**STORAGE TANK MANAGEMENT PROGRAM**



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#  Introduction and Purpose

Petroleum products and other chemicals are stored in aboveground and underground storage tanks throughout the university. The petroleum products are used primarily as a fuel for heat, emergency generators, vehicles, and other university machinery. Chemicals are used in university operations including water and wastewater treatment, and heating and cooling equipment. In addition, vegetable oils may be stored in tanks for use in food preparation. The storage of these materials, while necessary, is a potential environmental hazard due to the possibility of spills, leaks, and releases.

Any oil or chemical spill can pose a serious threat to both the environment and human health and may result in significant costs for clean-up. A single ***pint*** of oil released onto a surface water body can cover up to ***one acre***. The threat to the environment is not limited to surface water but includes soils and ground water as well.

Penn State is committed to reducing its environmental risk to the minimum possible while continuing to function as a leading research and teaching institution. To that end, the Storage Tank Management Program is tasked with ensuring that the tanks that are used to store petroleum products, oils, and chemicals are safe and environmentally sound. This includes ensuring that tanks are properly designed and in compliance with all regulations.

This program is closely linked to the Environmental Emergency Plans program, which details the specific inspection requirements for each tank, reviews the preventive maintenance procedures to prevent releases, requires that personnel are trained and understand the workings of their storage tank systems, and provides instructions on response to spills and releases.

#  Scope

This program applies to all Penn State storage tanks that are used to store oil, fuels, and hazardous substances at all PSU locations except the Hershey Medical Center and the College of Medicine. Tanks which hold water, septage, or propane are not covered by this program. For the purposes of this program, tanks do not include portable totes, also known as intermediate bulk containers, or IBC totes (typically 275- or 330-gallon), or drums that contain 55-gallons or less. The containers are, however, included in the Environmental Emergency Plans Program.

#  Responsibilities

At Penn State, Budget Executives and Administrators, Safety Officers, Project Leaders, supervisors, employees, and Environmental Health and Safety (EHS) have responsibilities to ensure that storage tanks are properly designed, installed, operated, inspected, and closed in accordance with regulations and safe practices.

## 3.1 Budget Executives and Budget Administrators

* Communicate to all faculty, employees, and students that the health and safety of persons in the workplace and environment are of the highest priority at Penn State University;
* Ensure that the Storage Tank Management Program is implemented in the academic departments or administrative units for which they are responsible;
* Support measures such as training, and spill/release cleanup and reporting; and
* Provide resources to replace/repair tanks as needed, and to control and prevent spills, releases, and other hazards.

## 3.2 Safety Officers

* Assist in the implementation of this program within their unit;
* Investigate spills/releases and tank malfunctions; and
* Ensure corrective actions are implemented when needed due to unsafe conditions, practices, or malfunctioning equipment that are reported or observed.

## 3.3 Facility Managers/Supervisors

* Understand the requirements of this program and ensure that they are fulfilled;
* Ensure that tanks under their jurisdiction are included in Environmental Emergency Plans;
* Take prompt corrective action when unsafe conditions, practices, or malfunctioning equipment are reported or observed;
* Report needed tank modifications and repairs to the EHS Storage Tank Program Manager as required by this program;
* Ensure personnel are trained under the Environmental Emergency Plans Program upon hire and annually; and
* Promptly conduct an investigation in conjunction with the Safety Officer of spills, releases, and other hazards related to storage tanks, and follow through to ensure corrective measures have been expeditiously implemented.

## 3.4 Employees

* Report all unsafe conditions, practices, or equipment to the supervisor or Safety Officer whenever deficiencies are observed; and
* Respond to and inform the supervisor immediately of all spills, releases, and other hazards associated with the storage tanks in their area.

## 3.5 Environmental Health and Safety

* Ensure implementation of the Storage Tank Management Program and communicate updates as developed;
* Serve as the storage tank contact for Penn State for all regulatory matters;
* Review all proposed tank installations, repairs, and modifications for compliance with regulations and best practices;
* Assist supervisors when tank inspections reveal the need for corrective actions or recommendations;
* Provide oversight for all tank closures and maintain documentation; and
* Provide oversight of the cleanup of spills and releases and ensure that these incidents are properly reported to Penn State’s environmental insurer and the appropriate regulatory authorities.

## 3.6 Project Leaders

* Ensure that all tank installations and removals are coordinated with Environmental Health and Safety;
* Report needed tank modifications and repairs to the Storage Tank Program Manager as required by this program;
* Notify EHS as soon as possible when construction projects encounter unknown or abandoned tanks, or soil contamination caused by leaking tank systems; and
* Ensure only contractors who are certified in the appropriate category by the Pennsylvania Department of Environmental Protection perform work on storage tanks, unless otherwise approved by EHS.

# Definitions and Abbreviations

*Ancillary Equipment* – Electrical, vapor recovery, access, or other systems and devices, including, but not limited to, devices, piping, fittings, flanges, valves, and pumps used to distribute, meter, monitor, or control the flow of regulated substances to or from a storage tank system.

*ANSI –* American National Standards Institute

*Anti-Siphon Valve* – is a normally closed valve (typically a solenoid) used to help prevent the accidental siphoning of a product from a tank in the event of a leak downstream below the liquid level. They are generally installed on the dispensing side of a fuel system. An anti-siphon valve is often needed where the liquid level in the tank is higher than the elevation of the dispenser or any of the product piping.

*API –* American Petroleum Institute

*AST* – aboveground storage tank

*ASTM –* ASTM International

*Cathodic Protection* – is a means of protecting metal structures, such as steel tanks and piping, from corrosion. It is commonly seen on underground steel tanks and piping. In a moist-soil environment, the tank behaves somewhat like part of an electric battery. An area of the tank acts as an anode or a positive pole. Ions migrate from this positive pole, seeking a nearby negative pole, or cathode. The cathode may be located on a separate structure or at another location on the tank itself. When the ions move away from the anode on the tank, they carry with them microscopic pieces of the tank itself. As the process continues and accelerates, the corrosion becomes increasingly severe. In order to address this the underground tank is made to act as a negative pole (a cathode) and ions in the soil then do not seek to move away from the tank, instead, move toward the tank with no metal lost. This is usually accomplished for smaller tanks by adding a bar, usually made of zinc or magnesium, to the end of the tank. The magnesium bar acts as the anode and the tank becomes the cathode. Ions flow from the magnesium to the tank. The magnesium bar, or the “sacrificial anode,” sacrifices itself to protect the steel tank, now the cathode. Cathodic protection may also occur by impressed current. An impressed current system, instead of relying on sacrificial anodes to provide the protective flow of electricity, relies on electricity provided by an outside power source. The electricity is brought to the site through utility transmission lines. There, through use of a rectifier, it is converted from alternating current to direct current. This direct current is channeled to anodes buried near the structure to be protected. The current flows from the anodes to the structure, protecting it from corrosion.

*Containment Structure – A*nything built, installed, or established and designed to contain regulated substances that are spilled, leaked, or discharged from a storage tank or storage tank system, including a vault, dike, wall, building, or secondary containment.

*Drop Tube* – is installed in the riser at the fill connection or attached to the bottom of overfill prevention valves to direct product flow from the fill point to within six inches of the tank bottom. The drop tube reduces turbulence when the tank is being filled. Instead of splashing into the nearly empty tank from the top, product entering the tank is routed through the drop tube where it emerges near the bottom of the tank. This serves to minimize turbulence and, as a consequence, minimize the creation of potentially explosive vapors.

*EHERP –* Environmental Hazards Emergency Response Plan

*EHS* – Environmental Health and Safety

*Emergency Vent* – is a vent installed on an aboveground tank to provide for vapor release in the event of excessive pressure build-up resulting from fire exposure. These vents are designed to operate at higher pressure settings and to allow a greater flow rate of vapors than those from normal vent pipes. Double-walled tanks will typically have an emergency vent for both the inner and outer tank.

*EPA* – Environmental Protection Agency

*FM –* FM Global

*Fusible Link* – is an automatic closing heat-actuated valve on a fuel line that cuts the flow off from the storage tank through the piping during a fire.

*Interstice/Interstitial Space* – is the space between the inner tank and the outer tank of a double wall tank. This space can be monitored for leaks in the walls of the inner tanks. In double-wall piping, the space between the inner and outer pipes is also referred to as the interstice.

*Interstitial Monitor/Rupture Alarm* – is a monitor or alarm that indicates if liquid is detected within the interstitial space of a double-walled tank. The interstitial monitor is usually a float that activates either an electronic alarm to a panel or a pop-up visual monitor on the top of the tank. A detection of liquid in this space may indicate a tank leak.

*NFPA –* National Fire Protection Association

*OSHA –* Occupational Safety and Health Administration

*Overfill Prevention* – is designed to reduce product flow, stop product flow, or alert the delivery person that the tank is nearly full. Typically the overfill prevention is set at 90% of the tank capacity to allow time to shut off the fuel flow and to provide sufficient tank volume for fuel expansion during warm weather. The overfill prevention for most aboveground tanks is an alarm or whistle vent (see below), while for underground tanks it may be both an alarm and a shutoff mechanism.

*PADEP –* Pennsylvania Department of Environmental Protection

*PADL&I* – Pennsylvania Department of Labor and Industry

*PPC Plan* – Preparedness, Prevention, and Contingency Plan

*Primary Vent* – is a pipe, usually two inches in diameter, that extends above the storage tank. The vent allows vapors that build up in the tank to escape during filling and outside air to enter when removing product, thus keeping the tank at atmospheric pressure when liquids are both added or removed. Vent pipes may have a pressure/vacuum cap on top to seal vapors in when the tank pressure is equalized.

*Spill Basket/Bucket* – is a bucket-shaped fitting placed around the fill pipe of a storage tank that is designed to capture incidental spills that might occur when the delivery hose is disconnected. These are most commonly two to five gallons in size. For underground tanks, these are often referred to as spill containment manholes and are required to be tested for leaks regularly. Typically, the spill containment device is equipped with a drainage port that leads into the storage tank below, however Penn State does not allow this as the containment usually has some debris in it which could contaminate the fuel/product.

*SPCC Plan* – Spill Prevention, Control, and Countermeasures Plan

*SPR Plan –* Spill Prevention Response Plan

*STI –* Steel Tank Institute

*Storage Tank System –* All or part of an underground or aboveground storage tank, associated underground or aboveground piping directly serving that storage tank, and any of the following which are directly associated with that storage tank: ancillary equipment, foundation, containment structure or facility, corrosion protection system, release detection system, and spill and overfill protection system.

*UL –* Underwriters Laboratory

*USTIF –* Underground Storage Tank Indemnification Fund

*Whistle Vent/Vent Alarm* – is a method of overfill prevention used on smaller aboveground tanks. When product is pumped into the tank, air is displaced from inside the tank through the vent pipe. The whistle vent is installed between the tank and the vent pipe. As the air passes through the whistle vent, it makes a whistling sound that is audible through the vent pipe. When the level reaches the bottom of the whistle vent, air no longer can flow through the whistle and the whistling stops, which indicates that the tank is at the full level. This full level is usually set to 90%.

#  Background Information – Regulatory Requirements and Industry Standards

Storage tanks at Penn State are regulated by four entities: the US Environmental Protection Agency (EPA), the US Occupational Safety and Health Administration (OSHA), the PA Department of Environmental Protection (PADEP), and the PA Department of Labor and Industry (PADL&I). Environmental Health and Safety oversees the University’s adherence to these regulations as they apply to the tanks throughout the university system. The pertinent acts and regulations for each are discussed below.

## 5.1. Environmental Protection Agency

In 1965, the federal government passed the Solid Waste Disposal Act to improve solid waste disposal methods. It was amended in 1970 by the Resource Recovery Act. In 1976, Congress again amended this act to create a new program for the management of hazardous waste. The Resource Conservation and Recovery Act (RCRA) provides for the management of both hazardous and non-hazardous wastes. RCRA was amended by the Hazardous and Solid Waste Amendments of 1984 which expanded its scope. The statute that covers underground storage tanks (USTs) is Subtitle I, "Regulation of Underground Storage Tanks."

As a result of these acts, Congress promulgated Title 40, Federal Code of Regulations, Part 280 (40 CFR 280), "Technical Standards and Corrective Action Requirements for Owners and Operators of Underground Storage Tanks," Part 281 (40 CFR 281), "Approval of State Underground Storage Tank Programs," and Part 282 (40 CFR 282), "Approved Underground Storage Tank Programs," all of which are administered by EPA. Pennsylvania has an approved state program and hence the state underground storage tank regulations, which are at least as stringent as the federal regulations, apply.

Additionally, in 1973, the federal government passed the Clean Water Act, which resulted in the promulgation of the "Oil Pollution Prevention" regulation, identified as Title 40, Federal Code of Regulations, Part 112 (40 CFR 112). The Clean Water Act was amended by the Oil Pollution Act of 1990 and requires that facilities that are subject to the regulations meet specific requirements to reduce the chances of releases. The regulations also require facilities to prepare and implement a plan to prevent any discharge of oil into navigable waters or adjoining shorelines of the United States. The plan is referred to as a Spill Prevention, Control, and Countermeasures Plan (SPCC Plan). The act, as amended, provides requirements for aboveground storage tanks, and containers and oil-filled equipment of 55-gallons or greater volume at facilities which meet threshold storage volumes. While underground tanks must be identified in these plans, the focus is on preventing aboveground releases. Some Penn State facilities fall under these regulations, which results in some additional requirements for these tank facilities.

Under the Clean Air Act, in 1987, EPA promulgated New Source Performance Standards (NSPS) subpart Kb (40 CFR 60) which applies to large storage tanks that store volatile organic liquids across a variety of industries, such as petroleum refineries, chemical plants, and portions of the oil and gas industry to reduce volatile organic compound emissions. These regulations do not apply to Penn State’s storage tanks as of 2021.

## 5.2 Occupational Safety and Health Administration

OSHA regulates storage tanks that contain flammable liquids under Title 29, Federal Code of Regulations Part 1910.106 (29 CFR 1910.106). These regulations apply to the storage of liquids with flash points less than 199.4°F. The regulations chiefly address the issues related to fire prevention and are largely captured by those established by PADL&I, and by the industry standards of the Underwriters Laboratory, American Petroleum Institute, and the National Fire Protection Association.

## 5.3 Pennsylvania Department of Environmental Protection

The Pennsylvania legislature passed the Storage Tank and Spill Prevention Act (Act 32, as amended) in 1989 in response to a large aboveground storage tank release. The act is broader and more far-reaching than the EPA’s RCRA Subtitle I and establishes a comprehensive state (PADEP) regulatory program for both aboveground and underground storage tanks that is codified under Title 25 Environmental Protection, Chapter 245, “Administration of the Storage Tank and Spill Prevention Program." These regulations include all of the federal regulations with the exception of the Spill Prevention, Control, and Countermeasures Plan, which remains in federal control, and include requirements for certification of tank installers and inspectors, tank permitting and registration, technical standards for installation and operation, inspections, corrective actions, and closure. In addition, these regulations require training for those responsible for regulated underground storage tanks.

While the EPA retains control of SPCC Plans, the PADEP requires Preparedness, Prevention, and Contingency (PPC) Plans for facilities that have the potential for causing accidental pollution to the waters of the Commonwealth, or the endangerment of public health and safety. This includes storage tanks that contain polluting materials (e.g., fuels, oils, chemicals, etc.). In addition, the PADEP storage tank regulations require Spill Prevention Response (SPR) Plans for larger tank facilities. At Penn State, the Environmental Emergency Plan program addresses all of these requirements.

While not all storage tanks are regulated under the PADEP program, the PADEP does have jurisdiction over the storage of materials that create a danger of pollution (which includes requirements such as having secondary containment for containers of 55-gallons or more), and spills and releases from all storage tanks through the Clean Streams Law.

In addition, PADEP has air quality regulations that address storage tanks: Title 25 Environmental Protection, Chapter 129, “Standards for Sources" includes regulations for storage tanks containing volatile organic compounds. These regulations do not apply to Penn State’s storage tanks as of 2021.

## 5.4 Pennsylvania Department of Labor and Industry

The Fire and Panic Act of 1927 (commonly known as the Pennsylvania State Fire Marshal Law) also provided tank regulations largely related to fire prevention issues, which were administered by the Pennsylvania State Police. This law, as it applies to storage tanks, was repealed, and replaced by the Combustible and Flammable Liquids Act of 1998, which transferred the powers and duties of the State Police to the Department of Labor and Industry. The Act resulted in the promulgation of Title 34, Chapters 14 and 14a, Flammable and Combustible Liquids regulations, that apply to certain tanks which contain flammable or combustible materials. In Allegheny and Philadelphia counties these laws are administered at the county level; at all other locations they are administered by the PADL&I. These regulations require that permits be obtained prior to certain tank installations, and that the installation be inspected prior to filling the tank.

## 5.5 Industry Standards

In addition to regulations, storage tank design, construction, and inspections at Penn State follow several industry standards including the Steel Tank Institute (STI), Underwriters Laboratories (UL), the American Petroleum Institute (API), ASTM International (ASTM), National Fire Protection Association (NFPA), and FM Global (FM).

The Steel Tank Institute is a trade industry association that develops tank fabrication technologies such as corrosion prevention, secondary containment, monitoring capability, and fire protection. Tank technologies that they have developed include the Fireguard and Flameshield tanks, which have some fire protection for aboveground tanks and the sti-P3 cathodically protected underground tank. STI has also developed inspection criteria for manufactured metal aboveground storage tanks (SP001 Standard for the Inspection of Aboveground Storage Tanks) that is recognized by EPA as one of the inspection standards under the Spill Prevention, Control, and Countermeasures rules.

Underwriters Laboratories certifications demonstrate that products have been tested to applicable standards. UL is one of several Nationally Recognized Testing Laboratories approved to perform safety testing by OSHA. There are several UL listings for storage tanks that are used at Penn State. The UL-142 tank is a standard steel tank, which may be double- or single-walled. The UL-2085 tank is a fire-protected double-walled tank. The UL-2080 is a fire-resistant double-walled tank. A UL-58 tank is an underground storage tank that may be either double- or single-walled. The UL-80 tank is the standard steel oil burner tank.

The American Petroleum Institute represents the oil and natural gas industry, and sets standards and recommended practices for field constructed storage tanks. The standards are accredited by the American National Standards Institute (ANSI) and are also recognized by EPA as one of the inspection standards under the Spill Prevention, Control, and Countermeasures rules. API provides standards for field constructed tanks (API 650, Welded Steel Tanks for Oil Storage) and the inspection requirements for these tanks (API 653, Tank Inspection, Repair Alteration, and Reconstruction).

ASTM International provides a standard specification for polyethylene upright tanks in ASTM D1998. This specification covers flat-bottom, upright, cylindrical tanks molded in one-piece seamless construction. The tanks are molded from polyethylene for aboveground, vertical installation and are capable of containing aggressive chemicals at atmospheric pressure.

The National Fire Protection Association addresses Flammable and Combustible Liquids Codes in the NFPA 30 standard. This NFPA standard provides requirements for storage tanks of 60 gallons or greater volume that contain these materials. The codes are focused on fire prevention through proper storage and handling procedures. The standard covers tank construction, required accessories, and siting criteria. This document is referenced by OSHA, and the requirements are often included in building codes as well as the PADL&I regulations.

FM Global issues Data Sheets with requirements for tank installations of ignitable materials in an effort to prevent fire loss. The three data sheets which apply are 5-23, Emergency and Standby Power Systems, 7-32, Ignitable Liquid Operations, and 7-88 Outdoor Ignitable Liquid Storage Tanks. The FM Data Sheets address not only the tanks themselves, but also the construction of rooms used for indoor storage as well as tank setback requirements.

#  Program Requirements

## 6.1 New Tank Design and Installation

All new storage tank designs must be reviewed and approved under the Storage Tank Management Program by the Department of Environmental Health and Safety. The tank requirements are site-specific, and therefore only guidelines are given below.

In the interest of reducing pollution potential, EHS determines, with the project leader and end user, the need for a new tank and the minimum acceptable tank volume. In all cases, EHS will review the use of alternatives for the needed fuel or chemical prior to considering a tank for a new location. In addition, the volume required will be reviewed with the goal of minimizing the tank volume to a practical level, but not to so small a volume that the tank needs to be filled too frequently.

EHS and the facility manager/project leader select the location for the tank based on best management practices. Wherever possible, the use of underground storage tanks will be strongly discouraged in favor of aboveground tanks that are either dual walled or have another means of secondary containment. Tank locations are reviewed with both the needs of the user and the potential for environmental degradation should a release occur considered. For example, tanks are not located adjacent to sink holes, where a spill could be released directly to ground water. In addition, tank locations are reviewed to ensure that the hose from fuel trucks can reach the fill point for the tank. FM has strict requirements for indoor tanks that contain flammable and combustible liquids; project leaders should have discussions with FM early in the design process if a tank installation is intended to be indoors. EHS provides oversight for any required tank permitting.

In rare cases, Penn State may be required to obtain a Site-Specific Installation Permit from PADEP prior to the installation of the tank(s). This permit requires significant geotechnical investigation and narrative, and must be coordinated with EHS. The project leader should provide sufficient lead time for this process.

Many fuel tanks require permitting from PADL&I prior to installation. EHS, working with the project leader, will submit these applications. The project leader should provide sufficient lead time for this process, typically several months. This permitting is also required for replacement of fuel pumps unless they are replaced with the same type that was previous permitted. When a PADL&I permit is required, the tank may not be filled (or if it is for a pump replacement, the pump may not be used) until a final inspection by them occurs.

Installation must be done by a PADEP certified tank installer in most cases; the Storage Tank Management Program requires this even when the tank is not a regulated storage tank. Exceptions may be made on a case by case basis; contact EHS for assistance.

At the completion of installation, EHS typically reviews the storage tank system to ensure that all of the specified requirements have been met. If the tank is required to be registered with PADEP, EHS assists the installer with the required application. A PADEP regulated storage tank may not be filled prior to the state issuing the registration in response to the submittal. It is the responsibility of the project to pay the registration fees during the installation; the facility is responsible to pay them annually thereafter. EHS coordinates the annual registrations.

### 6.1.1 Aboveground Tank Requirements

Listed below are general requirements for aboveground storage tanks, however, it is important to note that there may be other specific requirements, especially for chemical and indoor tanks that EHS will provide during design.

* Tanks must be a double-walled or located within secondary containment.
* Outdoor tanks must be set on a concrete pad.
* Indoor fuel tanks must meet FM Global standards.
* Tanks must have an interstitial monitor or rupture alarm that detects when product has entered the interstitial space.
* Tanks must have a means of overfill prevention. Typically for smaller tanks this consists of a whistle vent. Overfill prevention may also be provided by a high-level alarm within the tank. The alarm should activate at 90% full. If the tank has a remote fill, there must be an audible and visual alarm at the fill point.
* Tanks must have a level gauge. It is preferred that these readout in gallons. Gauges that just show ¼, or ½ full are not acceptable.
* Tank venting is required for all fuel tanks and for some chemical tanks. For all fuel tanks, the primary vent pipe must terminate outside the building and above the normal snow level. Typically 18 inches is sufficient. Contact EHS to determine if a chemical tank requires venting.
* Fuel tanks require emergency venting in addition to primary venting, and for double walled tanks this vent must be present for both the inner and outer tanks. The emergency vents must terminate outside the building and above the normal snow level.
* Piping connections that are located on the top of rectangular tanks must stub up to prevent water from entering the connection.
* Piping should be placed aboveground wherever possible. If it must be placed underground, then it must also be double-walled and have release detection.
* Fusible links should be installed wherever there is the possibility of fuel flow through piping into a building during a fire.
* For outdoor tanks, the fill pipe must be able to be locked.
* A spill basket/bucket must be located around the fill pipe to capture small spills that occur during filling operations. The spill containment must not have a drain in the bottom.
* Tanks that contain flammable and combustible liquids must have a metal drop tube to prevent static discharge present in the fill port that extends to six inches from the tank bottom. This is not required if the tank is 12 inches deep or less.
* Tanks need to have an anti-siphon valve if the possibility exists that product could be released in the event of a pump or piping failure.
* Fuel tanks shall be grounded, and all electric connections shall meet PADL&I and NFPA requirements.
* Tanks that are used to dispense fuel to vehicles and machinery may not have a hold-open clip on the nozzle unless a facility attendant always pumps fuel at the facility.
* All ports, vents, fills, etc. shall be labeled.
* For flammable and combustible liquid storage, a minimum 10-pound ABC fire extinguisher shall be installed within a 50-foot travel distance, but no closer than 25 feet. The extinguisher must be readily accessible, visible from the tank, and protected from the elements.
* For tanks located outdoors, a "No Smoking" sign shall be displayed on the tank.
* The tank contents shall be displayed on the tank along with an NFPA diamond with the appropriate hazards identified.
* If applicable, the tank shall be protected from vehicles with bollards. Use six-inch steel pipes filled with concrete set three feet in ground, that are four feet high, four feet apart, set at least two feet from the shell of the tank.
* A spill kit must be provided sized to the tank. The spill kit must have absorbent socks and pads, and in some cases bags of loose absorbent (EHS will provide details on the size and type based on the tank specifics).

### 6.1.2 Underground Tank Requirements

Penn State previously relied on underground storage tanks at many locations to provide fuel to heat. As these tanks were removed due to expanded alternative fuel sources, it was noted that approximately 20% of these tanks had been associated with a release. As a result, new underground storage tank installations are strongly discouraged and proposed new installations must be reviewed and approved by EHS. Listed below are general requirements for underground storage tanks, however, it is important to note that there may be other specific requirements that EHS will provide during design.

* Underground tanks may only be considered with EHS approval.
* Tanks must be steel, double-walled, and either be cathodically protected or jacketed.
* Tanks must have a deadman anchoring system if they are in a flood or high water table area.
* Tanks must have a continuous interstitial monitor that detects when product has entered the interstitial space and alarms at a panel.
* Tanks must have a means of overfill prevention. Overfill prevention may be provided by a high-level alarm within the tank or an automatic shutoff device. The alarm or device should activate at 90% full. If the tank has a remote fill, there must be an audible and visual alarm at the fill point.
* Tanks must have a level gauge that reads out in gallons.
* Fuel tanks must have a gauge that indicates the presence and the level of water in the bottom of the tank.
* Piping must be double wall suction with the check valve located under the pump unless otherwise approved by EHS.
* Fusible links should be installed wherever there is the possibility of fuel flow through piping into a building during a fire.
* Tank venting is required. For all combustible liquid tanks, the primary vent pipe must terminate above the normal snow level. Typically 18 inches is sufficient. For gasoline tanks the vent must terminate at 12 feet aboveground.
* Containment sumps must be used for piping and dispensers. The sumps must have a sensor that alarms when leaks to the sumps are detected.
* The fill pipe must be able to be locked.
* A spill containment manhole must be located around the fill pipe to capture small spills that occur during filling operations. The spill containment must not have a drain in the bottom. The lid shall identify the material stored in the tank.
* Tanks that contain flammable and combustible liquids must have a metal drop tube to prevent static discharge in the fill port that extends to six inches from the tank bottom.
* Tanks that are used to dispense fuel to vehicles and machinery may not have a hold-open clip on the nozzle unless a facility attendant always pumps fuel at the facility.
* All ports, vents, fills, etc. shall be labeled.
* For flammable and combustible liquid storage, a minimum 10-pound ABC fire extinguisher shall be installed within a 50-foot travel distance. The extinguisher must be readily accessible, visible from the pumps/dispensers, and protected from the elements.
* A "No Smoking" sign shall be displayed near the tank or on the pump/dispenser.
* A spill kit must be provided sized to the tank. The spill kit must have absorbent socks and pads, and in some cases bags of loose absorbent (EHS will provide details on the size and type based on the tank specifics).

## 6.2 Annual Regulated Tank Registration and Underground Storage Tank Indemnification Fund Fees

Storage tanks that are regulated by PADEP have annual registration fees. The annual registration is coordinated by EHS and the fees are paid by the tank facility.

Additionally, PADEP regulated USTs are also subject to the Underground Storage Tank Indemnification Fund (USTIF) fees. The USTIF fees are an insurance policy that provides funding to owners to address leaking underground storage tanks. For gasoline, the fees are charged by the fuel provider on a fee per gallon basis – the facility personnel must ensure that they are being charged this fee on each fuel purchase. For other fuels, there is an annual fee. EHS coordinates these fees but they are paid by the tank facility. EHS maintains the documentation required by PADEP that Penn State, as a self-insurer, has the financial resources to meet the USTIF deductibles for corrective action and third-party liability.

## 6.3 Environmental Emergency Plans

As discussed previously, Penn State University is required to have a variety of spill plans. The EPA under 40 CFR Part 112.7 requires Spill Prevention, Control, and Countermeasures (SPCC) Plans for facilities with a threshold of 1,320 gallons of aboveground storage or 42,000-gallons of underground storage in containers and equipment that holds 55-gallons or more.

The PADEP requires Preparedness, Prevention, and Contingency (PPC) Plans for tanks containing hazardous substances. They also require Spill Prevention and Response (SPR) Plans for facilities that store greater than 21,000-gallons of regulated substances, which include fuels and some types of chemicals.

These plans have been combined under the Environmental Emergency Plans program and are titled Environmental Hazards Emergency Response Plans (EHERP). The plans are a necessary annex to the Storage Tank Management Program for facilities that have existing tanks. The plans detail measures that will prevent and control spills due to human operational error or to equipment failure. The plans contain operating procedures to prevent a spill, control measures to prevent a spill from migrating, and countermeasures to contain, clean-up, and mitigate the effects of any oil or chemical spills. The plans require annual training that is specific to the facility for all facility personnel. Facility managers are responsible to ensure that all employees understand the plans as well as provide hands-on training for their storage tanks. Each plan is reviewed by the appropriate facility manager, and the manager and their alternate for each site sign the site’s plan, agreeing to implement all portions of the plan.

The plans are updated by EHS according to the regulatory requirements whenever there is an addition or removal of a tank, drum, or oil-filled machine/equipment, or the facility has a change in design, construction, operation, maintenance, or other circumstances, that increases the potential for fires, explosions, or releases of toxic or hazardous constituents. Refer to the EHS Environmental Emergency Plans program for more detail.

## 6.4 Downstream Notification

Storage tank facilities with an aggregate aboveground storage capacity greater than 21,000 gallons or more are required to annually provide public notice to all downstream municipalities, downstream water companies, and downstream industrial users within 20 miles of the aboveground storage tank facility site and the local municipality and county in which the facility is located. For facilities where this is required, it is specified in the Environmental Emergency Plan, which includes a sample notification letter and the names and addresses of the downstream contacts. The notice provides a detailed inventory of the type and quantity of material in storage at the facility. The facility manager shall provide a copy of any updates of the Spill Prevention Response Plan after its initial preparation to the county and municipal emergency management agency and the department.

## 6.5 Inspections and Testing

There are different requirements for inspection and monitoring procedures based on tank size, construction, and regulations. The University follows the requirements for tank inspections as specified by the PADEP (these inspection requirements are also listed on the tank’s Storage Tank Registration/ Permit Certificate), the Steel Tank Institute’s Standard SP001, and the American Petroleum Institute’s API 653, depending on the type of tank. Facility personnel are required to inspect and monitor their storage tanks and ancillary equipment in accordance with their Environmental Emergency Plan, which details the appropriate type and frequency of inspection for the tank.

For aboveground steel shop-constructed tanks, the STI SP001 standard drives the inspection process. These always include facility personnel completing the MONTHLY ABOVEGROUND STORAGE TANK INSPECTION CHECKLIST and the ANNUAL ABOVEGROUND STORAGE TANK INSPECTION CHECKLIST. Inspection forms are provided in Section 8 of this document. In some cases they require a STI inspector to conduct periodic testing.

* Double-walled tanks
	+ Up to 5,000 gallons – Periodic (monthly and annual) inspection by facility personnel
	+ Greater than 5,000 gallons – Periodic (monthly and annual) inspection by facility personnel plus an external inspection by an STI inspector every 20 years
* Elevated single-walled tanks located within containment structures
	+ Up to 1,100 gallons – Periodic (monthly and annual) inspection by facility personnel
	+ 1,101 – 5,000 gallons – Periodic (monthly and annual) inspection by facility personnel plus an external inspection and leak test by an STI inspector every 10 years
	+ 5,001 – 30,000 gallons – Periodic (monthly and annual) inspection by facility personnel plus: an external inspection test every 10 years and an internal test every 20 years by an STI inspector, or an external inspection test every five years and a leak test every 10 years by an STI inspector
	+ Greater than 30,000 gallons – Periodic (monthly and annual) inspection by facility personnel plus an external inspection and leak test every five years and an internal test every 15 years by an STI inspector

Some aboveground steel shop-constructed tanks may also be required to have periodic inspections by PADEP certified tank inspectors. When these inspections overlap those required by the STI standard, both are completed at the same time. Larger (greater than 21,000 gallon) shop-constructed tanks may also be required to have out of service inspections.

Aboveground molded plastic shop-constructed tanks do not have industry standards that dictate their inspection schedule. Penn State requires a monthly visual inspection conducted by facility personnel and there is a slightly modified inspection form (MONTHLY CHEMICAL ABOVEGROUND STORAGE TANK INSPECTIONCHECKLIST) for these storage tank systems (see Section 8, Attachments). For the tanks that are also regulated by PADEP, there may be periodic inspections required by a certified inspector.

Field-constructed aboveground tanks follow the API 653 standard for inspections. These require an external and ultrasonic thickness inspection every five years, with an internal (out of service) inspection 10 years following installation and then with a schedule based on the remaining tank thickness, but no less frequently than every 20 years. All of these inspections are performed by an API certified inspector.

Field-constructed aboveground tanks also have the same monthly and annual inspections by facility personnel (MONTHLY ABOVEGROUND STORAGE TANK INSPECTION CHECKLIST and ANNUAL ABOVEGROUND STORAGE TANK INSPECTION CHECKLIST) as manufactured tanks. Per PADEP requirements, tanks that are over 21,000 gallons must also have a ROUTINE ABOVEGROUND STORAGE TANK INSPECTION CHECKLIST completed every 72 hours. In addition, they may require periodic inspection by PADEP certified tank inspectors – typically these are done at the same time as the API certified inspections. If there is an impressed cathodic protection system, it must be checked every 60 days to ensure it is working properly.

Aboveground tanks that are located within a containment structure must have a valved water release system, with the valves normally in the closed position. Facility personnel must inspect the containment structure following every precipitation event and document that there is not sheen on the water surface before opening the valve to drain the water. The valve must then be returned to the closed position. The CONTAINMENT WATER RELEASE INSPECTION CHECKLIST inspection form to document this process is contained in Section 8, Attachments.

Underground storage tanks present some challenges because most leaks will not be obvious to the facility personnel. To address this, these tanks have monitoring systems with the alarm panels located inside the facilities. Personnel must take immediate action in the event that a panel shows an alarm condition. In addition, these tanks have annual checks by third-party vendors to ensure that all sensors and the tank monitor are working properly. Facility personnel must perform monthly checks of the facility, including spill prevention, release detection, and general facility conditions as well as inspections of the dispenser and piping containment sumps in accordance with PADEP requirements using the MONTHLY UNDERGROUND STORAGE TANK FACILTY INSPECTION CHECKLIST and the MONTHLY UNDERGROUND STORAGE TANK SUMP INSPECTION CHECKLIST (see Section 8, Attachments). Each month they must print out the tank leak check from the tank monitor. For those tanks that are cathodically protected, testing must occur at least every three years (but is recommended annually) to ensure that these anti-corrosion systems are working properly. For tanks with pressurized piping there must be an annual test of the line leak detectors by a PADEP certified inspector. As most of these tanks are regulated by PADEP, there are also periodic inspections required by a PADEP certified inspector.

It is required that for all tank filling operations a Penn State employee be present as a witness. The employee is required to ensure that the correct product is added to the tank, that storm drains are identified to the vendor, that a spill kit is present during the filling, that the tank is not overfilled, and that any spills are promptly addressed. Section 8, Attachments, contains the PRODUCT DELIVERY OBSERVATION FORM that is used to document this. More requirements for this process are found in the Environmental Emergency Plan for the facility.

## 6.6 Tank Maintenance and Corrective Action

Periodically, inspection results will indicate the need for storage tank maintenance and/or corrective action. Facility personnel must contact EHS to review all maintenance and needed repairs with the exception of replacing hoses and fuel filters. This is necessary to determine if the maintenance meets the program requirements, needs to be done by a PADEP certified installer, or needs PADL&I permitting; for example, replacement of a pump may require PADL&I permitting. Permission for facility personnel to complete some repairs may be provided on a case-by-case basis. For example, at some facilities, minor repairs, such as replacing a pop-up interstitial monitor, may be performed by facility personnel, however modifications to PADEP regulated storage tanks or other corrective actions as indicated by the PADEP certified tank inspector may need to be performed by PADEP certified tank installers. In all cases where maintenance is needed or a tank inspection yields results which may indicate a problem, facility personnel shall contact EHS for guidance.

## 6.7 Training

### 6.7.1 Environmental Emergency Plans Training

EHS provides the annual training for all employees who are involved with handling, storage, and/or clean-up of petroleum products, oils, and hazardous substances that are stored in tanks as well as other equipment. The purpose of the training is to ensure that the Environmental Emergency Plans are in place and the components of the plans are implemented at each tank site. Facility managers should contact EHS to arrange for the training. Training for new hires is to be provided by the facility manager for the site.

The training includes pre-release planning for each storage tank system at a site. It details the inspection and monitoring plan for the tanks and the responsibility of site personnel to perform these tasks. The training reviews possible indications of leaky tanks or spills and what to do should the situation be encountered. A review of the required preventative maintenance for the tank is discussed, as is site security.

Personnel are trained in the countermeasures to be taken in response to a spill, including the proper use of absorbents, the locations of possible environmental receptors, and the reporting required if a spill or release occurs. The spill kit and other emergency equipment located at the site are reviewed and their use is explained. The facility manager and the emergency coordinator are identified, and their duties are explained. The regulatory reporting requirements are reviewed.

### 6.7.2 PADEP Required Underground Storage Tank Operator Training

PADEP requires underground tank facilities to designate three levels of operators - Class A, Class B, and Class C operators. A Class A operator has primary responsibility to operate and maintain the underground storage tank system and facility to achieve and maintain compliance with regulatory requirements. The Storage Tank Program manager in EHS is a Class A operator for Penn State tanks.

A Class B operator is responsible to implement the underground storage tank regulatory requirements and standards at the storage tank facility. This person oversees and implements the day-to-day aspects of operations, maintenance, and recordkeeping for the underground storage tank systems at one or more facilities. At each underground storage tank facility at Penn State, a primary person and alternate(s) must be designated as a Class B operator.

A Class C operator is the first line of response to events indicating emergency conditions and may control or monitor the dispensing of regulated substances. This person is responsible for responding to alarms or other indications of emergencies caused by spills or releases from underground storage tank systems and associated equipment failures. The Class C operator shall notify the Class A or Class B operator and appropriate emergency responders when necessary, based on the nature or type of emergency. All employees at each Penn State underground storage tank facility whose work involves pumping fuel or responding to issues at the tanks are designated as Class C operators.

Class A and B operators must take a PADEP approved training class, pass a test, and receive a certificate of completion. The training is a one-time requirement. When a Class A or Class B operator is replaced, a new operator shall be trained within 30 days of assuming duties for that class of operator.

Class C operators are required to be trained annually. The Environmental Emergency Plan training covers this requirement. Alternatively, this training may be provided by facility personnel who have completed Class A or Class B operator training. Training must include written instructions or procedures for the Class C operator to follow and to provide notification necessary in the event of emergency conditions.

Each facility must maintain a list of those employees that have been trained as Class A, Class B, and Class C operators for the storage tank facility and include:

* The name of each operator, class of operation trained for and the date each operator successfully completed initial training and refresher training, if any.
* For Class A and Class B operators that are not permanently onsite or assigned to more than one facility, telephone numbers to contact the operators.
* A copy of the certificates of training for Class A and Class B operators shall be on file and readily available.
* Class C operator instructions procedures, including contact names and telephone numbers, and emergency procedures shall be conspicuously posted at storage tank facilities.

## 6.8 Incident and Emergency Planning and Response - Spills and Releases

In the event of a spill, leak, or release from a tank, regardless of quantity, Environmental Health and Safety should be contacted to provide guidance on clean-up and reporting requirements. EHS can be reached at 814-865-6391. For emergencies that immediately threaten the environment, and can’t be readily handled by the facility, the initial notification should be made to 911. The Environmental Emergency Plan for the facility provides details on addressing spills and releases. EHS performs all regulatory notifications for spills and releases at University Park and assists the Emergency Coordinators at other locations with making these notifications.

In some instances, spills cannot be suitably cleaned-up by University personnel. In those events, a third- party contractor will be brought in to direct the clean-up. This may include directing the removal of a tank, contaminated soil, collecting soil samples to demonstrate that all contamination was removed, arranging for disposal of contaminated soil, and providing closure reports. If ground water contamination is suspected, further investigation will be undertaken, with appropriate remediation if necessary. In all cases EHS will coordinate these efforts with the storage tank facility personnel.

## 6.9 Tank Closure

If during the course of maintenance, inspection, or for any other reason, it is determined that a tank needs to be removed, EHS coordinates and provides oversight for the tank removal, and, if necessary, for the replacement. EHS requires the tank remover to be a PADEP certified tank remover and to collect soil samples to establish that there is no contamination present when an underground tank is removed, even when not required by PADEP. In some cases, this may also be required for an aboveground tank. All removed tanks are cleaned and made inoperable prior to disposal. Closure reports are maintained by EHS to document the removal of all underground and aboveground storage tanks and submitted to PADEP when required by EHS. EHS also ensures that if the tank is a PADEP regulated tank, that the required documentation to remove it from registration is completed.

## 6.10 Recordkeeping

The table below provides the records, the frequency of the action, and the retention period for storage tank facilities (customer records). The checklists and forms are provided in Section 8, Attachments, of this document. Refer to the facility’s Environmental Emergency Plan to determine the required inspections and their frequency.

| Inspection Description | Frequency | Retention Period |
| --- | --- | --- |
| Monthly Aboveground Storage Tank Inspection by facility personnel | Monthly | End of calendar year + 3 years |
| Monthly Chemical Aboveground Storage Tank Inspection by facility personnel | Monthly | End of calendar year + 3 years |
| Annual Aboveground Storage Tank inspection by facility personnel | Annually | End of calendar year + 3 years |
| Routine Aboveground Storage Tank Inspection by facility personnel | Every 72 hours | End of calendar year + 1 year |
| Containment water inspection prior to opening valves to allow it to drain | Varies | End of calendar year + 3 years |
| Observation of tank filling procedures by facility personnel | Varies | End of calendar year + 1 year |
| Underground tank inspections using the monthly facility checklist by facility personnel | Monthly | End of calendar year + 3 years |
| Underground tank piping and dispenser sump inspections by facility personnel | Monthly | End of calendar year + 3 years |
| Regulated storage tank inspection by PADEP certified inspector | Varies | Life of equipment |
| Underground storage tank annual tank check by vendor  | Annual | Life of equipment |
| PADEP Regulated Storage Tank Registration certificate | Annual | Until superseded |
| Environmental Emergency Plan Training Records (also maintained by EHS) | Annual | End of calendar year in which course ends or separation of employment + 30 years |

The table below provides the records and their retention period for storage tanks that are maintained by EHS:

| Record Description | Retention Period |
| --- | --- |
| Storage Tank Management Program Documents: Storage Tank Management Program; Snapshot; Forms: Monthly AST Checklist; Monthly Chemical AST Checklist; Routine AST Checklist; Annual AST checklist; Containment Water Inspection Checklist; Product Delivery Observation Form; Monthly Underground Tank Facility Checklist; and Monthly UST Sump Inspection | When superseded or outdated + 3 years; Review by Archives |
| Environmental Emergency Plans training records | End of calendar year in which course ends or separation of employment + 30 years |
| Storage Tank Management Inspections and Audits by EHS; Inspections by regulators | End of Calendar Year which in which audit was completed + 7 years  |
| Environmental Emergency Plans training program materials | When superseded or outdated + 3 years  |
| Records of spills and releases of fuels, oils, and hazardous materials with an environmental impact (outdoors) | Building demolition or transfer of ownership + 4 years; Review by Archives |
| Storage tank records - existing and removed, including specifications, inspections, modifications, and closure reports; storage tank releases | Building demolition or transfer of ownership + 4 years; Review by Archives |
| Environmental Emergency Plans (Environmental Hazard Emergency Response Plans, Spill Prevention, Control, and Countermeasures Plans, Preparedness, Prevention, and Contingency Plans, and/or Spill Prevention Response Plans)  | When superseded or outdated + 5 years; Review by Archives |
| Inventories of existing and removed storage tanks | When superseded or outdated + 3 years |
| Storage tank permits from PADEP and PADL&I | Expiration of permit + 3 years |
| Storage Tank regulatory interpretations (PADEP and PADL&I) | Program superseded or outdated + 3 years |

# Revision Summary Table

|  |  |
| --- | --- |
| Revision Date | Summary of Revisions |
| 9/26/2001 | Initial Program |
| 2/13/2008 | Converted from web page to stand alone program document |
| 9/3/2014 | Updated tank statistics |
| 5/7/2021 | Total update of the program documentation; new requirement for customers to contact EHS for approval of any tank modifications/maintenance except fuel filter and hose replacement |

# Attachments

* Monthly Aboveground Storage Tank Inspection Checklist
* Monthly Chemical Aboveground Storage Tank Inspection Checklist
* Annual Aboveground Storage Tank Inspection Checklist
* Routine Aboveground Storage Tank Inspection Checklist
* Containment Water Release Inspection Checklist
* Product Delivery Observation Form
* Monthly Underground Storage Tank Facility Inspection Checklist
* Monthly Underground Storage Tank Sump Inspection Checklist

#### MONTHLY ABOVEGROUND STORAGE TANK INSPECTION CHECKLIST

Location: \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ Date: \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ Completed by: \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

|  |  |  |  |
| --- | --- | --- | --- |
|  | Tank: | Tank: | Tank: |
| Is there any deterioration on the tank, tank coating, piping, foundation, drainage, supports, ladder, platform, or safety equipment? For molded plastic tanks, check for evidence of cracked and worn areas and delamination. If yes, specify below. | YesNo | YesNo | YesNo |
| Is there any water at the lowest possible point within the primary tank (fuel tanks only)? Remove any water found. For tanks containing other products, is there any evidence of chemical degradation? | YesNoN/A | YesNoN/A | YesNoN/A |
| Is there any evidence of liquid (product or water) in the interstitial space (double-walled tanks) or containment area? | YesNoN/A | YesNoN/A | YesNoN/A |
| Are all drain valves secured in the closed position when not in use and all tank openings properly sealed? Are the piping connections tight and aligned? | YesNoN/A | YesNoN/A | YesNoN/A |
| Is the spill basket clean and functional? | YesNoN/A | YesNoN/A | YesNoN/A |
| Is the liquid level gauge readable and in good condition? | YesNo | YesNo | YesNo |
| Are there any obstructions or restrictions to the normal and emergency vents that prevent normal function? Ensure that the emergency vent moves freely.  | YesNo | YesNo | YesNo |
| Are there any operational malfunctions of ancillary equipment (pumps, gauges, etc.)? | YesNo | YesNo | YesNo |
| Is there any evidence of a release from the tank – this includes visible signs of leakage around the tank, concrete pad, containment area, ringwall, or ground? | YesNo | YesNo | YesNo |
| Is there a clear path to the tank and containment area, and are gates/doors to the containment area operable and in good condition? | YesNo | YesNo | YesNo |
| Is a complete spill kit available? | YesNo | YesNo | YesNo |
| Are there any conditions that may be a fire or safety hazard, or pose an environmental hazard? If yes, specify below. | YesNo | YesNo | YesNo |

Any deficiencies noted during the inspection must be corrected as soon as possible. **Facility personnel must contact EHS to review all tank maintenance and needed repairs with the exception of replacing hoses and fuel filters.** If there are any questions, call the Department of Environmental Health and Safety at 814/865-6391. Comments/Clarifications and Corrections:

#### **MONTHLY CHEMICAL ABOVEGROUND STORAGE TANK INSPECTION** CHECKLIST

Location: \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ Date: \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ Completed by: \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

|  |  |  |  |
| --- | --- | --- | --- |
| Inspection Item: | Tank: | Tank: | Tank: |
| Is there any deterioration on the tank, piping, foundation, supports, ladder, platform, or safety equipment? For molded plastic tanks, check for evidence of cracked and worn areas and delamination. If yes, specify below. | YesNo | YesNo | YesNo |
| Is there any evidence of degradation of the chemical stored in the tank? | YesNo | YesNo | YesNo |
| Is there any evidence of liquid (product or water) in the interstitial space (double-walled tanks) or containment area? | YesNoN/A | YesNoN/A | YesNoN/A |
| Are all drain valves secured in the closed position when not in use and all tank openings properly sealed? Are the piping connections tight and aligned? | YesNoN/A | YesNoN/A | YesNoN/A |
| Is the spill basket clean and functional? | YesNoN/A | YesNoN/A | YesNoN/A |
| Is the liquid level gauge readable and in good condition? | YesNo | YesNo | YesNo |
| Are there any obstructions or restrictions to the vent that prevents normal function?  | YesNoN/A | YesNoN/A | YesNoN/A |
| Are there any operational malfunctions of ancillary equipment (pumps, gauges, etc.)? | YesNo | YesNo | YesNo |
| Is there any evidence of a release from the tank – this includes visible signs of leakage around the tank, concrete pad, containment area, or ground? | YesNo | YesNo | YesNo |
| Is there a clear path to the tank and/or containment area? | YesNo | YesNo | YesNo |
| Is a complete spill kit available? | YesNo | YesNo | YesNo |
| Are there any conditions that may be a fire or safety hazard, or pose an environmental hazard? If yes, specify below. | YesNo | YesNo | YesNo |

Any deficiencies noted during the inspection must be corrected as soon as possible. **Facility personnel must contact EHS to review all tank maintenance and needed repairs with the exception of replacing hoses and fuel filters.** If there are any questions, call the Department of Environmental Health and Safety at 814/865-6391. Comments/Clarifications and Corrections:

#### ANNUAL ABOVEGROUND STORAGE TANK INSPECTION CHECKLIST

Location: Tank:

Completed by: Date:

|  |
| --- |
| **Tank Containment** |
| Is the containment structure in satisfactory condition? | Yes No N/A |
| Are drainage pipes/valves fit for continued service? | Yes No N/A |
| **Tank Foundation and Supports** |
| Is there evidence of tank settlement or foundation washout? | Yes No N/A |
| Is there cracking or spalling of the concrete pad or ring wall? | Yes No N/A |
| Are the tank supports in satisfactory condition? | Yes No N/A |
| Is water able to drain away from the top of the tank? | Yes No N/A |
| Is the grounding strap secured and in good condition? | Yes No N/A |
| **Tank External Coating** |
| Is there evidence of paint failure? | Yes No N/A |
| **Tank Shell/Heads** |
| Are there noticeable distortions in the tank shell/head, buckling, denting, or bulging? | Yes No N/A |
| Is there evidence of shell/head corrosion or cracking? | Yes No N/A |
| **Tank Manways, Piping, and Equipment with Secondary Containment** |
| Are flanged connection bolts tight and fully engaged with no signs of wear or corrosion? | Yes No N/A |
| **Tank Roof** |
| Is there standing water on the tank roof? | Yes No N/A |
| Is there evidence of coating cracking, crazing, peeling, or blistering? | Yes No N/A |
| Are there holes in the roof? | Yes No N/A |
| **Vents** |
| Are vents free of obstructions? | Yes No N/A |
| Is the emergency vent operable and lift as required? | Yes No N/A |

Location: Tank:

Completed by: Date:

|  |
| --- |
| **Insulated Tanks** |
| Is any insulation missing? | Yes No N/A |
| Are there noticeable areas of moisture on the insulation? | Yes No N/A |
| Is there mold on the insulation? | Yes No N/A |
| Is the insulation exhibiting any signs of damage? | Yes No N/A |
| Is the insulation sufficiently protected from water intrusion? | Yes No N/A |
| **Level and Overfill Prevention** |
| Has the tank liquid level sensing device (fuel gauge) been tested to ensure proper operation? | Yes No N/A |
| Does the tank liquid level sensing device (fuel gauge) operate as required? Check by comparison to stick readings. | Yes No N/A |
| Are overfill prevention devices in proper working condition? | Yes No N/A |
| Does the interstitial monitor operate properly and are there no weathering cracks (if plastic)? | Yes No N/A |
| **Electrical Equipment** |
| Are tank grounding lines in good condition? | Yes No N/A |
| Is electrical wiring for control boxes/lights in good condition? | Yes No N/A |
| **Fuel/Product Quality** |
| Does the fuel have an off odor or is the fuel filter plugging? If so, this may be an indication of bacterial contamination and may require an additive. If a chemical is stored, is there any sign of degradation? | Yes No N/A |

Any deficiencies noted during the inspection must be corrected as soon as possible. If there are any questions, call the Department of Environmental Health and Safety at 814/865-6391. **Facility personnel must contact EHS to review all tank maintenance and needed repairs with the exception of replacing hoses and fuel filters.** For any inspection item that is deficient, provide clarification/detail here and indicate the steps taken to correct the deficiency:

#### ROUTINE ABOVEGROUND STORAGE TANK INSPECTION CHECKLIST

**COMPLETE THREE TIMES A WEEK WITH A MAXIMUM INTERVAL OF 72-HOURS**

Location: \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ Date: \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ Completed by: \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

|  |  |  |
| --- | --- | --- |
|  | Tank: | Tank: |
| Is there any evidence of liquid (product or water) in the containment area? | YesNo | YesNo |
| If, yes, does the containment water have a sheen? | YesNoN/A | YesNoN/A |
| Has the source of the sheen been identified? | YesNoN/A | YesNoN/A |
| Has containment water been released? | YesNoN/A | YesNoN/A |
| Is the containment drain valve secured in the closed position? | YesNo | YesNo |
| Is there any evidence of a release from the tank or piping – this includes visible signs of leakage around the tank, concrete pad, or ground inside and outside containment? | YesNo | YesNo |
| Are there any conditions that may be a fire or safety hazard, or pose an environmental hazard? If yes, specify below. | YesNo | YesNo |

Note: It is not permissible to release water with any evidence of contamination (e.g., sheen on surface) by petroleum products. If a sheen is found, contact Environmental Health and Safety (814) 865-6391. **Facility personnel must contact EHS to review all tank maintenance and needed repairs with the exception of replacing hoses and fuel filters.** Any deficiencies noted during the inspection must be corrected as soon as possible.

Comments/Clarifications and Corrections:

#### CONTAINMENT WATER RELEASE INSPECTION CHECKLIST

Location: \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| Date: | Is there any accumulation of water in the storage area containment? | Does the containment water have a sheen? | Has any oily sheen been absorbed from the surface of the containment water? | Has containment water been released? | Initials: |
| Yes | No | Yes | No | N/A | Yes | No | N/A | Yes | No | N/A |
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Check the appropriate box.

Note: It is not permissible to release water with any evidence of contamination (e.g., sheen on surface) by petroleum products. If a sheen is found, contact Environmental Health and Safety (814) 865-6391.

#### PRODUCT DELIVERY OBSERVATION FORM

|  |  |  |
| --- | --- | --- |
| Yes | No |  |
|  |  | Prior to tank filling, did personnel determine the amount of product to be delivered as calculated below:[(tank capacity in gallons) X .9] – (product quantity currently in tank)   |
|  |  | Was the delivery person notified of the location of the storm drain inlets and the need to cover the drain inlet should a spill occur? |
|  |  | Were spill control materials immediately available when tank was filled? |
|  |  | Did the University representative notify delivery personnel of the type of overfill prevention (whistle vent, alarm, etc.) that tank is equipped and fueling operation must stop if overfill prevention mechanism indicates the tank is full?  |
|  |  | Was spill basket empty prior to filling? |
|  |  | Did University representative verify that correct product is being delivered prior to filling tank? |
|  |  | Was the “No Smoking” rule within 50-feet of delivery truck, dispensing hoses and tank vents followed? |
|  |  | Did the University representative observe and monitor the total delivery operation? |
|  |  | Was the tank overfilled? |
|  |  | Was any product spilled? |
|  |  | If there was a spill, was the delivery company notified and were proper University spill reporting guidelines followed? |
|  |  | Compare actual amount delivered to calculated delivery amount:Actual amount delivered GallonsCalculated amount to be delivered GallonsDifference GallonsIf there is a wide difference, contact EHS. |
|  |  | Was spill basket empty after filling? |

Date:

Tank Filled:

University Representative:

Supplier Representative:

#### MONTHLY UNDERGROUND STORAGE TANK FACILTY INSPECTION CHECKLIST

Location: Date: \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

Completed by:

Answer Y (Yes), N (No), or N/A (Not Applicable) for each item below.

|  |  |  |
| --- | --- | --- |
|  | Tank No: | Tank No: |
| SPILL BASKET/FILL PIPE |
| Is there any damage? If yes, contact EHS. |  |  |
| Has all liquid and debris been removed? |  |  |
| Has the fill pipe been checked for any obstructions, such as tank gauging sticks, and if found, have they been removed? |  |  |
| Is the fill cap securely fastened and locked? |  |  |
| MONITORING PORTS |
| Are covers and caps of all ports tightly sealed and locked? |  |  |
| PUMPS |  |  |
| Are the dispenser hoses, nozzles, and breakaways in good condition? Replace as needed. |  |  |
| Does the fuel filter need to be replaced? Replace as needed. |  |  |
| Are fire extinguishers present with current monthly and annual inspections? |  |  |
| SPILL KIT |
| Is the spill kit stocked and are spill control absorbents dry? |  |  |
| TANK MONITORING |
| Does the tank monitoring show no alarms? If there is an alarm for an unknown reason, contact EHS immediately. |  |  |
| Has one printout for the month from the tank monitoring system been filed? Keep for three years. |  |  |

Comments or Issues Encountered:

Any deficiencies noted during the inspection must be corrected as soon as possible. **Facility personnel must contact EHS to review all tank maintenance and needed repairs with the exception of replacing hoses and fuel filters.** If there are any questions, call the Department of Environmental Health and Safety at 814/865-6391

#### MONTHLY UNDERGROUND STORAGE TANK SUMP INSPECTION CHECKLIST

Location: Date: \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ Completed by: \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| Location | Is there any water in the sump? | Does the water have a sheen? | Has the oily sheen been absorbed from the surface of the water? | Has the water been removed? | Initials: |
| Yes | No | Yes | No | N/A | Yes | No | N/A | Yes | No | N/A |
| Tank pipe sump |  |  |  |  |  |  |  |  |  |  |  |  |
| Tank pipe sump |  |  |  |  |  |  |  |  |  |  |  |  |
| Dispenser sump |  |  |  |  |  |  |  |  |  |  |  |  |
| Dispenser sump |  |  |  |  |  |  |  |  |  |  |  |  |
| Dispenser sump |  |  |  |  |  |  |  |  |  |  |  |  |
| Dispenser sump |  |  |  |  |  |  |  |  |  |  |  |  |

Comments or Issues Encountered:

Any deficiencies noted during the inspection must be corrected as soon as possible. **Facility personnel must contact EHS to review all tank maintenance and needed repairs with the exception of replacing hoses and fuel filters.** If there are any questions, call the Department of Environmental Health and Safety at 814/865-6391