigable Waters** These waters are waters of the United States including territorial waters, interstate waters, interstate lakes, rivers, and streams which are utilized by interstate travelers for recreational or other purposes, and interstate lakes, rivers, and streams from which fish or shellfish are taken and sold in interstate commerce.
  E.g. At Fermilab navigable waters include Indian Creek, Kress Creek, and Ferry Creek.

Kress Creek – north side of FNAL

[read definitions]



The creeks are shown here in yellow. Major ponds are in blue.
There is a subtle difference between Navigable Waters (i.e. Waters of the U.S.) and waters that are Fermilab's. The three thumb tacks show the points where Fermilab waters become navigable waters. Waters that are considered Fermilab's can be used to contain an oil spill if such a thing ever occurred. (This is considered a worst case scenario. We definitely do NOT want oil in our ponds.) The creeks however (in yellow) are what must be protected under the jurisdiction of our NPDES Permit *. Kress and Ferry Creeks end up flowing into the West Branch of the DuPage River, and Indian Creek flows to the Fox.
Note that there are two Main Injector ponds that are not highlighted in blue. Although these ponds are Fermilab waters, the discharge flow from these two ponds cannot be controlled during very heavy rain events and therefore should be treated as if they were navigable waters.

*NPDES is National Pollutant Discharge Elimination System through the IEPA. The NPDES Permit requires a Storm Water Pollutions Prevention Plan (SWPPP) to control pollution from storm water runoff.

Definitions, cont.

- **Storage Capacity** The shell or maximum capacity of any container.
- **Bulk Storage Container** Bulk storage containers are any containers used to store oil. These containers are used for purposes including, but not limited to: storage of oil prior to use, while being used, or prior to further distribution in commerce. Examples of bulk storage containers used at Fermilab are: 55-gallon drums, totes, or backup generator fuel tanks.

Note: Bulk storage containers must always be stored in secondary containment.

[read definition]

DEFINITIONS, cont.

- **Oil-Filled Operational Equipment (OFOE)** Oil-filled operational equipment is any equipment that includes an oil storage container (or multiple containers) in which the oil is present solely to support the function of the apparatus or device. OFOE is not considered a bulk storage container. E.g. Hydraulic systems, lubricating systems (i.e. pumps, compressors), gear boxes, machining coolant systems, heat transfer systems, transformers, circuit breakers, electrical switches, and other equipment containing oil solely to enable the operation of the equipment. Transformers are the most prevalent OFOE at Fermilab.

[read definition]

DEFINITIONS, cont.

- **Completely Buried Tank** Completely buried tanks are any container completely below grade and covered with earth, sand, gravel, asphalt, or other material. E.g. Fuel service station gasoline and E85 underground tanks.

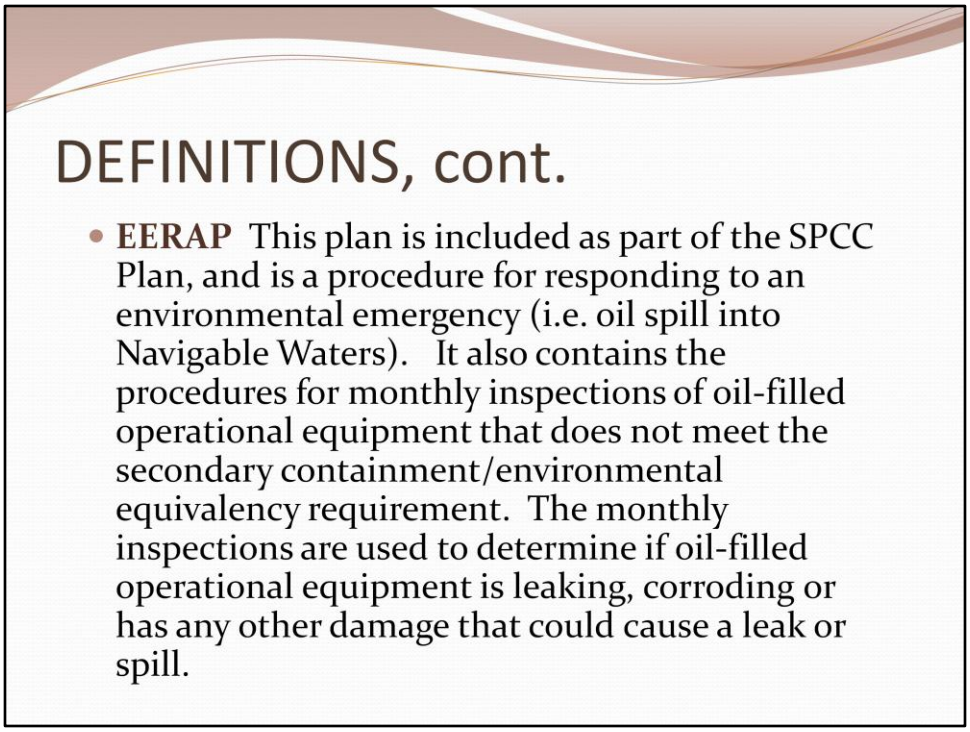
These tanks are subject to other regulations for Underground Storage Tanks.

Completely buried tanks are self explanatory, and are covered by other regulations. Our fuel station underground tanks are considered completely buried tanks.

DEFINITIONS, cont.

- **Secondary Containment** A dike or catchment basin sufficient to contain the capacity of the largest single compartment or container of oil. If outdoors, secondary containment must have sufficient freeboard to contain precipitation (freeboard is 5.5 inches at Fermilab).
- **Environmental Equivalent** A sufficient area between an oil source and navigable waters that provides a buffer for an oil spill as determined by a Professional Engineer familiar with 40 CFR Part 112.

[read definition]
[read definition]

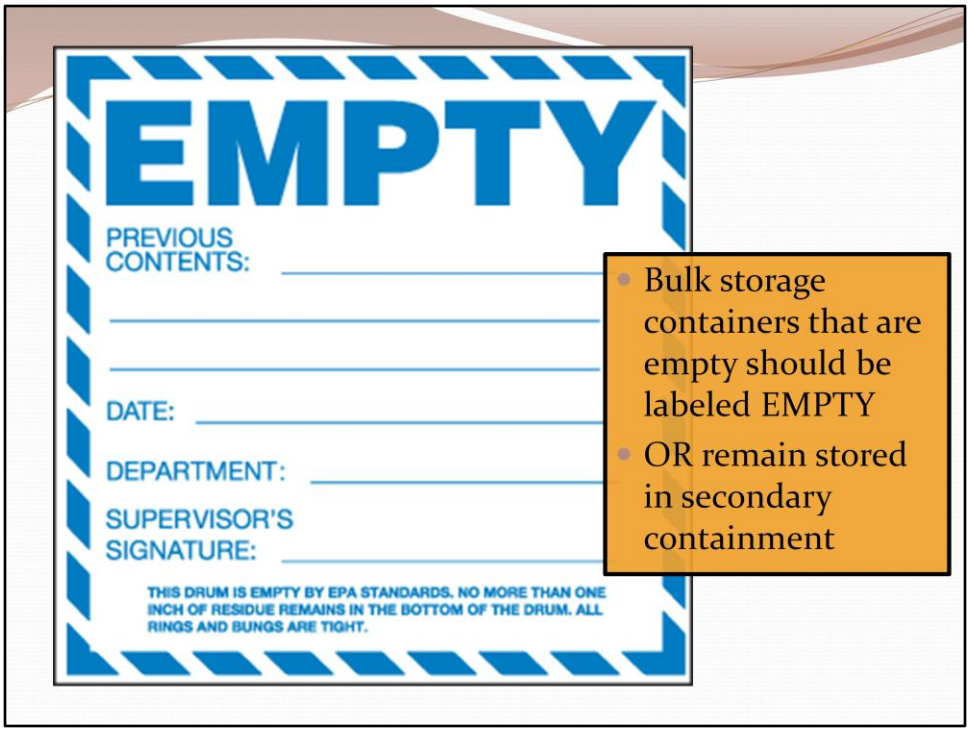


The EERAP is the emergency response procedure in case of an oil spill. It also contains a group of inspection procedures for oil filled equipment that does not have secondary containment or equivalent. The procedures are in place so that leaks or spills will be detected as soon as possible.

DEFINITIONS, cont.

- **Discharge** A discharge includes but is not limited to, any spilling, leaking, pumping, pouring, emitting, emptying, or dumping of oil.
- **Permanently Closed** A container is permanently closed when: all liquid and sludge has been removed (including connecting lines), and all connecting lines or piping have been disconnected from the container and blanked off, all valves (except ventilation valves) have been closed and locked, and conspicuous signs have been posted on each container stating that it is permanently closed and noting the date of closure.

[read definitions]



A bulk storage container does not need to use secondary containment if it is empty. However, it is not empty until you label it that way. These labels can be obtained from the HCCT Team at Site 40.

Responsibilities

FESHM 8031 – Oil Pollution Prevention

Like all ES&H programs the responsibilities are defined from the Directorate down to each employee. And every employee is responsible for following the emergency response procedures for their areas. Mostly that means calling x3131 if there is a spill that they cannot safely control or clean up.

Responsibilities, cont.

- **Fermilab Fire Department** – Act as first responders once the need for response has been initiated. Stabilize the situation by stopping the release of oil and containing the oil discharge to as small of an area as possible. Initiate mutual aid if necessary, communicate with the ES&H Director as required by the Fermilab Emergency Response Procedure, and coordinate with D/S/C Environmental Officer or alternately the Senior Safety Officer once the discharge has been contained to begin clean-up efforts. Provide materials, equipment and supplies for oil discharge clean-up if necessary.

The FFD is the first responder in the event of an environmental emergency. They will stop and contain the discharge and then turn things over to the EO for clean up.

You! [read responsibilities] You may also be responsible for completing monthly inspections. D/S/C management should assign those duties.

The D/S EO will make sure their D/S is following the procedures of the SPCC plan. They are your resource for any environmental issue. The SSO is responsible for ensuring training within their D/S/C and will back-up the EO in an environmental emergency, such as an oil spill.

The SPCC Plan

Spill Prevention, Control & Countermeasures Plan

Containers with the capacity to store 55 gallons or more must be in secondary containment, and must be inspected monthly.

Bulk Storage Containers

55 gallon drums of mineral oil in secondary containment.

Note: It does not matter if drum is full or contains only 5 gallons of oil, it <u>must</u> be in secondary containment.

Here is an example of 55 gallon drums in “tub” secondary containment. [read NOTE]

The SPCC Plan –

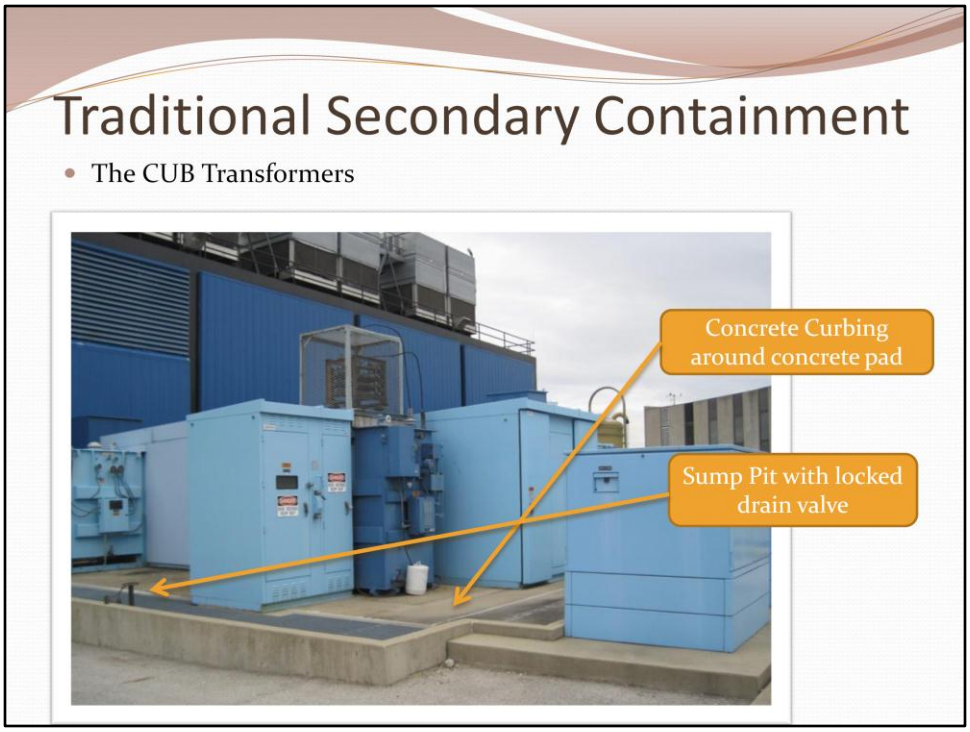
Oil Filled Operating Equipment (OFOE)

- Equipment with the **capacity** to hold 55 gallons or more of oil.
- Secondary containment required. Use one of these methods:
  - Traditional secondary containment
  - Environmental equivalent
    - dikes, berms, or retention ponds
  - EERAP
    - including monthly inspections.

Secondary containment is also required for OFOE filled with 55 gallons or more. There are three ways that containment is achieved – traditional, environmental equivalent and EERAP.

The SPCC Plan –
Oil Filled Operating Equipment (OFOE)

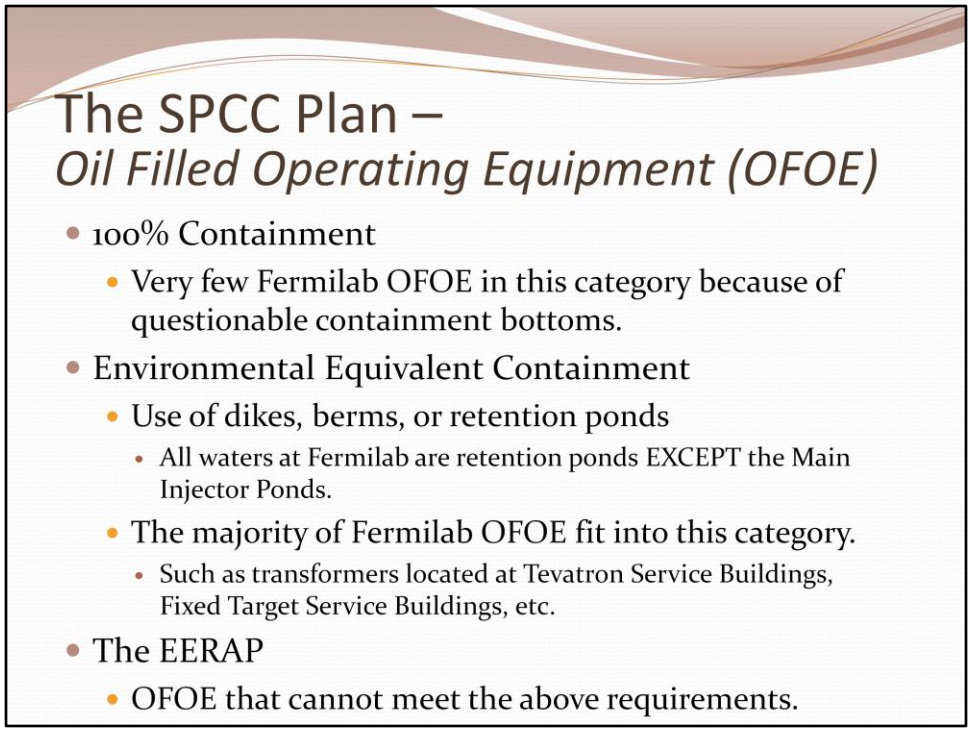
- Traditional Secondary Containment
  - Very few Fermilab OFOE in this category because of questionable containment bottoms.



Traditional secondary containment is a concrete curb around the equipment with a sump pit to collect precipitation and leaked oil.

Environmental Equivalent Containment is the use of dikes, berms or retention ponds. Basically, there is enough space between the oil filled equipment and Waters of the U.S. that a spill there would be identified and cleaned up before causing any damage. Most of Fermilab's OFOE use this type of containment – such as the transformers located at the Tevatron and Fixed Target Service Buildings.

Here's an example. This transformer Y0187 is in the parking lot of A0 at contains 316 gallons of oil. It does not have any traditional secondary containment. The parking lot and Tev cooling pond provide an environmental equivalent to traditional secondary containment.



Finally there is the EERAP. Equipment that do not meet the traditional or equivalent secondary containment requirements must be part of the EERAP.

The EERAP

Environmental Emergency Response Action Plan

The EERAP –

Oil Filled Operating Equipment (OFOE) covered by the EERAP

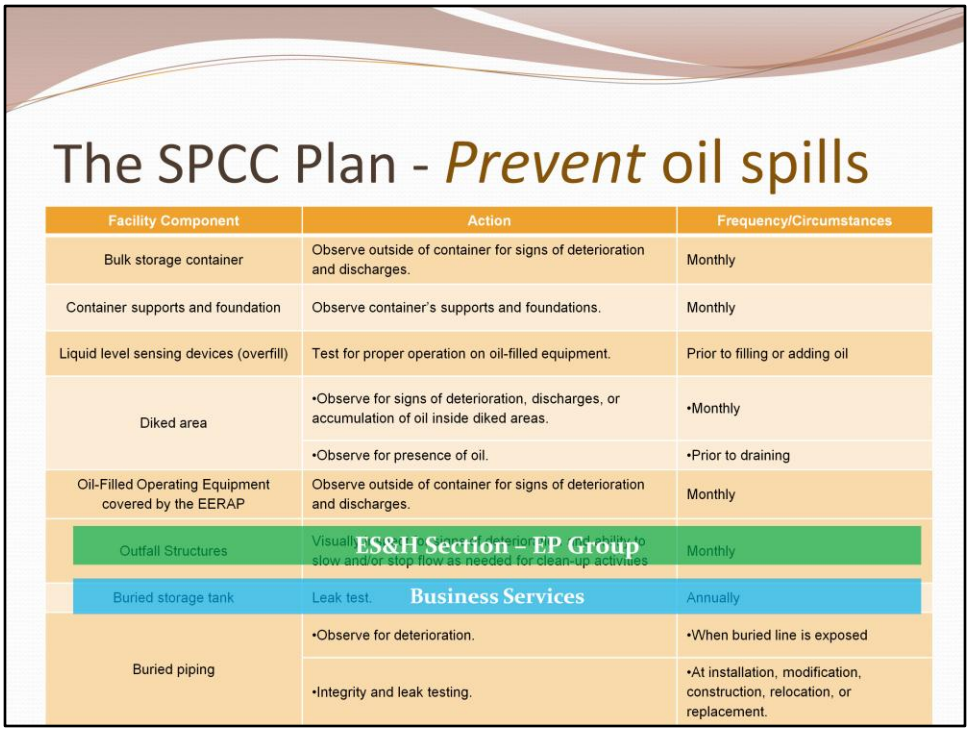
Location	OFOE	Volume (gallons)
AP0	1 transformer	240
AP10	1 transformer	323
AP 30	1 transformer	323
AP 50	3 transformers	748, 748, 670
Giese Road Transformer	1 transformer	1545
MI8	1 transformer	323
MI10	6 transformers	316, 1184, 1184, 1865, 1184, 1184
MI12	1 transformer	670
MI20	5 transformers	316, 1184, 1184 1184, 1184
MI-30	6 transformers	316, 1184, 1184, 1865, 1184, 1184
MI-31	1 transformer	316
MI40	6 transformers	316, 1184, 1184, 1184, 1184, 620
MI50	6 transformers	316, 1184, 1184, 1184, 1184, 2046
MI52	5 transformers	1184, 1184, 2046, 316, 620
MI60	14 transformers	1184, 1184, 1865, 1470, 1470, 910, 910, 1470, 664, 620, 620, 620, 620, 1240
MI62	3 transformers	620, 316
MI65	2 transformers	664, 316
MiniBooNE	2 transformers	237, 237

This is a table of the oil-filled operating equipment, all transformers, that are part of the EERAP. All of these transformers are near Indian Creek and present a threat of an oil spill to that Navigable Water.

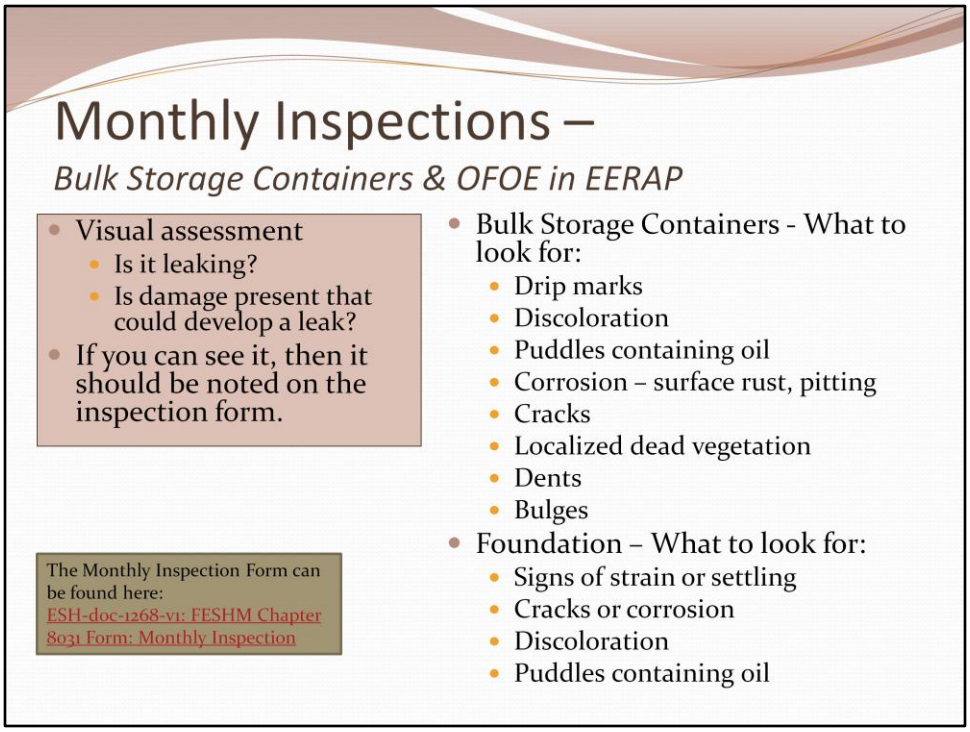
The EERAP is simply an inspection procedure. All of the equipment covered by the plan must be inspected monthly, documented and records filed for a minimum of three years.

Monthly Inspections

Bulk Storage Containers & OFOE in EERAP



The main goal of the SPCC plan is to prevent oil spills. This table lists the actions that must be taken to meet that goal. Bulk storage containers, OFOE covered by the EERAP, their supports and foundations and diked areas must be inspected monthly. All overfill sensors must be tested before filling. The outfalls are inspected monthly by the ES&H Section. Buried storage tanks must be inspected at least annually. Buried piping must be inspected by the D/S/C who owns it. Currently the only buried tanks or piping on site belong to Business Services Section at the fuel station.



Monthly Inspections for bulk storage containers and OFOE covered by the EERAP are a visual assessment. You want to look and see if it is leaking or if there is damage present that could develop into a leak (like rust or corrosion). On the containers and equipment look for: drip marks, discoloration, puddles with oil, corrosion like surface rust or pitting, cracks, and dead plants nearby. Then look at the foundation and look for: signs of strain/settling, cracks or corrosion, discoloration, and puddles with oil. The inspection form can be found in the ES&H DocDB – document #1268.

Monthly Inspections –

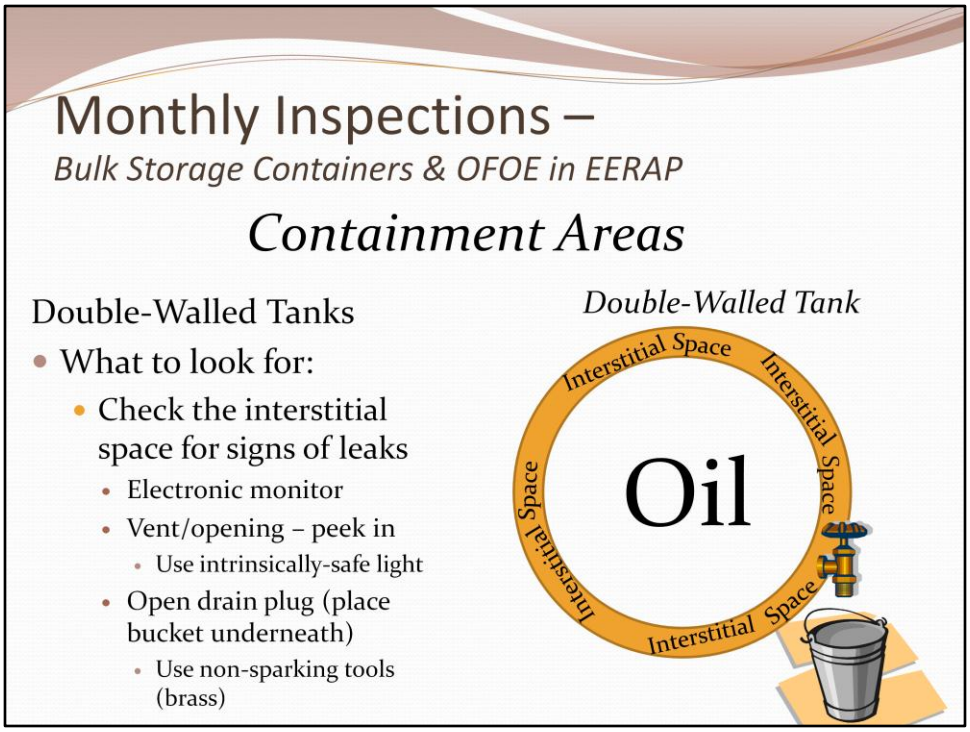
Bulk Storage Containers & OFOE in EERAP

Containment Areas

Traditional Secondary Containment

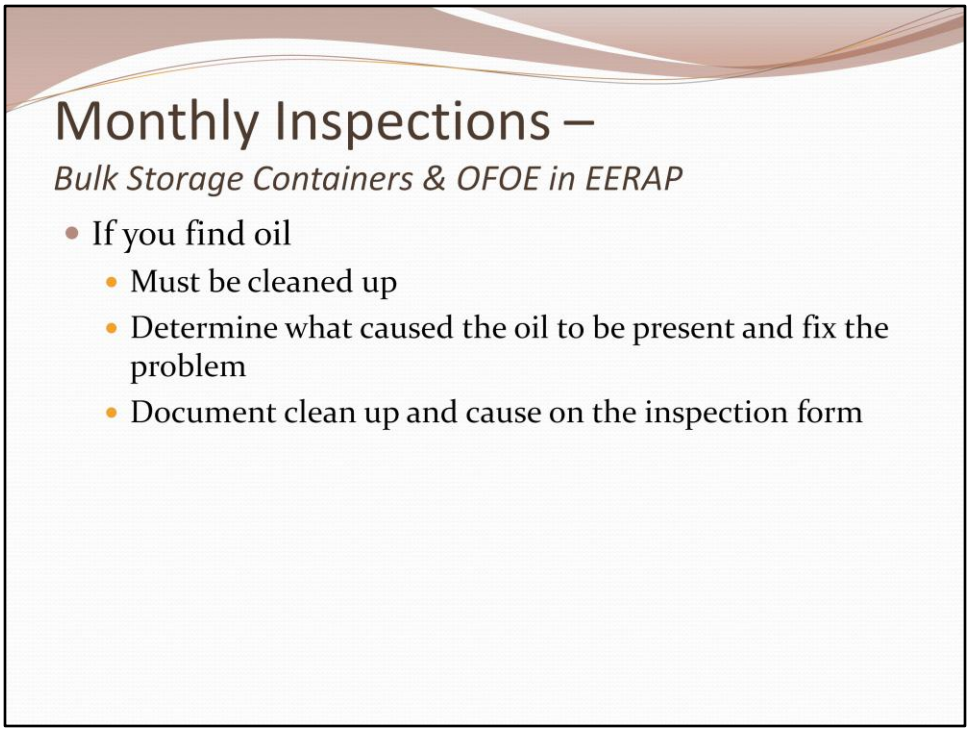
- What to look for:
  - Level of precipitation/available capacity
  - Drain valves – if present must operate correctly, be in good condition, and be closed/plugged
  - Cracks in the secondary containment
  - Check pipes, inlets, drainage beneath tanks for signs of leakage
  - Discoloration
  - Stressed vegetation
  - Spilled or leaked material
  - Corrosion
  - Debris or other items in containment area

For traditional secondary containment, look for: water in the containment (what is the available capacity?), drain valves (must work properly and be in good condition, and also closed/plugged), cracks in the containment, leaks coming from inlets or drainage, discoloration, stressed/dead vegetation, oil that was spilled or leaked, corrosion, debris or other stuff in the containment that will lessen its capacity.



Double-walled tanks are also secondary containment. Emergency back-up generators often have double-walled fuel tanks. These tanks are considered bulk storage containers. To inspect a tank that has double-walls, check the interstitial space (the space between the two tanks) for signs of leaks using an electronic monitor, looking in a vent or opening using an intrinsically safe light, or open the drain plug and inspect what comes out.

Always remember to use safe tools – non-sparking tools, intrinsically safe flashlights, etc. when working with flammable liquids. Determine if you need a JHA.



If you find oil during an inspection it must be cleaned up. And you have to understand what happened. And fix the problem that caused the spill. Also, always document the clean up and cause on your inspection form.

Diked Area Drainage

DIKED AREA DRAINAGE FORM

Containment Area:	
Appearance of water at time of draining:	
If oil or sheen is present, what was done to clean it up:	
Was the source of oil or sheen identified, and if so, what was done to correct problem:	
Date Drainage Started:	Time Drainage Started:
Date Drainage Stopped (Containment Resealed):	Time Drainage Stopped (Containment Resealed):
Operator Name:	
Operator Signature:	
Supervisor Name:	
Supervisor Signature:	

Fermilab ES&H Manual — 9031.2 Rev. 11/2009

The Diked Area Inspection Form can be found here: http://esh-docdb.fnal.gov/cgi-bin/ShowDocument?docid=1269

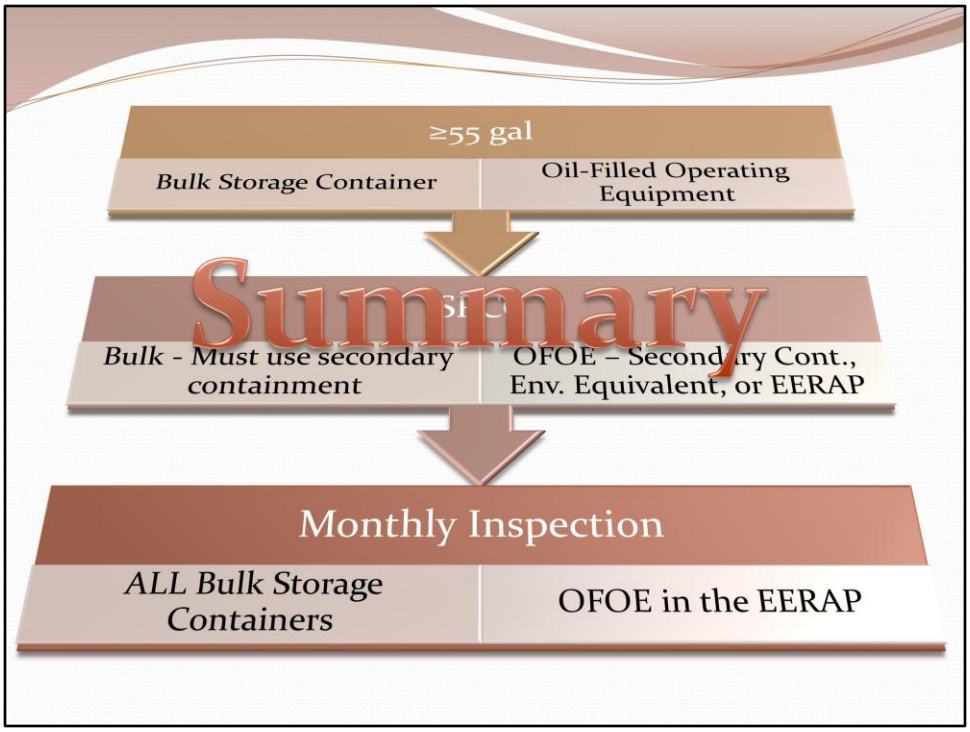
- Outdoor secondary containment will collect precipitation.
  - Drain after the precipitation event
  - Inspect water before draining
  - Clean up any oil sheen before draining
  - Identify source of oil and correct the problem

Outdoor secondary containments will collect rain and snow. After a precipitation event, the diked area (or secondary containment) must be drained. Before draining a documented inspection must occur. The form can be found in the ES&H DocDB, document #1269. The water must be inspected to ensure there is no oil present. If a sheen is observed, then you must clean it up before draining. You must identify the source of the oil and correct the problem. All of this must be noted on the Diked Area Drainage Form.

The procedures for tank truck loading and unloading are found in FESHM 8031 and the SPCC Plan. These procedures (or a local equivalent) should be used anytime a tank truck or railcar is loaded or unloaded with oil. Contact your D/S/C EO for assistance.

Appendix I of the SPCC Plan details the proper response to an oil spill. Specific responsible parties are listed in the plan. The ES&H Director must determine if a spill is reportable to the National Response Center, or IEPA or DOE, etc. The D/S Heads must authorize the release of funds to hire a remediation contractor if necessary. The SSO makes sure that everyone is familiar with the spill response. The EO will coordinate clean up efforts and help determine reporting requirements. The Fermilab Fire Department will contain and control the spill until it can be handed over to the D/S EO.

The Fermilab Emergency Response Plan states that the person who discovers a spill must determine if they can control the spill. If not, call x3131 immediately and prevent personnel entry to the spill location.



If there is the capacity of 55 or more gallons of oil in a bulk storage container or OFOE it is part of the SPCC Plan. Bulk storage containers MUST use secondary containment. OFOE must use secondary containment or environmental equivalent or, if neither of those are available, be part of the EERAP. Monthly inspections must be performed on ALL bulk storage containers, and all OFOE that are in the EERAP.

Fermilab Environmental Officers

Division/Section/Center	Name	Email, Extension
AD, APC	Barry Fritz	bfritz@fnal.gov, x2230
BS	Greg Mitchell	gmitchel@fnal.gov, x8002
CD	Amy Pavnica	pavnica@fnal.gov, x8493
Directorate, ESHS	Eric Mieland	mieland@fnal.gov, x2248
FESS	Rod Walton	rwalton@fnal.gov, x2565
Finance	Greg Mitchell	gmitchel@fnal.gov, x8002
PPD, FCPA, CMS	Angela Sands	asands@fnal.gov, x3701
TD	Bridget Scerini	iverson@fnal.gov, x3382
WDRS	Mike Bonkalski	bonkalski@fnal.gov, x8448

Please make a note of your D/S/C's Environmental Officer. They are great resources for oil handling question, or any environmental question. Please feel free to contact them.