



# AEM Tier 2 Worksheet

## Petroleum and Oil Product Storage

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### Glossary

**Cathodically Protected:** Corrosion protection for an underground metal tank or pipe by causing a continuous electric current to flow from one or more electrodes or a sacrificial anode to the protected structure.

**Corrosive Soils:** Soil which can induce a chemical reaction that dissolves or weakens uncoated steel. The rate of corrosion is related to such factors as soil moisture, acidity and electrical conductivity of the soil. Information on the risk of corrosion posed by a particular soil type can be found in your County Soil Survey Report.

**Inventory Control:** Measuring and comparing the volume of tank contents regularly with product delivery and withdrawal records to help detect leaks before major problems develop.

**Corrosion Resistant:** Tanks and piping systems constructed of fiberglass-reinforced-plastic (FRP), steel protected by fiberglass (FRP) coatings, or steel that was installed with sacrificial anodes, or impressed current systems (cathodically protected).

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### Background

According to the US Environmental Protection Agency (EPA), nearly one out of four underground storage tanks in the United States may be leaking. Both above and below-ground containers of petroleum products have the potential to damage public health and the environment, should leaks occur. Older underground petroleum tanks, especially those 15 years old or more, are more likely to leak.

Minor petroleum leaks can have major environmental impacts. For example, a few quarts of gasoline can contaminate an entire farmstead's drinking water supply. Human health is threatened with even low levels of petroleum contamination that are undetectable by taste or smell. Petroleum products contain numerous potentially toxic compounds, as well as carcinogens.

This worksheet applies to all on-farm petroleum and oil product storages (including waste/used oil), regardless of amount, as a loss from any storage has the potential to impact surface waters and groundwater. In addition, farms with certain types and capacities of petroleum or oil product storages are required to comply with the NYS Department of Environmental Conservation's (DEC) Petroleum Bulk Storage (PBS) regulation and/or the US EPA's Spill Prevention, Control, and Countermeasure (SPCC) regulation. The basic information in the table on the following page provides an introduction of the regulatory requirements.

### Agricultural Water Quality Principle:

Care should be exercised in the storage of petroleum and oil products on the farm in order to prevent contamination of surface or groundwater resources.

## Background continued...

**Is a farm likely to be directly regulated under NYS DEC PBS and/or US EPA SPCC?**

***NOTE: To absolutely determine whether a farm is regulated under PBS and/or SPCC and the regulatory requirements of each, please visit the websites for details and agency contacts.***

Topic	NYS DEC PBS Regulation	US EPA SPCC Regulation
Website	<a href="http://www.dec.ny.gov/chemical/287.html">www.dec.ny.gov/chemical/287.html</a>	<a href="http://www.epa.gov/ceppo/web/content/spcc/">www.epa.gov/ceppo/web/content/spcc/</a>
A farm is likely regulated and required to comply if ...	<p>... it has at least one underground storage tank greater than 110 gallons (not storing heating oil or non-retail motor fuel) or at least one petroleum storage tank with a capacity greater than 1,100 gallons (regardless of petroleum product stored).</p> <p>Note, if the farm has any tanks described above, then any heating oil and non-retail motor fuel tanks that do exist on the farm would also be included in the regulatory requirements.</p> <p>Note, <u>all tanks storing used oil</u>, regardless of capacity or type (above- or under-ground) must be registered. Other tanks on the farm would only need to be registered if their capacities exceeded the thresholds described, above.</p>	<p>...total above ground oil storage capacity is greater than 1,320 gallons, <u>excluding home heating oil tanks</u>, OR the total storage capacity of completely buried tanks is greater than 42,000 gallons, <u>also excluding buried home heating oil tanks</u>.</p> <p>Note, count containers with a storage capacity of 55 gallons or more, but do not count motive power containers (e.g., automotive or truck fuel tanks). Also, if the farm exceeds the volume thresholds, above, then home heating oil tanks would be included in the regulatory requirements.</p>
What is considered petroleum (PBS) or oil (SPCC)?	<p>Petroleum is crude oil and any mixture made from or containing crude oil; synthetic forms of lubricating oil, dielectric oils, insulating oils, hydraulic oils and cutting oils. Also includes used/waste oils meeting the preceding definition.</p> <p><b>Note:</b> petroleum does not include animal or vegetable oils that do not contain crude oil or any fraction thereof, or products that are gases at 68° Fahrenheit and one atmosphere pressure (e.g., liquid propane), so these are not regulated by PBS.</p>	<p>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.</p>

## Glossary Continued...

**Oil Product:** 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. Note, US EPA SPCC Regulations focus on oils of any kind, while NYS DEC PBS Regulations pertain to petroleum-based oils.

**Secondary Containment:** Containment which prevents any materials spilled or leaked from reaching the land or water outside the containment area before cleanup occurs.

**Soil Permeability:** Ability of water to flow through a soil.

**Stationary Tank** All underground tanks or any aboveground tank which is not mobile. Examples of stationary above ground tanks include tanks which may rest on the ground or may be fixed or permanently in place on foundations, racks, cradles, or stilts.

**Tightness Test:** A test which will detect a tank or piping leak as small as five hundredths (0.05) of a gallon in one hour, which is approximately one gallon per day.

**Wellhead Area:** The pumping of a well draws down (lowers) the water table around the well, creating a “cone of depression.” The land surface area over the cone of depression is often termed the “area of influence.” The water which is recharged through the land surface within this area may eventually reach the well.

## Tank Inventory

**Appropriate section of this worksheet should be completed for each tank listed below.**

<u>Tank No.</u>	<u>Size (gal.)</u>	<u>Above or Below Ground</u>	<u>Description*</u>	<u>Contents</u>	<u>Comments/Condition**</u>

\*Age, physical dimensions, above/underground, containment, protective coating, type of support/anchoring

\*\* Rusted, painted, dented, resting directly on the ground, secondary containment

AEM Tier 2 Worksheet: Petroleum Product Storage		Potential Concern		
Factors Needing Assessment:	Lower 1	2	3	Higher 4
<b>Above-Ground Storage Tanks:</b>				
Is tank above a primary aquifer?	No			Yes
How far is petroleum stored from surface water sources?	More than 500 ft.	Between 200 and 500 ft.	Between 100 and 199 ft.	Less than 100 ft.
How far is the tank from water well?	Tank is outside wellhead area.	Tank is down slope more than 100 ft. from a well.	Tank is upslope more than 100 ft. from a well.	Tank is at grade or upslope less than 100 ft. from a well.
If tank is located in a floodplain, is the tank anchored to avoid flotation or lateral movement?	Tank is outside the floodplain.		Tank is within the floodplain but is anchored.	Tank is within the floodplain and is not anchored.
What is the soil permeability?	Slowly permeable	Slightly permeable soils	Moderately permeable soils.	Rapidly permeable soils.
What is the depth to the water table?	Always greater than 6ft. below the ground surface.	Never less than two feet below the ground surface.	Seasonable high water table.	Soil are often saturated.
What type of material is the tank constructed from, and is it corrosion resistant?	Painted steel tank, less than 15 years old with no visible rust or damage.	Painted steel tank, older than 15 years with no visible rust or damage.	Painted steel tank (any age) showing slight surface rust and/or minor damage to tank.	Steel tank (any age), showing extensive or pitted rust and/or damage to tank.

AEM Tier 2 Worksheet: <b>Petroleum Product Storage Above Ground</b>		<b>Potential Concern</b>		
<b>Factors Needing Assessment:</b>	<b>Lower 1</b>	<b>2</b>	<b>3</b>	<b>Higher 4</b>
<b>Above-Ground Storage Tanks Continued:</b>				
<b>What type of material are tank supports constructed of, and is there corrosion?</b>	Painted steel or other non-flammable material, less than 15 years old with no visible rust or damage. <b>AND</b> An impermeable barrier under the tank.	Painted steel or other non-flammable material, older than 15 years with no visible rust or damage. <b>AND</b> An impermeable barrier under the tank.	Painted steel or other non-flammable material (any age) showing slight surface rust and/or minor damage. <b>AND</b> An impermeable barrier under the tank.	Steel or other non-flammable material (any age) showing extensive or pitted rust and/or damage <b>OR</b> Supports made from flammable material <b>OR</b> Tank is not stable. <b>OR</b> No impermeable barrier under the tank.
<b>Was tank installed to Manufacturer's Standards?</b>				
<b>Are monthly inspections performed on the storage and dispensing systems, and are records kept of dates and types of inspections performed, and leaks detected?</b>				
<b>What type of tank overfill protection exists?</b>	Automatic shutoff and fill port is within secondary containment.	Overfill alarm or gauge and impermeable overflow spill catchment basins installed around fill port.	Impermeable overflow spill catchment basin installed around fill port.	No protection.
<b>How do you monitor for leaks?</b>	Ability to monitor for leaks beneath the tank and daily visual inspection with records.	Ability to monitor for leaks beneath the tank and daily visual inspection but not recorded.		No ability to monitor beneath the tank <b>AND/OR</b> Less frequent or no visual inspection

<b>AEM Tier 2 Worksheet: Petroleum Product Storage Above Ground</b>		<b>Potential Concern</b>		
<b>Factors Needing Assessment:</b>	<b>Lower 1</b>	<b>2</b>	<b>3</b>	<b>Higher 4</b>
<b>What type of secondary containment do you have?</b>	Double wall tank with ability to visually monitor for leaks of the inner tank.	Single wall tank placed within a fabricated (steel or concrete) containment with roof or diked containment with roof. <b>AND</b> Secondary containment valve is closed and locked.	Tank placed within a diked or bermed area capable of holding 100% of tank capacity plus precipitation. <b>AND</b> Secondary containment dike valve is closed and locked	No secondary containment. <b>OR</b> Secondary containment dike valve is not closed and locked.
<b>Are fill ports painted with the proper American Petroleum Institute (API) color paint code?</b>	<b>YES/NO</b>			
<b>Are tanks labeled with Tank Number, Design Capacity and Working Capacity?</b>	<b>YES/NO</b>			
<b>Is all piping connected to the top of the tank to prevent leaks?</b>	<b>YES/NO</b>			
<b>Are all tank controls locked or in a remote locked location? Secure/lock loading &amp; unloading connections?</b>	<b>YES/NO</b>			
<b>Is security lighting available around tanks?</b>	<b>YES/NO</b>			
<b>Does each tank have a liquid level gauge?</b>	<b>YES/NO</b>			
<b>Is tank(s) vented and clear of blockages?</b>	<b>YES/NO</b>			
<b>Are tank top sumps, dispenser sumps, and fill port catch basins kept clean and dry?</b>	<b>YES/NO</b>			
<b>Are fill port catch basins and vapor recovery systems checked after every delivery?</b>	<b>YES/NO</b>			



AEM Tier 2 Worksheet: Petroleum Product Storage Underground		Potential Concern		
Factors Needing Assessment:	Lower 1	2	3	Higher 4
<b>Underground Storage Tanks:</b>				
Is tank above a primary aquifer?	No			Yes
How far is petroleum stored from surface water sources?	More than 500 ft.	Between 200 and 500 ft.	Between 100 and 199 ft.	Less than 100 ft.
How far is the tank from a drinking water well?	Tank is outside wellhead area.	Tank is down slope more than 100 ft. from a well.	Tank is upslope more than 100 ft. from a well.	Tank is at grade or upslope less than 100 ft. from a well.
What is the soil permeability?	Slowly permeable.	Slightly permeable soils.	Moderately permeable soils.	Rapidly permeable soils.
What is the depth to the water table?	Always below the tank bottom.			Seasonable high water table <b>OR</b> In a floodplain.
What are the tank and piping characteristics?	Tank and all associated piping and connections are corrosion resistant <b>AND</b> Secondary containment on tank.	Steel tank and piping is newer than 15 years that is corrosion resistant. <b>AND</b> There is an annual cathodic protection test on the tank and piping.	Steel tank newer than 15 years coated with paint or asphalt and piping is coated.	Steel tank and piping over 15 years old.
Was tank installed to Manufacturer's Standards?				



<b>AEM Tier 2 Worksheet: Petroleum Product Storage Underground</b>		<b>Potential Concern</b>		
<b>Factors Needing Assessment:</b>	<b>Lower 1</b>	<b>2</b>	<b>3</b>	<b>Higher 4</b>
<b>Are monthly inspections performed on the storage and dispensing systems, and are records kept of dates and types of inspections performed, and leaks detected?</b>				
<b>What type of tank overfill protection exists?</b>	Automatic shutoff and impermeable overflow spill catchment basins installed around fill port.	Overfill alarm or gauge and impermeable overflow spill catchment basins installed around fill port.	Impermeable overflow spill catchment basin installed around fill port.	No protection.
<b>How do you monitor for leaks?</b>	Leak monitoring system for tank and piping with records for: <ul style="list-style-type: none"> <li>• Weekly leak monitoring for tanks</li> <li>• Monthly verification of operability of leak monitoring system</li> <li>• Monthly leak monitoring for lines</li> <li>• Annual pressurized line leak detector tests (if applicable)</li> <li>• 5-year tightness testing for tanks over 15 yrs old</li> </ul>	No leak detection system, but there are records of annual pressurized line leak detector tests (if applicable), and appropriate tank tightness testing available.	No leak detection system, but there is appropriate tightness testing	No monitoring or tightness testing.
<b>What is the inventory control protocol?</b>	Records of daily inventory monitoring and 10-day inventory reconciliation with deliveries and usage.	10-day inventory reconciliation	Occasional inventory monitoring.	No inventory control

<b>AEM Tier 2 Worksheet: Petroleum Product Storage Underground</b>		<b>Potential Concern</b>		
<b>Factors Needing Assessment:</b>	<b>Lower 1</b>	<b>2</b>	<b>3</b>	<b>Higher 4</b>
<b>Is there an unused underground tank or a history of underground tanks at the farm?</b>	No <b>OR</b> Tank taken from ground and excavation was checked for evidence of contamination.		Tank completely emptied and filled with inert material. Soil was not checked for contamination.	Unused tank was left as is in the ground.
<b>Are fill ports painted with the proper American Petroleum Institute (API) color paint code?</b>	<b>YES/NO</b>			
<b>Are tanks labeled with Tank Number, Design Capacity and Working Capacity?</b>	<b>YES/NO</b>			
<b>Are all tank controls locked or in a remote locked location? Secure/lock loading &amp; unloading connections?</b>	<b>YES/NO</b>			
<b>Is security lighting available around tanks?</b>	<b>YES/NO</b>			
<b>Does each tank have a liquid level gauge?</b>	<b>YES/NO</b>			
<b>Is tank(s) vented and clear of blockages?</b>	<b>YES/NO</b>			
<b>Are tank top sumps, dispenser sumps, and fill port catch basins kept clean and dry?</b>	<b>YES/NO</b>			
<b>Are fill port catch basins and vapor recovery systems checked after every delivery?</b>	<b>YES/NO</b>			
<b>Is area around tanks free of debris and unrelated flammable materials?</b>	<b>YES/NO</b>			

<b>AEM Tier 2 Worksheet:                      Petroleum Product Storage                      Underground</b>	<b>Potential Concern</b>
<b>Are there as-built plans and fill port labels?</b>	<b>YES/NO</b>
<b>Do you have a written emergency response plan that shows action to be taken in case of spill, leak, fire or explosion?</b>	<b>YES/NO</b>
<b>Are your employees aware of the plan?</b>	<b>YES/NO</b>
<b>Is a list of contacts and phone numbers, including the DEC Spills Hotline, posted and visible?</b>	<b>YES/NO</b>
<b>Are cleanup equipment and absorptive material available at the site?</b>	<b>YES/NO</b>
<b>Comments:</b>          	
<p><b>Benefits to other resources can also be possible while working toward improved water quality. Taking stock of how existing and future management affect soil, water, air, plants, animals, energy, greenhouse gases, people, and economics can result in more effective plans and additional benefits to farms and communities both now and into the future.</b></p> <p><b>Additional Comments:</b>          </p>	