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Understanding Pennsylvania's Underground Storage Tank Regulations; A Guidance Document for Storage Tank Owners and Operators

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Abstract
This capstone project is a proactive approach to addressing a problem observed in many underground storage tank facilities; owners and operator failure to understand the Pennsylvania state regulations. The Pennsylvania Department of Environmental Protection (PA DEP) enacted the Storage Tank and Spill Prevention Act in 1989. Now, twenty years later, government regulators are still struggling to achieve a high rate of compliance at storage tank facilities. Most of the non-compliant storage tank facilities in question are gas stations. Some of the factors contributing to the non-compliance are: limited understanding of the English language; complexity of the regulations; constant evolution of the regulations; and the ignorance of responsibility and consequences. In many cases, these impediments lead to an apathetic attitude toward the requirements. I have created a plain-language guidance document that explains storage tank systems and key regulations. My goal is to have the document published by the PA DEP so that it may be handed out to the regulated community. Over the next few years, Pennsylvania will be implementing a federally mandated operator training. This document would be a great complement to the training goals of the federal and state government agencies. In addition, achieving compliance at underground storage tank facilities is of great importance for protecting our groundwater supplies. Pennsylvania has had over 14,000 releases of regulated substances from storage tanks since 1989. Groundwater is an extremely valuable resource for drinking water purposes as well as for the natural environment. My document will assist storage tank owners and operators in understanding the regulations, which will lead to a greater level of compliance with the regulations, and fewer release incidents.

Disciplines
Environmental Sciences | Physical Sciences and Mathematics

Comments
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CHAPTER ONE

Introduction

Statement of the Problem

In my four years working in the storage tanks program at the Pennsylvania Department of Environmental Protection (PA DEP), I have noticed a great need for clear, simple interpretation of regulations. Storage tank regulations can be confusing and foreign to the regulated community, which leads to an apathetic attitude. Many times these people ignore the regulations until an enforcement action is issued. A laymen’s terms guidance document that covers all of the major requirements, as well as direction on what to do in case of an emergency, would be an important resource for storage tank owners and operators. A better understanding of their regulatory requirements would lead to a higher rate of compliance.

Purpose of the Study

I took a proactive approach to improving the regulatory compliance of Pennsylvania storage tank facilities by developing a guidance document specifically for underground storage tank owners and operators. The goal of this document is to improve compliance with the state storage tank regulations by simplifying the requirements and educating the regulated community.

Need for Research

Operator training is a relatively new compliance tactic for state storage tank regulators. Pennsylvania is currently in the process of developing an operator training program for storage tank operators. My guidance document would complement this program by serving as a reliable reference document for the regulated community.
**Hypothesis**

**Hypothesis:**

The document that I produce will improve gas station owner and operator compliance with the state environmental regulations.

**Research Questions**

The research questions being investigated are:

1. How can regulations be interpreted in a way that is easy for a layperson to understand while still upholding legal caveats?
2. What are the most important sections of the storage tank regulations for operators to understand?
3. What about the regulations is hindering operator understanding?
4. How can impediments to understanding the regulations be overcome?
5. Is understanding the regulations enough to facilitate compliance?
6. What is the benefit of having a guidance document of this type available?

**Definition of Terms**

**Storage Tank Regulations**

This term refers to 25 Pa. Code Chapter 245, Administration of the Pennsylvania Storage Tank and Spill Prevention Act. These are the Pennsylvania regulations that apply to regulated aboveground and underground storage tanks.

**Storage Tank Operator**

The storage tank operator (“operator”) is the person who is responsible for the use and maintenance of the storage tank system.
Storage Tank Owner

The storage tank owner (“owner”) refers to the property owner for the property containing regulated storage tanks. This can be the same person as the operator, but does not have to be.

Pennsylvania Department of Environmental Protection (PA DEP)

The Pennsylvania Department of Environmental Protection (PA DEP) (“Department”) is the regulatory agency responsible for the enforcement of the Pennsylvania storage tank regulations.

Regulated Storage Tanks

Storage tanks which are subject to the regulations found in 25 Pa. Code Chapter 245. The majority of these tanks are located at gas stations.

CHAPTER TWO

Literature Review

Storage Tank Regulation History

On August 5, 1989, the State of Pennsylvania enacted the Storage Tanks and Spill Prevention Act, which established specific regulatory requirements for owners and operators of underground and aboveground storage tanks. (Pennsylvania code) A large majority of the facilities that have underground storage tanks covered by these regulations are gas stations. Although the total number of active storage tanks in Pennsylvania has been reduced from 90,321 in 1991 to 24,162 in 2009, there have been 14,766 confirmed releases of regulated substances from storage tanks since 1989. (US EPA, 2009) Pennsylvania currently has a backlog of 3,207 open releases that are still in the process of remediation. (US EPA, 2009) The impact of these releases is mostly to groundwater. (Frye, 2008)
Groundwater

A September 2008 LUSTline article states that groundwater is extremely important to human survival, not just for drinking, but for many other integral parts of our economy including energy and fuel production. However, groundwater has not gotten the attention and the respect that it deserves from the public. (Frye, 2008) In addition, it is widely accepted that contaminated groundwater sources are very difficult and expensive to replace. (Ground Water Protection Council, 2007) The Groundwater Protection Council, among other reputable sources, believes that underground storage tanks are a major contributor to groundwater contamination. The Council also recognizes that, while the federal and state regulations have become more stringent since the inception of the regulations, in order to protect groundwater resources, these regulations must be strictly enforced. (Ground Water Protection Council, 2007) Don Carr, spokesman for the Environmental Working Group stated in a recent USA Today article, “You can't put a price on the availability of clean, fresh sources of drinking water.” (Schweers, 2009)

Impediments to Compliance

A number of issues are preventing 100% compliance with the Pennsylvania storage tank regulations. A prime source of non-compliance is a disconnection between the regulations and the operator of the storage tanks. Many times the root of this problem is due to the complexity of regulatory writing. This problem can be magnified when, as often happens, the operator is uneducated and/or foreign to the English language. In addition, many owners and operators are ignorant of their respective obligations and they fail to take responsibility for their property. The owner may assume that the requirements are solely for the operator, and the operator may assume the owner is the only responsible party. Owners and operators also seem to be unaware
of the consequences of failing to properly maintain their storage tank systems and non-compliance with the regulations. This ties back into the issue of uneducated owners and operators. They may not realize that a release from their storage tank could result in a sizeable financial obligation, as well as negative impacts to nearby residents’ drinking water. (Dee, 2009) An August 26, 2009, *USA Today* article focuses on the difficulties gas station owners are having with keeping up with the environmental requirements for their storage tanks, both economically and in dealing with the constant evolution of regulations. In the article, James Patneau Jr., owner of four independent gas stations in Ohio, says, “The bottom line is there is a progression that the rules never get easier, they only get tougher.” He says regarding the regulations, “It is tough dealing with the federal and state government.” (Schweers, 2009) The issue of untrained storage tank owners and operators has been acknowledged by both federal and state government regulators all over the country. While it would be ideal if the government environmental agencies could make sure that each facility fully understands all of its regulatory obligations prior to operating their tanks, there is not nearly enough staffing in the agencies to complete this task. Marcel Moreau, a noted expert in the field of storage tanks says, “Today’s storage systems are...complex and sophisticated (for reasons that are economic as well as environmental), as are the regulations governing them. Yet we still expect that people off the street will be able to successfully operate these systems. Is it any wonder that they so often fail?” (Moreau, 2002)

**Operator Training**

The state government of Oregon responded to this issue by instituting an operator training program in 2003. (England, 2008) Now that the program has been in place for a few years, critics are saying that while the training has not been a silver bullet for compliance, the operators are proving to be more knowledgeable, and compliance rates have gone up and
continue to do so. (England, 2008) The Federal Energy Policy Act of 2005 requires all states to begin an operator training program by August 8, 2009. (Hazardous Waste Consultant, 2006) Pennsylvania has developed an operator training program that requires all storage tank facilities to have DEP-certified class A, B, and C operators for their facility no later than August 8, 2012. (Environmental Quality Board, 2009) The Class A operator assists the owner and operator in maintenance and compliance. The Class A operator will typically be a DEP-certified tank handling company hired by the owner. The Class B operator oversees day-to-day operations, maintenance, and compliance. This person may be overseeing several facilities at the same time. The Class C operator is the person who is at the facility daily. This is the person physically performing the release detection, checking equipment, and responding to emergencies.

(Environmental Quality Board, 2009)

**Summary**

At least some, if not all, storage tank owners and operators may require additional assistance with understanding the state storage tank regulations. The current lack of understanding is resultant of several issues, including ignorance of the requirements and consequences, language barriers, and lack of education. My guidance document is intended to aid the Class B and C operators. It will serve as a reference document for operators who do not have experience in operating underground storage tank systems. In addition, it will give new operators a baseline from which to work. It will be especially useful for facilities that have a high turnover rate for their Class C operators. These people will have a very difficult time keeping up with the required operator training. This document will be a reliable source of easily understood information for any operator. The success of this guidance document will protect storage tank owner and operators from costly clean-ups and penalties as well as lighten the
overwhelming workload of the understaffed PA DEP. Hopefully, attaining a higher rate of compliance with the regulations will decrease the number of future releases from storage tanks into the environment.

CHAPTER THREE

Research Design & Methodology

Proposed Evaluation Design

My capstone project is a plain-language guidance document for storage tank operators. The document will be a manual for complying with the applicable Pennsylvania Department of Environmental Protection (PA DEP) regulations. The document is written mainly for gas station owners and operators. The following topic headings are included in the document: My Tank System; Identifying Storage Tank System Components; Registration; Corrosion Protection; Tank Release Detection; Piping Release Detection; Spill and Overfill Prevention; Facility Operations Inspections; Operator Training Requirements; Releases; Other Applicable DEP Regulations (air and waste); Testing Schedule Summary; Frequently Asked Questions; and Forms. I explained the regulations while trying to keep the information brief and easy to read so that the document does not become overwhelming for the reader. My goal is for this guidance document to be published by PA DEP and handed out to the regulated community. It is of utmost importance that this document is easy to use and understand. Otherwise, it will not achieve the intended purpose.

Methods

I used the Pennsylvania storage tank regulations along with current guidance documents both produced by the federal and several different state governments as resources to produce the document. I had DEP-certified tank inspectors and state regulators to review my document and
provide me with feedback regarding the information I chose to include and the clarity of my interpretations. These opinions confirmed that the document is easily understood and that I have not overlooked any important regulations. I have a validity concern with the completeness and accuracy of my regulatory interpretations, due to the fact that I am trying to have it published by a government agency. This will be addressed by the storage tank program managers in PA DEP’s central office and the PA DEP policy office reviewing the document prior to publishing.

Quantitative Analysis

Time did not permit a pre-test/post-test to test my hypothesis.

CHAPTER FOUR

Results

Discussion

I expect that PA DEP will publish the document that I create. It will then be handed out to storage tank owners and operators by PA DEP storage tank program staff in all regions of Pennsylvania. I expect that owners and operators who use my guidance document will gain a more complete understanding of their regulatory requirements. A better understanding of the regulations will improve facility compliance with the regulations.

Conclusion

I wrote a plain-language guidance document which explains underground storage tank systems and the Pennsylvania underground storage tank regulations. Research has shown that lack of understanding of the regulations is a major impediment of compliance for storage tank owners and operators. If PA DEP publishes my document, it will be an excellent tool for government regulators to provide to storage tank owners and operators. It will also complement the new operator-training program in Pennsylvania, which will be fully phased in by 2012. My
guidance document explains the regulations in an easily understandable way and therefore promotes facility compliance. The compliant facilities will also be less likely to experience an incident where regulated substance is released into the environment including groundwater.
REFERENCES


UNDERSTANDING PENNSYLVANIA’S UNDERGROUND STORAGE TANK REGULATIONS

A GUIDANCE DOCUMENT FOR STORAGE TANK OWNERS AND OPERATORS

ABSTRACT
This document will assist storage tank owners and operators in understanding Pennsylvania’s underground storage tank regulations. The document is meant for gas station owners and operators, but is applicable to other regulated underground storage tank facilities as well. This document will assist storage tank owners and operators in achieving compliance with the regulations and serve as a reference document for them. Greater compliance with the regulations should lead to fewer release incidents. In addition, compliance benefits the storage tank owners and operators by extending the life of their tank system and potentially improving eligibility for insurance claims.

Disclaimer
This document is an interpretation of 25 Pa. Code Chapter 245. The requirements covered in this document are not comprehensive. To access the complete regulations please visit http://www.pacode.com/secure/data/025/chapter245/chap245toc.html
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I. **My Tank System**

Components may be identified using your most recent Facility Operations Inspection report or with the help of a certified individual

<table>
<thead>
<tr>
<th>Facility ID #</th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Tank #</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Capacity</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Product</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

### Tank Construction and Corrosion Protection
- **Steel**
  - Double Wall
  - Single Wall
  - **Corrosion Protection Method:**
    - Galvanic
    - Impressed Current
- **Fiberglass**
  - Double Wall
  - Single Wall
  - Fiberglass Coated Steel (Act 100)

### Tank Leak Detection Method:
- **Interstitial Monitoring**
- **Static Test (0.2 gph)**
- **CSLD**
- **Statistical Inventory Reconciliation (SIR)**
  - **Manual Tank Gauging**

### Overfill Protection:
- **Drop tube shut off device (flapper valve)**
- **Ball Float**
- **Overfill Alarm**

### Piping Connections:
- **(Flexible Connectors, Swing Joint, etc):**
  - **Tank End:**
    - Not in contact with the ground
    - Completely inside containment sump
    - Completely jacketed/sealed boot
    - Galvanic (Anode attached)
    - Impressed Current
  - **Dispenser End:**
    - Not in contact with the ground
    - Completely inside dispenser pan
    - Completely jacketed/sealed boot
    - Galvanic (Anode attached)
    - Impressed Current

### Main Piping Construction and Corrosion Protection:
- **Single Wall**
- **Double Wall**

### Piping Material:
- **Metallic**
  - **Corrosion Protection Method:**
    - Impressed Current
    - Galvanic

### Piping Leak Detection Method (must have both small and gross):
- **Small (0.2 gph detection)**
  - **Interstitial Monitoring**
  - **Annual Tightness Testing**
  - **Not Required**
  - **Electronic Line Leak Detector**
  - **Statistical Inventory Reconciliation (SIR)**
- **Gross (3 gph detection)**
  - **Interstitial Monitoring**
    - with positive shut down
  - **Line Leak Detector**
    - with positive shut down
  - **Not Required**
II. Identifying Storage Tank System Components

Typical Tank with Components

1. Double wall fuel storage tank
2. Piping submersible pump
3. Fill pipe with spill containment
4. Interstitial monitoring device
5. Monitoring well with sensor and containment (if applicable)
6. Continuous automatic leak detection sensor
7. Lead wire to continuous automatic leak detection control panel
8. Fuel line
9. Fuel sensor

STP Sump Components

1. Sump Access Cover
2. Sump Containment Cover
3. Sump Containment
4. Submersible Turbine Pump (STP)
5. Test Boots
6. Flexible Connector
7. Leak Detection System Sensor
8. Double Wall Pipes
9. Double Wall Tank

Spill Containment Bucket

(Johnson, 2000, p. 8)
(US EPA, 2009)
III. Registration

Initial Registration
Tank owners must register each storage tank within 30 days of the installation or property transaction by completing the form provided by the Department. The form should be submitted to the PA DEP Central Office and a copy of the form should be submitted to the appropriate regional office. If you are unsure if your tank requires registration, contact your local DEP regional office.

Registration Changes
PA DEP should be notified of any changes to the registration information previously submitted within 30 days of the change. The amended registration short form may be used for most changes except for change of ownership and tank installations and removals. PA DEP should be notified of the following changes:

- Contact information
- Change of Owner or Operator
- Change in tank status to temporarily out of service
- Tank removal or installation
- Change in substance stored

Registration Fees
Pennsylvania storage tank owners must pay annual registration fees. Currently, the fee for underground storage tanks is $50.00 per tank. The Department will issue an invoice to the tank owner each year. Upon receipt of payment, the Department will issue a registration certificate that should be displayed at the facility. The certificate expiration date is the date which annual registration fees will be due next year. It is important to pay annual fees in a timely manner. Failure to pay may result in the suspension of your operating permit.

Sample Registration Certificate

Forms are available online at:
http://www.elibrary.dep.state.pa.us/dsweb/View/Collection-10603
II. Corrosion Protection

Regulations
Pennsylvania storage tank regulations require metallic underground storage tanks systems to be equipped with corrosion protection systems to prevent the components from rusting. This is because unprotected steel tanks and piping corrode and could release product through corrosion holes. The regulations also require that these systems be properly operated, maintained, and tested at the appropriate frequency. The testing must be performed by a qualified cathodic protection expert. Maintaining corrosion protection on your tank system can prevent releases as well as costly repairs and can extend the life of your tanks and piping.

Methods
There are two main methods of corrosion protection, galvanic and impressed current.

**Galvanic:** Also known as a sacrificial anode system. This method causes the anode metal to corrode rather than the protected tank or piping. Anodes must be replaced periodically.

**Impressed Current:** This method uses a rectifier to send current from buried anodes to the tank and/or piping and back to the rectifier. The tank components are protected because the current flowing to the tank system overcomes the corrosion-causing current that normally is flowing away from it. The system must **always** be turned “on”. Readings from the rectifier box must be checked and recorded at least once every 60 days.

![Diagram of corrosion protection system](image)

(US EPA, 1994, p.17)

NOTE: The regulations also require all sumps (pictured on page 3) to remain free of water at all times to prevent the metallic portions of the piping from rusting. The rubber gaskets on the sump lids often need to be replaced to prevent water from entering the sumps.

Testing
Cathodic protection systems must be tested every 3 years and within 6 months of a repair or installation.
III. Tank Release Detection

Regulations
Regulated underground storage tanks must be monitored for releases using a valid method of tank release detection. Records of this monitoring must be documented at least once per month. 12 months of records must be available at all times.

Methods
All methods of tank release detection require the equipment to be operated and maintained according to the manufacturers instructions. Documentation of repairs and maintenance should be kept for 1 year. All methods of tank release detection must be third party certified to be considered a valid method. The following are the common methods of tank release detection

Static Automatic Tank Gauging
This method uses an in-tank probe that is connected to a monitor or “control box”. The probe measures product level and temperature, performs leak tests, and can trigger an alarm in the event of a leak. The standard test performed by an automatic tank gauge (ATG) is the 0.2-gallon per hour leak test also known as the periodic test. This test requires a certain amount of quiet time, where the tanks are not in use, as well as a minimum product level in order to run a valid test.

(Veeder Root, 2009)
(CA SWRCB, 1996, pg 1)
Automatic Tank Gauging (continued)

Requirements
- Must be capable of detecting a 0.2-gallon per hour leak rate from any portion of the tank that routinely contains product
- DOCUMENTATION: Print at least one passing 0.2-gallon per hour test result per month for each tank. An “invalid” result does not meet this requirement.

Sample:

```
MMM DD, YYYY HH:MM XM
LEAK TEST REPORT
T 1: REGULAR UNLEADED
PROBE SERIAL NUM 109752
TEST STARTING TIME:
MMM DD, YYYY HH:MM XM
TEST LENGTH = 4.3 HRS
STRT VOLUME = 3725 GALS
LEAK TEST RESULTS
0.2 GAL/HR TEST PASS
```

Continuous Automatic Tank Gauging (ex. CSLD, SCALD, or CITLDS)
Facilities that are open 24 hours, have little quiet time, or frequently have less than the minimum required product level to achieve a valid static 0.2-gallon per hour test usually find success with this method. Instead of performing one test during a time when the tanks are not in use, short tests are continuously being performed. A statistical evaluation is performed with the test results combining all of the small tests into one result. This method usually requires purchasing an additional software chip and having it professionally installed by a trained technician.

Requirements
- Must be capable of detecting a 0.2-gallon per hour leak rate from any portion of the tank that routinely contains product
- DOCUMENTATION: Print at least one passing test result per month for each tank. The most common versions are called CSLD or SCALD test.

Sample:

```
CSDL TEST RESULTS
-----------------------
DD-MM-YY HH:MM XM
T 2: SUPER UNLEADED
PROBE SERIAL NUM 123002
0.2 GAL/HR TEST
PER: DD-MM-YY PASS
```
**Interstitial Monitoring**
This method of release detection involves monitoring the area between a storage tank and a secondary barrier. In most cases the secondary barrier is the outer wall of a double-walled tank. The area between the two walls is called the interstice or annular space. Typically, a sensor connected to an ATG or other type of electronic display box monitors the interstice.

**Requirements**
- Must be capable of detecting a 0.2-gallon per hour leak rate, or 150 gallons within a month from any portion of the tank that routinely contains product
- DOCUMENTATION: Print a record of the sensor status at least once per month for each tank. If you do not have printing capabilities, a hand written log is acceptable. Either way, the report should indicate the location of each sensor.

**Sample:**

<table>
<thead>
<tr>
<th>Station Name</th>
</tr>
</thead>
<tbody>
<tr>
<td>Street</td>
</tr>
<tr>
<td>City, State</td>
</tr>
<tr>
<td>Zip</td>
</tr>
<tr>
<td>Telephone</td>
</tr>
<tr>
<td>Number</td>
</tr>
</tbody>
</table>

**SENSOR STATUS**

<table>
<thead>
<tr>
<th>SENSOR 2A</th>
<th>NORMAL</th>
</tr>
</thead>
<tbody>
<tr>
<td>SENSOR 4A</td>
<td>FUEL</td>
</tr>
<tr>
<td>SENSOR 6A</td>
<td>NORMAL</td>
</tr>
<tr>
<td>SENSOR 8A</td>
<td>NORMAL</td>
</tr>
</tbody>
</table>

**EXTERNAL INF. STATUS**

| OPEN |

**Statistical Inventory Reconciliation (SIR)**
To perform SIR the following data must be collected; daily product levels, withdraws, and deliveries. This data is sent to a trained professional SIR vendor each month. The SIR vendor uses sophisticated computer software to conduct a statistical analysis of the data to determine if the storage tank may be leaking.

**Requirements**
- Reports must be available to owners/operators within 20 days of the end of the monitored period.
- Reports must include: calculated leak rate, positive for out of tank and negative for into tank, minimum detectable leak rate, leak detection threshold, probability of detection and probability of false alarm which the supplied data supports.
- DOCUMENTATION: A valid monthly report from an SIR vendor must be obtained.
- An “inconclusive” or “fail” result requires a suspected release investigation as discussed on page 14.
Manual Tank Gauging

Only tanks of less than 2,000-gallons in capacity may use this method. The tank liquid level measurement is taken at the start and end of the test period. During this time, no liquid is to be added or removed from the tank. This test is performed each week and results are compiled and calculated for a monthly test result. Additionally, a periodic tank tightness test may be required. The following table must be completed each month:

<table>
<thead>
<tr>
<th>Start Test (month, day, and time)</th>
<th>First Initial Stick Reading</th>
<th>Second Initial Stick Reading</th>
<th>Average Initial Reading</th>
<th>Initial Gallons (convert inches to gallons)</th>
<th>End Test (month, day, and time)</th>
<th>First End Stick Reading</th>
<th>Second End Stick Reading</th>
<th>Average End Reading</th>
<th>End Gallons (convert inches to gallons)</th>
<th>Change in Tank Volume in Gallons (+ or (-))</th>
</tr>
</thead>
<tbody>
<tr>
<td>Date: Time: ANYTIME</td>
<td>Date: Time: ANYTIME</td>
<td>Date: Time: ANYTIME</td>
<td>Date: Time: ANYTIME</td>
<td>Date: Time: ANYTIME</td>
<td>Date: Time: ANYTIME</td>
<td>Date: Time: ANYTIME</td>
<td>Date: Time: ANYTIME</td>
<td>Date: Time: ANYTIME</td>
<td>Date: Time: ANYTIME</td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Tank Passes Test (circle YES or NO)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Y N</td>
</tr>
</tbody>
</table>

* For further guidance on how to perform manual tank gauging please call your local DEP regional office or access the EPA guidance on manual tank gauging online at [http://www.epa.gov/swerust1/pubs/manual.htm](http://www.epa.gov/swerust1/pubs/manual.htm)
**Remember:** There are 3 components to Leak Detection Compliance

1. **Monitoring Equipment**
   - LEAK DETECTION COMPLIANCE
2. **Operations and Maintenance**
3. **Record Keeping**

**IV. Piping Release Detection**

**Regulations**
Underground piping that routinely contains product from a regulated storage tank must be monitored for releases. There are different requirements depending on the product delivery method used. The two main methods of product delivery are pressurized piping and suction piping.

**Methods**

**Pressurized Piping**
Pressurized piping must be monitored for both small and large releases

**Large (gross) leak detection:**
To detect large, gross, leaks, piping must be equipped with a line leak detector. Interstitial Monitoring may be used instead only if the piping slope has been certified to meet the 3-gallon per hour detection requirement. Storage tank systems installed or replaced after November 10, 2007 must have line leak detectors with automatic pump shut off devices. This device will automatically shut off the flow of product through the piping if a leak is detected.

**Small leak detection:**
To detect small leaks, an annual line tightness test is required. An annual periodic piping test capable of detecting 0.1 gallons per hour may be substituted. An electronic line leak detector may perform this testing. As another option, certain systems may qualify to use interstitial monitoring.
Requirements
- Line leak detectors must be tested every year. This test must be documented and kept for at least one year.
- If interstitial monitoring is being used instead of a line leak detector, monthly record of the sensor status must be documented and kept for at least one year.
- If piping tightness testing is your method of small piping leak detection, testing must be conducted and documented every year. This test must be performed by a DEP certified tightness tester.

Suction Piping
There are 2 styles of suction piping, European (safe-style), and American (pressurized). European suction piping is exempt from gross leak detection due to the construction of the piping. If there is a large hole, the piping will be unable to hold the pressure required to carry product.

Large (gross) leak detection: European style is exempt, American style must be the regulations specified in the pressurized piping section.

Small leak detection: To detect small leaks, either a monthly monitoring method or line tightness testing every 3 years must be performed. If the suction piping meets certain criteria, such as the check valve being located at the pump and the piping being properly sloped back to the tank, then the piping is exempt from the small leak detection requirements. Again, the American style suction systems must meet the same requirements as pressurized piping.

Requirements
- If the proper criteria regarding the construction of the piping are met, then the piping may be exempt from the piping leak detection requirements
- If the construction criteria are not met, a line tightness test must be performed every 3 years, or a monthly monitoring method must be used.

V. Spill and Overfill Protection

Regulations
Storage tank owners and operators must prevent spilling and overfilling of regulated storage tanks. The following equipment is required to prevent spilling and overfilling.

Methods
Spill Protection:
A spill containment bucket or a spill catchment basin (pictured on page 4). Spill buckets should be kept clean and dry at all times.

Overfill Protection:
There are several methods of overfill protection including, drop tube shut off device (flapper valve), ball float, audible and visual high-level alarms. Please note that ball floats are not compatible with suction systems that contain air eliminators.
Requirements

- Spill Protection must prevent a release from occurring when the delivery hose is detached from the fill port
- Overfill Protection must achieve one of the following: automatically shut off the flow to the tank when the tank is 95% full, alert the delivery operator at least one minute before overfilling, or restrict flow when the tank is 90% full or at least 30 minutes before overfilling.

VI. Facility Operations Inspections

Regulations
Regulated underground storage tank facilities must have a facility operations inspection, performed by a DEP certified inspector, every 3 years. This inspection identifies tank components and includes review of release detection records, corrosion protection, spill protection, overfill protection, and registration. The due date for your next inspection is located on your storage tank registration certificate. Facility operations inspections are also required 6-12 months after a new facility is installed or after a change in facility ownership.

Methods
Facility operations inspections must be performed by an “IUM” certified inspector. After the inspection, the inspector will submit a report to the Department. If non-compliant items have been noted, inspectors from the DEP regional office will follow up to make sure these items have been addressed. Every effort to correct non-compliant items should be made before you are contacted by DEP.

*A list of DEP certified inspectors can be obtained by calling your local DEP regional office or on the internet by clicking on the certified inspectors link at http://www.portal.state.pa.us/portal/server.pt/community/underground_storage_tanks/

VII. Operator Training

Regulations
Storage tank owners shall ensure that their facility is equipped with properly trained Class A, B, and C operators. A Class C operator must be on site at all times while the facility is open for business. Also, a Class A and Class B operator must be available for immediate communication by phone and have the ability to be onsite within 2 hours of being contacted.

**Class A Operator:** Duties can be fulfilled by a Department certified installer/inspector or by a person who successfully completes an approved training course. Duties include responsibility for registration, notifications, operating and maintaining the storage tank system and facility, recommending maintenance, and maintaining installation and repair records. The class A operator should also provide emergency response procedures for the facility and may provide training for the class C operators.
**Class B Operator:** Must successfully complete an approved training course to receive their operator-training certificate. Duties include overseeing day-to-day operations, maintenance, and record keeping at one or more facilities. Class B operators are responsible for making sure release detection is being performed and the proper records are being retained. The class B operator can also provide emergency response procedures for the facility and may provide training for the class C operators.

**Class C Operator:** Class A or B operators may train class C operators. Duties include monitoring the dispensing of product and responding to emergencies by notifying Class A and B operators and appropriate emergency responders.

**Requirements**
- As soon as practicable but no later than August 8, 2012 storage tank facilities must have properly trained Class A, B, and C operators available.
- After June 28, 2010, owners must provide their Class C operators with written instructions for procedures to follow in the event of an emergency situation.

*For more information on operator training or to obtain a list of approved training courses call (800) 42TANKS (PA Only) or (717) 772-5599. The list is also available online at: http://www.portal.state.pa.us/portal/server.pt/community/underground_storage_tanks/ust_operators/*

**VIII. Releases**

**Regulations**
Underground storage tank owners AND operators are held responsible for reporting and cleaning up releases from the tank system. There are also requirements for investigating a “suspected” release. If a release has occurred at your facility, it is most important to act quickly. This may prevent the problem from getting worse and will protect you from extra clean up costs as well as possible penalties and enforcement from the Department.

**Suspected Releases**
The following are some examples of a “suspected” release; failed monthly tank release detection test, alarm or warning on an ATG or other monitor such as a sudden loss alarm, unexplained water in a storage tank, unusual level of vapors found in the area surrounding a storage tank system. If there is an indication that a release may have happened, the owner or operator should complete an investigation within 7 days to determine if a release has occurred. This investigation may include testing such as tank and piping tightness testing. If the investigation finds that a release did not occur, document your findings and keep this on file. If the investigation finds that a release did occur, follow the procedure below for “confirmed” release.
Confirmed Releases

A confirmed release is when product has definitely been released from the tank system into the environment. In this case the storage tank owner or operator must take the following actions:

• Immediately begin performing interim remedial actions. This includes addressing immediate threats to human health and the environment and may include the following:
  o Preventing further spreading of free product
  o Removing product from the affected tank
  o Identifying and reducing fire or explosion hazards
  o Identifying and sampling potable water supplies (wells) in the area
  o Supplying bottled water to the users of potentially affected wells
• An emergency clean up contractor and/or environmental consultant may be needed to properly perform interim remedial actions and begin to clean up. Note that hiring a professional does not relieve your responsibilities as the owner/operator for ensuring that the required reports are submitted to DEP on time.
• Call your DEP regional office to notify the Department of the release as soon as possible but at least within 24 hours. This must be followed up with a written notice within 15 days.
• Call your municipality and any other municipalities that may be affected.
• Call USTIF to notify them of the release as soon as possible but at least within 60 days. Failure to notify USTIF within 60 days may result in loss of insurance coverage for the clean up of the release.
• Hire an environmental consultant. A professional is needed to properly identify the extent of the contamination, direct the clean up efforts, and submit the proper reports to the Department. A site characterization report is due 180 days after a release occurs.

IX. Other Applicable DEP Regulations

Regulations

Please be aware that there may be other DEP regulations that apply to your facility besides the storage tank regulations. For example, you may be required to comply with Air Quality and Solid Waste regulations as well. The following are some of the other regulations that may apply to a gas station or another facility that contains storage tanks.

Air Quality

Regulations regarding Stage I and Stage II vapor recovery apply to most underground storage tank facilities.

Stage I: These vapor recovery systems control vapor emissions during delivery and storage of gasoline. Stage I vapor recovery uses either “dual point” or “coaxial” equipment for recovering vapors being pushed out of the tank during a delivery. All underground storage tanks containing gasoline are required to have Stage I vapor recovery.
**Stage II:** These vapor recovery systems control the vapor emissions from dispensing operations. Stage II requirements involve equipment such as a “balance” or “assist” system on each gasoline dispensing nozzle. This “assist” equipment must be tested annually. A “balance” system must be tested every 5 years. Stage II vapor recovery is only required in the southeast region of Pennsylvania (Bucks, Chester, Delaware, Montgomery, and Philadelphia Counties). It is also required in the 7 counties surrounding Pittsburgh, but only until the end of 2010.

**Solid Waste**
The solid waste regulations cover a wide range of topics. The issues most likely to apply to a storage tank facility, such as a gas station/auto repair shop, deal with used motor oil, parts washers, and any hazardous waste that is generated. These issues may be complex. Any questions regarding the solid waste regulations can answers by the regional DEP office.

**Waste Oil**
If waste oil is stored in an above ground tank that is not covered by the storage tank regulations or in any other container, this oil is most likely considered a residual waste and must be handled and disposed of properly. Tanks and drums should be clearly labeled, well maintained and kept inside if possible. These containers must be emptied at least once per year.

**Hazardous Waste**
Hazardous waste is flammable, reactive, toxic, or corrosive. Some examples of hazardous waste that may be found at a gas station/auto repair shop are used antifreeze, vehicle batteries, used oil filters, and solvent from a parts washer. There are different categories of hazardous waste generators based on the amount of waste that you create at your facility. Most gas station/auto repair shops are considered conditionally exempt small quantity generators of hazardous waste (CESQG). This means that less than 220 pounds (about 25 gallons) of waste are created per month and there is never more than 2,200 pounds of hazardous waste on-site at any time. If your facility meets the CESQG conditions, then the regulations require you to identify your waste and treat or dispose of it properly. If disposed of off-site, the site must be authorized and this disposal should be documented. Be sure to keep all disposal documents on file.
X. **Testing Schedule Summary**
This is a basic list of testing that may be required for your facility and required frequency

**Corrosion Protection Testing:** Due every 3 years and within 6 months of a repair or modification

**Facility Operations Inspection:** Due every 3 years. Some facilities are put on a shortened cycle as a result of severe non-compliance

**Piping Line Tightness Testing:** Due every year (if this is your method of leak detection)

**Line Leak Detector Testing:** Due every year (if this is your method of leak detection)

**Sensor Testing:** Due every year if interstitial monitoring is your method of leak detection

**Vapor Recovery Testing:** Assist system – due every year  
Balance system – due every 5 years
XI. Frequently Asked Questions

Q: When is my next facility operations inspection due?
A: The inspection due date is located on your blue registration certificate

Q: Why is my registration certificate expired?
A: If you have not paid your annual registration fees, you will not be sent a current registration certificate. If you did not receive the invoice for your fee payment, please contact the Department’s Central Office.

Q: I want to remove my tanks; what do I need to do?
A: Submit a 30-day closure notice to the Department regional office. Hire a DEP certified “UMR” category tank installer to perform the removal. The certified individual will provide you and the Department with a closure report. An amended registration form should be signed by the owner and the tank remover and submitted to the Department.

Q: My contact information has changed / There is a new operator at my facility / I changed the product stored in my tank...What should I do?
A: Submit the one page amended registration short form to the Department.

Q: Is my heating oil tank regulated?
A: Only heating oil tanks that are larger than 30,000 gallons or those which are for commercial use (i.e. a distributor) are regulated.

Q: My tank is registered in Temporarily Out of Service (TOS) status. Do I still need have a facility operations inspection? Do I still have to pay annual registration fees?
A: The facility operations inspection for a TOS tank may be delayed. However, the inspection must be completed prior to putting the tank back in service. Also, annual registration fees must still be paid. Tanks in TOS status must be empty, meaning less than 1 inch of product remaining. Tanks may remain out of service for up to 3 years before they must be removed or put back in to service.

Q: Can I fill my tank with sand or concrete?
A: Tanks may be permanently closed in place if the proper regulations are followed and if the municipality allows for it. The closure must still be done by a DEP certified tank remover and samples must still be taken.

Q: What other agencies have regulations that might apply to my storage tank?
A: Municipalities, Labor & Industry, Municipal Fire Marshal, and Licenses & Inspections (Philadelphia)
XII. **Forms**

The following frequently used forms are attached for your use:

- **Storage Tank Registration Amendment Form and Instructions**
  - Use to change owner/operator contact information, change tank status, or change product stored information.

- **Underground Storage Tanks Installation-Closure Notification Form**
  - Submit this form at least 30 days before an underground storage tank installation or removal. Partial system closures require this form as well (piping or dispensers only).

- **Notification of Reportable Release**
  - Use to meet the written notification requirement within 15 days of a release incident.
XIII. Contacts

PA DEP Central Office:

Pennsylvania Department of Environmental Protection
Rachel Carson State Office Building Division of Storage Tanks
P.O. Box 8763
Harrisburg, PA 17105-8763

Main Phone: 717-783-2300
Storage Tanks Section: 717-772-5599 or 1-800-42-TANKS (in PA only)

PA DEP Regional Offices:

Southeast Region
2 East Main Street Norristown, PA 19401 484-250-5900
Counties: Bucks, Chester, Delaware, Montgomery and Philadelphia

Northcentral Region
208 West Third Street, Ste. 101 Williamsport, PA 17701 570-321-6525
Counties: Bradford, Cameron, Centre, Clearfield, Clinton, Columbia, Lycoming, Montour, Northumberland, Potter, Snyder, Sullivan, Tioga and Union

Northeast Region
2 Public Square Wilkes-Barre, PA 18711-0790 570-826-5475
Counties: Carbon, Lackawanna, Lehigh, Luzerne, Monroe, Northampton, Pike, Schuylkill, Susquehanna, Wayne and Wyoming

Southwest Region
400 Waterfront Drive Pittsburgh, PA 15222-4745 412-442-4000
Counties: Allegheny, Armstrong, Beaver, Cambria, Fayette, Greene, Indiana, Somerset, Washington and Westmoreland

Southcentral Region
909 Elmerton Avenue Harrisburg, PA 17110 717-705-4705
Counties: Adams, Bedford, Berks, Blair, Cumberland, Dauphin, Franklin, Fulton, Huntingdon, Juniata, Lancaster, Lebanon, Mifflin, Perry and York

Northwest Region
230 Chestnut Street Meadville, PA 16335-3481 814-332-6648
Counties: Butler, Clarion, Crawford, Elk, Erie, Forest, Jefferson, Lawrence, McKean, Mercer, Venango and Warren

USTIF
Underground Storage Tanks Indemnification Fund
(717) 787-0763 or (800) 595-9887 (in PA only)
References


