NYS Department of Agriculture & Markets

AEM

AGRICULTURAL ENVIRONMENTAL MANAGEMENT INFORMATION SHEET

Petroleum & Oil Product Storage

Introduction

Petroleum products can be defined as any product that was once crude oil. Oil products refer to any kind of oil in any form including: fats, oils (plant, animal, or mineral based), greases, etc. Bulk petroleum and oil product storage tanks, both above ground and below ground, are very common on agricultural operations. According to the U.S. Environmental Protection Agency, nearly one out of four underground storage tanks in the United States may be leaking. Both above and below ground tanks have the potential to damage public health and the environment, should leaks occur. A leak, in any amount, can impact surface and groundwater supplies. Air quality can also be degraded by vapors that penetrate homes and buildings, which can impact human and animal health.

Environmental Concerns

Petroleum and oil products contain potentially toxic compounds including the solvents benzene, toluene, and xylene, as well as, additives such as MTBE, ethylene dibromide, and organic lead compounds. Petroleum/oil leaks in any capacity can have major environmental impacts. For example, a few quarts of gasoline can contaminate an entire farmstead's drinking water supply. Even a small leak or one drop per second could release more than 200 gallons of gasoline into surface of ground water over the course of one year. Human health is threatened if any level of petroleum contamination occurs as it is undetectable by taste or smell. The threat of leakage increases as the age of storage tanks increases. Aging or underground tanks can be weakened by rust and have a higher risk of developing leaks. Additionally, abandoned storage tanks can still pose a risk of contamination because they are not monitored, maintained, closed, or remediated in accordance with standards.

Potential Economic Benefits

With the high cost of fuel and oil, farmers cannot afford unnecessary losses of their fuel supply. Should water resources become contaminated it can cost thousands of dollars for clean up. Maintaining fuel and oil storages in an environmentally sensitive manner will not only reduce risk of leaks and contamination, but may position the farm to withstand regulatory scrutiny. Petroleum storage facilities that meet regulatory requirements may allow the farm operation to reduce insurance costs, qualify for loan programs or even enhance property value.

Summary of Pollution Prevention Practices

Maintain Leak-Free Tanks with Secondary Containment

- Monitoring for leaks should take place on a regular basis. All underground tanks on the farm should be double-walled with corrosion protection, while all above ground tanks should have some type of secondary containment. These measures will help to control fuel spills if leaks occur.

Siting Petroleum Tanks

- Site Petroleum Tanks at a safe and legal distance away from waterbodies, wells, water tables, and flood prone areas.
- Petroleum tanks must comply with local watershed rules and regulations regarding distances from drinking water wells or surface water bodies. If no regulations exist, tanks should be located at least 500 feet from a waterbody and at least 100 feet from a drinking well.

Emergency Spill Plan

- Create and implement an Emergency Spill Plan is the event of a leak of spill.
- Contact the NYS DEC 24-Hour Spill Hotline

For More Information:

- NYS DEC Chemical and Petroleum Storage
- NYS Farm Bureau Fact Sheet

Summary of Regulations

It is important to read and understand all local, state, and federal regulations pertaining to bulk petroleum and oil product storage. Below is a list of reference pages to assist in this process.

Local Regulations

- Contact your County Building and Fire Codes department for information regarding petroleum tanks.

State Regulations

- NYS DEC Chemical and Petroleum Storage
- NYS DEC Bulk Storage Guidance Documents
- NYS DEC Forms and Instructions for the Bulk Storage Program

Federal Regulations

- EPA Underground Storage Tanks
- EPA Spill Prevention Control and Countermeasure (SPCC) Regulation
- National Fire Protection Association Codes and Standards

Background Information for Worksheets

Is tank above a primary aquifer? - *Above Ground and Underground*
Petroleum/ oil product storage tanks, both above ground and underground, should not be above or near a primary aquifer. If a leak occurs, the aquifer could become contaminated threatening the health and safety of anyone who utilizes it as a drinking water source. The tank should be relocated and/or fitted with a secondary containment facility to help control any spills or leaks.

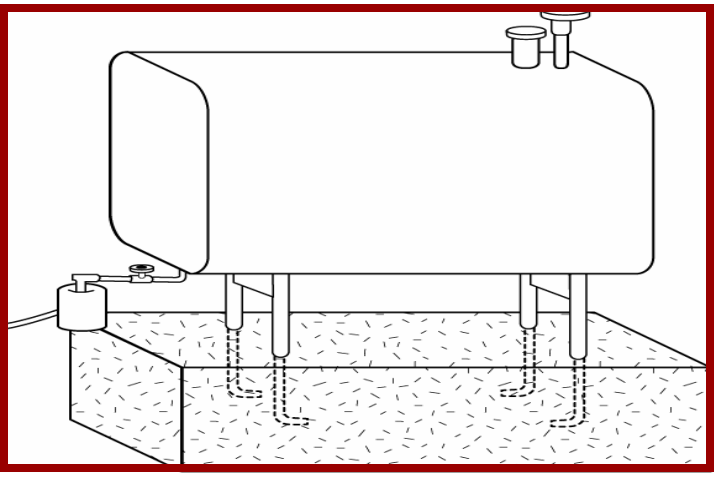
For More Information: NYS DEC – Map of Primary Aquifers in New York State

How far is petroleum stored from surface water sources? *– Above Ground and Underground*
A surface water source can be defined as road ditches, wetlands, streams, ponds, etc. The farther a petroleum storage tank is away from surface water sources, the less chance there is that the water source could become contaminated in the event of a spill or leak. Ideally, above ground and underground tanks should be located more than 500 feet away from water sources. If a tank is located less than 100 feet from the water source, relocation should be considered. Secondary containment facilities should also be installed, especially around tanks less than 500 feet from water sources, to provide a layer of protection should spills or leaks occur.

How far is the tank from a water well? *– Above Ground and Underground*
Petroleum tanks and oil product storages should be located outside of wellhead areas or more than 100 feet down slope from the well. If a leak or spill occurs, being outside or downslope of wellhead areas will remove or reduce the risk of drinking water supplies becoming contaminated.

If tank is located in a floodplain, is the tank anchored to avoid flotation or lateral movement? *– Above Ground*
Petroleum or oil product storage tanks should be located outside of floodplain areas. However, if this is unavoidable, tanks need to be anchored to prevent them from being moved in the event of a flood. A common type of anchoring system used is concrete anchoring. If no proper anchoring system is in place, the force of floodwaters may damage the tank or move the tank to another location. In either situation, environmental issues could occur.

For More Information:
Federal Emergency Management Agency – Map Service Center
Federal Emergency Management Agency (FEMA)
FEMA Homeowner's Guide to Retrofitting, Chapter 8



Background Information for Worksheets

What is the soil permeability? *– Above Ground and Underground*
Locations with soils that are slowly to slightly permeable are best suited for a petroleum or oil storage tank. If a leak or spill were to occur, the petroleum would infiltrate at a slow rate. This would allow for a better chance of keeping the contamination contained. It is best not to locate a petroleum tank on moderately permeable to rapidly permeable soils. This can greatly increase the risk of contamination as the spill can move quicker through the soil to the groundwater. If the tank is located in an area with permeable soils, secondary containment is necessary to catch and control any spills.

For More Information:
NRCS Web Soil Survey
Define Area of Interest
- Soil Data Explorer—Suitabilities and Limitations for Use-Water Management, Storm Water Management - Infiltration

What is the depth to the water table? *– Above and Underground*
It is important to know how deep the water table is where petroleum or oil storage tanks are placed and is best to locate storage tanks in areas where the water table is greater than 6 feet below the surface. Petroleum/oil tanks should not be located in areas with seasonally high water tables or consistently saturated soils. Additionally, it is also important to consider the depth to bedrock when determining a location for a petroleum storage tank. If a spill or leak occurs, the deeper the water table and depth to bedrock the more protected ground water sources are from contamination.

For More Information
NRCS Web Soil Survey
Define Area of Interest
- Soil Data Explorer—Soil Properties and Qualities—Water Features—Depth to Water Table

NRCS Web Soil Survey
Define Area of Interest
- Soil Data Explorer—Soil Properties and Qualities—Soil Qualities and Features—Depth to Any Soil Restrictive Layer

What type of material is the tank constructed from, and is it corrosion resistant? *– Above Ground*
Tanks should be painted steel tanks with no visible damage (i.e. dents, scrapes, cracks, missing paint, etc.) or rust. Painted steel tanks are more durable and resistant to weathering. This can help prevent rust from forming and protect against leaks. Ideally, tanks should also be less than 15 years old. If this is not feasible, implementing a good maintenance and monitoring program can help prevent and protect against leaks.

What type of material are tank supports constructed from, and is there corrosion? – Above Ground
Tank supports should be made of painted steel or other non-flammable material with no visible damage or rust. Like painted steel tanks, painted steel supports are more durable and resistant to weathering. There should be no visible rust or damage to the supports as this could increase the risk of them breaking. Weak or damaged supports could cause the tank to fall and become damaged. Ideally, supports should be less than 15 years old and an impermeable barrier should be under the tank. Proper supports keep the tank off the ground and allow for visual inspections for leaks.

Background Information for Worksheets

What are the tank and piping characteristics? *– Underground*
Underground tanks, piping, and connections should be corrosion resistant with secondary containment on the tank. Since it is difficult to make inspections of the tank, having corrosion resistant elements will protect against rust which can lead to the development of leaks. Secondary containments will provide a catch basin should a leak or spill occur. If the tank is newer than 15 years and corrosion resistant, with no secondary containment, it should be cathodically protected. Having the tank cathodically protected prevents corrosion from occurring by causing a continuous electric current to flow from one or more electrodes or sacrificial anode to the protected structure. Coating underground steel tanks and piping, newer than 15 years, with paint or asphalt is another option to protect against corrosion. The coating provides some protection against rusting and corrosion; however, the coating can weaken overtime and will not provide adequate protection against leaks or spills. Steel tanks and piping older than 15 years with no additional protections are very susceptible to leaks and consideration should be given to replacing the tank. It is important to maintain the tank and keep it up to date to avoid the risk of contaminating groundwater supplies and soil resources.

For More Information:
EPA – Cathodic Protection
EPA - Preventing Underground Storage Tank Releases

Was tank installed to Manufacturer's Standards? *– Above Ground and Underground*
If the tank was not installed to the Manufacturer's Standards the risk of leaks or spills could greatly increase. Always verify that the tanks are installed according to specifications.

Are monthly inspections performed on the storage and dispensing systems, and are records kept of dates and types of inspections performed, and leaks detected? *– Above Ground and Underground*
Inspections of storage tanks should be performed on a regular basis. Maintaining a good monitoring program will help to catch any leaks before they can contaminate water supplies or soil resources. Keeping records of inspections will help to maintain consistency and track any issues that may arise.

For More Information:
NYS DEC – Standard and Practices for Bulk Storage
EPA SPCC Bulk Storage Container Inspection Factsheet

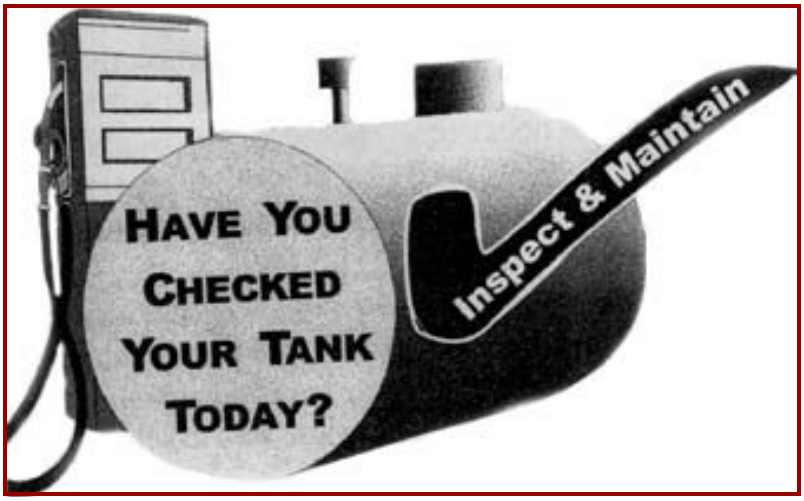
What type of tank overfill protection exists? *– Above Ground and Underground*
Overfill protection on petroleum tanks is necessary as it acts as a catch basin should spills occur. At a minimum, an impermeable catch basin must be around the fill port. This will catch any spills that occur during the filling process. Ideally, the overfill protection should consist of an automatic shut off, as well as, a secondary containment surrounding the fill port. Not only does this provide a measure to catch any spills that occur, but a measure is in place to prevent spills from occurring.

For More Information:
EPA – Underground Storage Tanks (Types of Spill Protection)

Background Information for Worksheets

How do you monitor for leaks? *– Above Ground*
Monitoring for leaks is important, because if even a small petroleum leak goes undetected it could cause catastrophic damage. It is very easy for leaks to go unnoticed especially if they occur underneath the tank. Visual inspections of the tank need to be made on a daily basis. It is important to be able to check for leaks underneath the tank and maintain daily inspection records. If no records are kept, it is still important to complete visual inspections of the entire tank on a regular basis.

For More Information:
NYS DEC Tank Bulletin, "Management, Monitoring, and Maintenance Support Leak Detection Systems"



How do you monitor for leaks? *– Underground*
When monitoring an underground tank for leaks it is best to perform weekly leak monitoring on tanks, as well as, monthly leak monitoring of all piping and lines. The monitoring system should be checked for operability and, if applicable, pressurized line leak detector tests should be performed. If the underground tank is over 15 years old, a 5 year tightness test should be performed. This test has the ability to detect a leak as small as five hundredths of a gallon in one hour. If possible, records should be kept of all monitoring and tests. If no leak detection system exists, records should be kept of all annual pressurized line leak and tightness tests. Implementing a sound monitoring and leak detection program will help prevent serious contamination events.

For More Information:
EPA – Tank Tightness Testing with Inventory Control
NYS DEC – Petroleum Bulk Storage Underground Tank Tightness Testing FAQ's

What is the inventory control protocol? *- Underground*
Maintaining records of daily inventory monitoring will help to monitor petroleum or oil consumption/ usage. Also, inventory reconciliation with deliveries and usage should be completed every 10 days to verify the amounts of petroleum and oil being stored. If the actual amount being stored in the tank is less than the amount used this could indicate a leak. However, the presence of a leak should be verified using a tightness test. Preferably, both daily and 10-day inventory records are kept and maintained of the farm. If daily records are not kept, 10-day inventory reconciliation should be completed to help monitor for leaks. If inventory monitoring occurs infrequently or not at all, the probability of a leak going undetected increases which can result in the contamination of water resources.

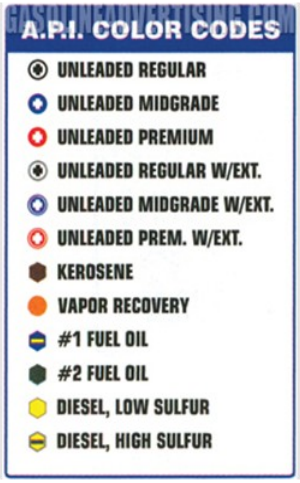
For More Information:
EPA – Doing Inventory Control Right

Background Information for Worksheets

What type of secondary containment do you have? *– Above Ground*
Secondary containment facilities are designed to protect surface and groundwater resources from tank ruptures, overfills, vandalism, and equipment failure. Double walled tanks with leak monitoring capabilities are the best type of secondary containment. An acceptable alternative is a single walled tank placed within a steel, concrete, or diked containment with a roof to exclude precipitation. This fabricated secondary containment must have a valve which needs to be closed and locked. This is essential because spills or leaks that occur will not be trapped and the containment will not function properly if the valve is not properly secured. Tanks can also be stored in a bermed or diked area with a closed and locked valve. However, this method is less effective as there is a risk of corrosion and rust developing on the tank, as well as, a high risk of berm or dike failure. This method also makes it difficult to determine if the contained precipitation is clean or contaminated before releasing it from the structure. It is important to note, that all secondary containment facilities must be capable of holding 110% of tank capacity. If the secondary containment is uncovered it must be able to hold 110% of the tank capacity plus precipitation from a 25-year 24-hour rainfall event.

For More Information:
NYS DEC – Secondary Containment Systems for Above Ground Storage Tanks
NRCS Agricultural Secondary Containment Facility (710) Standard

Is there an unused underground tank or a history of underground tanks at the farm? *– Underground*
If underground tank are known to exist on the farm, they should be removed and the site should be inspected for evidence of leaking and contamination. If tank removal is not a feasible option, the tank should be emptied completely and filled with an inert material. It is unacceptable to abandon existing underground storage tanks and leave them to deteriorate. Residual petroleum or oil from the tank could leak into the environment as a result of the tank's deterioration. While an immediate problem might not exist, this practice could cause serious issues for future generations or new landowners.



Are fill ports painted with the proper American Petroleum Institute (API) color paint code? *– Above Ground and Underground*
Fill ports on petroleum tanks must be colored in accordance with the American Petroleum Institute color paint code. These markings identify what type of product is inside the tank and help to prevent dangerous mixing.

For More Information:
NYS DEC Handling and Storage of Petroleum

Are tanks labeled with Tank Number, Design Capacity, and Working Capacity? *Above and Under*
Tanks need to be numbered and capacities identified to prevent overflows, spills, and dangerous mixing.

Is all piping connected to the top of the tank to prevent leaks? *– Above Ground*
All piping must be connected tightly to the top of the tank to ensure that no leaks occur during filling or dispensing.

Are all tank controls locked or in a remote locked location? Secure/lock loading & unloading connections? *– Above Ground and Underground*

Background Information for Worksheets

Is security lighting available around tanks? *– Above Ground and Underground*
Security lighting can be helpful when trying to deter vandalism and theft. By controlling unauthorized usage of fuel or oil, accidental spills can be prevented.

Does each tank have a liquid level gauge? *– Above Ground and Underground*
Liquid level gauges are important because they help to prevent overfills and spills by measuring the level of liquid in the tank. If the distributor can monitor the level of petroleum or oil inside the tank, the chances of overtopping the tank and a spill occurring are minimized.

Is tank(s) vented and clear of blockages? *– Above Ground and Underground*
Proper ventilation is important because petroleum or oil products can produce dangerous fumes. If no vents exist or if they are blocked this could create potentially dangerous conditions. Petroleum or oil product fumes can be harmful if inhaled and are easily combustible if allowed to accumulate.

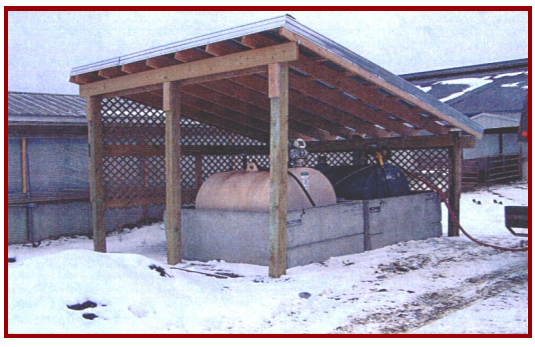
Are tank top sumps, dispenser sumps, and fill port catch basins kept clean and dry? *– Above Ground and Underground*
Keeping top sumps, dispenser sumps, and fill port catch basins clean and dry will help keep them functioning properly. Not maintaining them can increase the risk of petroleum /oil leaks or spills.

Are fill port catch basins and vapor recovery systems checked after every delivery? *– Above Ground and Underground*
Fill port catch basins and vapor recovery systems prevent petroleum/oil spills and vapors from entering the environment. They should be checked after each delivery to determine if they have collected any contaminates and if they are working properly.

Is area around tanks free of debris and unrelated flammable materials? *– Above and Underground*
Keeping the area around tanks free of debris and other flammable material not only reduces the risk of fire, but it also allows the landowner the ability to easily monitor the condition of the tank, as well as, monitor for leaks or spills.

Is tank in a location not normally accessible to traffic, or is it protected by bollards or walls? *– Above Ground*
Locating the petroleum or oil storage tanks away from traffic and or having some type of barrier protection (i.e. bollards or walls) reduces the chance of tanks being accidentally hit by a car, tractor, delivery truck, or piece of machinery. If hit by a vehicle, an unprotected tank could develop a crack, leak, or cause an dangerous explosion. Exposed tanks pose a dangerous threat to the health and safety of humans, livestock, wildlife, and the environment.

Is it vulnerable to snow, ice, or rain coming off of roofs? *– Above Ground*
Ice and snow that may fall from roofs could potentially damage the tank which could result in a petroleum or oil leak. Regular exposure to weather elements can increase the chances of rust and corrosion weakening the tank and increasing the risk of leaks forming.



SUMMARY

AEM Tier 2 Assessments document environmental stewardship and establish benchmark conditions on the farm. They also identify resource concerns and areas of opportunity. The AEM Tier 2 worksheets also help to further establish baseline data that can be used to prioritize issues for Tier 3 planning.

Tier 2 Assessments should be completed on-site with the farmer. When the initial assessment is completed, appropriate feedback in the form of an AEM Tier 2 Worksheet Summary should be provided to the farmer. The summary should include an overall level of concern for the worksheet, explanation of the overall ranking, a list and description of items of greatest concern, as well as, documentation of what is being done well and what areas need improvement. After the evaluation is complete, the farm should be given a ranking which will determine their priority to advance to the AEM Tier 3 planning phase. Appropriate ranking categories that could be used are: High, Medium, or Low Priority. A ranking procedure that has been approved by your local AEM Team should be used to make the ranking determinations.


AEM