



Underground Storage Tanks in Minnesota

Answers to commonly asked questions



Minnesota Pollution Control Agency
Tanks Compliance and Enforcement Unit

Most Common Underground Storage Tank Violations

After evaluating thousands of inspection records, the violations described below are those most commonly found and cited by MPCA tank inspectors.

- ▶ Cathodic protection testing not conducted on steel tanks and/or piping annually for impressed current systems (see question 110), or every three years for sacrificial anode systems (see question 98).
- ▶ Spill buckets not maintained free of liquid and debris (see question 129).
- ▶ Piping not tightness tested annually (see question 85).
- ▶ Line leak detectors not function tested annually (see questions 87 and 90).
- ▶ Sites with automatic tank gauges not obtaining monthly passing tank leak tests due to low product levels in tanks or nighttime pumping activity (see question 41).
- ▶ Sites with automatic tank gauges not keeping one passing tank leak test per tank per month (see question 43).
- ▶ Sites with electronic line leak detectors not recording and keeping leak test results (see question 89).

To Tank Owners and Operators in Minnesota

It is the responsibility of the MPCA's Underground Storage Tank (UST) program to prevent contamination of our state's groundwater by adopting regulations for how substances are stored and conducting inspections to ensure compliance with those regulations. This manual helps owners and operators comply with regulations.

This manual was designed, written, and revised to provide owners and operators of UST systems with a working resource for answering frequently asked questions. These questions were gathered from staff who have been asked these questions many times.

A glossary of commonly used terms is included at the back, as well as an appendix with fact sheets and MPCA contact information. The fact sheets provide more detailed information about topics covered in this manual. A larger collection of environmental fact sheets can be found on MPCA's Web site at www.pca.state.mn.us.

This manual includes a site information worksheet (pages v-vi, instructions begin page vii) to help you identify the components of your storage tank facility. The worksheet directs you to the sections of the manual that apply to your specific system.

Many different regulations from several different regulatory agencies apply to storing and dispensing petroleum and hazardous materials. The intent of this manual is to focus on just one set of those regulations: those of the MPCA.

This manual is intended as a "plain language" guide to help owners and operators understand and implement MPCA regulatory requirements. It is not intended to supplement or replace any statutory or regulatory requirements. In the event of any inadvertent conflict between this manual and Minnesota's statutes and rules, the statutes and rules shall control.

This manual can be copied as necessary and is also available on MPCA's Web site, www.pca.state.mn.us. Thank you for your efforts to protect the environment.

MPCA Tanks Program Staff

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Site information worksheet

See the Page vii for additional information on completing this worksheet. Make as many copies as you wish. Numbers in the right column refer to the question in the manual with additional information on the topic.

Question

A MPCA

Site Id Number _____

14, 18, 19, 20

B. Site location

Name _____

14

Address _____

Phone Number _____

C. Site owner

Owner Name _____

Owner Contact _____

Owner Address _____

Owner Phone Number _____

14, 15, 22, 23, 24

D. Tank Status

Active tanks on site? (Yes ☐ / No ☐)

List tanks _____

16, 17, 24, 26-31

Inactive tanks on site? (Yes ☐ / No ☐)

List tanks _____

30, 139-144

E. Tank information

Tank Number _____

Capacity _____

9-12

Product Stored _____

10-12

Tank Type _____

28, 29

Double-walled? _____

Piping Type _____

28, 29

Double-walled? _____

Dispenser Type _____

81, 84

Question		
F. Tank leak detection		
<i>(Check Type that Applies)</i>	<input type="checkbox"/> ATG	37-45
	<input type="checkbox"/> SIR	46-60, 96, 97
	<input type="checkbox"/> MTG	61-69
	<input type="checkbox"/> Inventory Control	70-76
	<input type="checkbox"/> Interstitial Monitoring	77-80
G. Piping Leak Detection		
<i>(Check Type that Applies)</i>	<input type="checkbox"/> Mechanical	86-88
	<input type="checkbox"/> Electronic	89-91
	<input type="checkbox"/> Interstitial	92-95
	<input type="checkbox"/> None Safe Suction	81-83
	<input type="checkbox"/> Not required	
	<input type="checkbox"/> Safe Suction	81-83
	<input type="checkbox"/> Gravity Fill Only	
H. Corrosion protection		
<i>(Check Type that Applies)</i>	<input type="checkbox"/> Sacrificial Anode	98-109
	<input type="checkbox"/> Impressed Current	110-117
	<input type="checkbox"/> Internal Lining	118-122
	<input type="checkbox"/> Isolation / Double Wall	123
	<input type="checkbox"/> Fiberglass (n/a)	
I. Overfill protection		132-135
<i>(Check Type that Applies)</i>	<input type="checkbox"/> Automatic Shutoff	
	<input type="checkbox"/> Ball Float Valve	
	<input type="checkbox"/> Audible Overfill Alarm	
J. Vapor recovery		136-138
<i>(Check Type that Applies)</i>		

Site information worksheet guide

The MPCA Web site (www.pca.state.mn.us) can provide much of the information you need to complete the Site Information Worksheet.

In the upper right corner of the MPCA home page, enter “tank compliance and assistance program” and hit “go,” then click on one of the first links that are found. The link should take you to the MPCA’s online tank database. (Once on the tank Web page, you may have to scroll down to find the database.)

Once you find the section for searching the tank database, enter as much information on your site as possible and submit the search. If the database is unable to identify your site, try submitting just the city name, and search the list of possible sites until you find your site. Searching by zip code instead of city name can make searches of a large city easier. If you need assistance, contact the MPCA toll-free at 800-657-3864 and ask for the tanks program.

Click on the site ID number to view your site information. If you also click on the tank number, you should be able to view specifics about each tank.

Be aware that this database is not necessarily accurate, so use this data only as a guide to help you complete the Site Information Worksheet. Refer to the information below to help you verify that the database is correct.

The accuracy of this database is limited by the information provided to the MPCA by tank owners. If you determine that the information in the database is inaccurate, call the MPCA toll-free at 800- 657-3864 and ask for the tanks program.

A. MPCA – Site ID Number

Your site ID number can be found by using the MPCA tanks database or by calling the MPCA.

B. Site Location

This means the physical location of the tanks. This should be a street address and not a P.O. box or rural route number.

C. Site Owner

This means the name and address of the tank owner where the owner can be contacted by mail, preferably a location other than the site location in item B.

D. Tank Status

Active – indicate in this box the tanks on site that are currently in use.

Inactive – indicate in this box the tanks on site that are no longer in use (if applicable).

E. Tank Information

Tank Number – assign a number to each tank. This number can correspond with the tank number used in your leak detection records. For compartmental tanks, assign a letter to each compartment (ex. 002a, 002b).

Capacity – fill in the size of each tank in gallons.

Product Stored – specify the product stored: gasoline, diesel, E85, jet fuel, etc.

Tank Type – Since the tank is buried, you have to depend on your records or your contractor to tell you what kind of material your tank is made from. Common tank types are:

- **sti-P3®** – This is a steel tank with a protective coating on the outside of it. Some sti-P3® tanks are warranted under a program offered by the Steel Tank Institute called “Watchdog.”
- **Fiberglass** – As the name implies, this tank is made from fiberglass material. The most recognizable feature of a fiberglass tank is that it is rounded on each end while the ends of a steel tank are flat.

- **ACT-100®** – sometimes referred to as a composite tank. This is a steel inner tank covered by a heavy layer of urethane resin.
- **Bare Steel** – this tank is made of bare steel that either does not have a protective coating or has a coating of tar or asphalt. Bare steel tanks generally are found at sites where the tanks were installed prior to 1985. Some bare steel tanks were later lined on the inside with a coating. It is important that you know if your tank is lined or not. Check with your tank contractor to find out if your bare steel tank is lined or not.

Also specify whether the tank is double-walled. If your records do not specify whether the tanks are double-walled, contact your tank contractor to help make this determination.

Piping Type – Checking your records or contacting your tank contractor is the best way to determine what kind of piping each tank has. Sometimes it is possible to determine the type of piping by opening up tank sumps or looking under dispensers. There are three basic pipe types:

- **Steel** – There are two types of steel pipes – bare steel and coated steel (green in color).
- **Fiberglass Piping** – sometimes referred to as “FRP” pipe (fiberglass reinforced plastic).
- **Flexible piping** – Unlike fiberglass piping, flexible piping can bend. Almost always, flexible piping is used with double-wall piping systems, and there are sumps at each end of the piping. By looking in the sump, you should be able to see if the piping is flexible piping or not. Most flexible piping is bright green, blue, or yellow.

Specify whether your piping is double-walled. If your records do not specify this,

contact your tank contractor to help make this determination.

Dispenser Type – There are two types of dispensers used to distribute product from the tank:

- **Pressurized** - In a pressurized piping system, a pump at the tank pushes fuel under pressure to the dispensers.
- **Suction** - In a suction system, the pump is located within the dispenser and pulls fuel from the tank with suction. You can generally see the suction pump, pulley, and belt inside the dispenser if you remove the dispenser access cover.

F. Tank Leak Detection

The following are common tank leak detection methods:

- **Automatic Tank Gauge (ATG)** – an electronic instrument installed with a tank that measures inventory and determines if the tank is leaking
- **Statistical Inventory Reconciliation (SIR)** – a leak detection method that uses daily tank measurement, sale and delivery data to determine if a tank is leaking. SIR accomplishes this by computer analysis of daily inventory data.
- **Manual Tank Gauging (MTG)** - this method of leak detection involves measuring the product level in the tank before and after a specific time period (ranging from 36 – 58 hours depending on the size of the tank).
- **Inventory Control** – uses daily inventory readings (sticking) and dispenser readings to determine if your tank is leaking. The data is reconciled daily and monthly to determine if the overage and shortages are within allowable limits.

- **Interstitial Monitoring** - Interstitial monitoring is a method of leak detection for double-walled tanks. With this method, the space between the walls of the tank (interstice) is monitored either manually (with a gauge stick) or electronically (with a leak sensor.)

G. Piping Leak Detection

The following are methods of piping leak detection:

- **Mechanical Line Leak Detector (MLLD)** – MLLD's are mounted on the submersible pump that restricts flow of product if it senses a leak. (See photo 4)
- **Electronic Line Leak Detector (ELLD)** – ELLD's use a sensor in the pipe to detect a leak. (See photo 5)
- **Interstitial Sensor** – the interstitial sensor, often referred to as the sump sensor, is often used with double-walled piping. (See photo 6)

Gravity-fed fill pipes (such as a used oil tank), or safe suction piping (question 82) are exempt from piping leak detection requirements.

H. Corrosion Protection

Often it is difficult to determine what type of corrosion protection is installed on a tank or its piping. Refer to your tank system records, MPCA records, or your tank service provider to determine which method you have. The most common types of corrosion protection are:

- **Sacrificial Anode** – anodes connected to the tank protect it from corrosion
- **Impressed Current** – anodes buried in the ground next to the tank carry an electric current from a power supply (rectifier) which protects the tank from corrosion
- **Internal Lining** – lining applied to the interior of the tank after it was installed

- **Isolation from contact with soil** – tanks or piping constructed in such a way as to prevent soil from touching it and causing corrosion.
- **Fiberglass** - does not require corrosion protection

I. Overfill Protection

Three basic types of overfill protection may be installed on tanks:

- **Automatic Shutoff** – this device is installed in the fill pipe and can be identified by looking down the fill pipe. If you have an automatic shutoff valve installed, you can see the fill pipe partially blocked by the valve, which should be set to activate when the tank is 95 percent full. See (photo 12)
- **Ball Float Valve** – this is installed where the vent pipe connects to the tank and extends down into the tank. The valve should be set to activate when the tank is 90 percent full. Since the vent pipe/tank connection is usually buried, it is difficult to determine if a ball float valve is installed. Your tank service provider may be able to help you determine this.
- **Audible Overfill Alarm** – the alarm must be set to activate when the tank is 90 percent full. The alarm must be installed outside where the delivery person can hear it and shut down the delivery. (See photo 11)

J. Vapor Recovery

Required at all retail sites selling gasoline within the seven-county metro area (Anoka, Carver, Dakota, Hennepin, Ramsey, Scott and Washington counties).



Photo 1: Examples of Automatic Tank Gauges (ATGs).

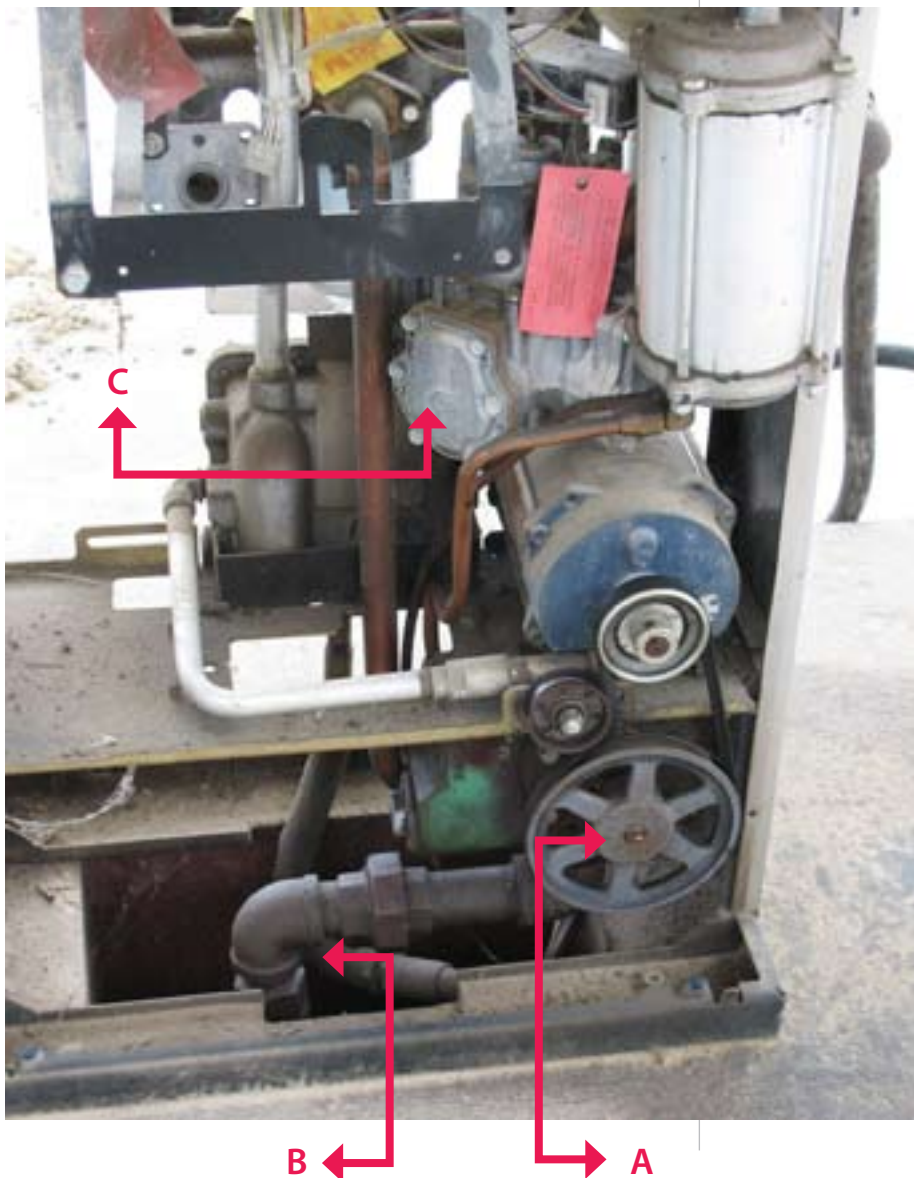


Photo 2: Safe suction dispenser indicated by the presence of the pump (A) in the dispenser and a check valve (B) on the piping. Gaskets (C) on meters can degrade and start leaking over time.

Photo 3: Pressurized dispenser. The shear valves (A) are located at the point where the piping is even with the concrete. The fuel filters (B) and the piping unions (C) are above the shear valves and are susceptible to leaking, especially in cold weather. Gaskets (D) on meters can degrade and start leaking over time. The pumps supplying the pressurized dispenser are located at the tank.

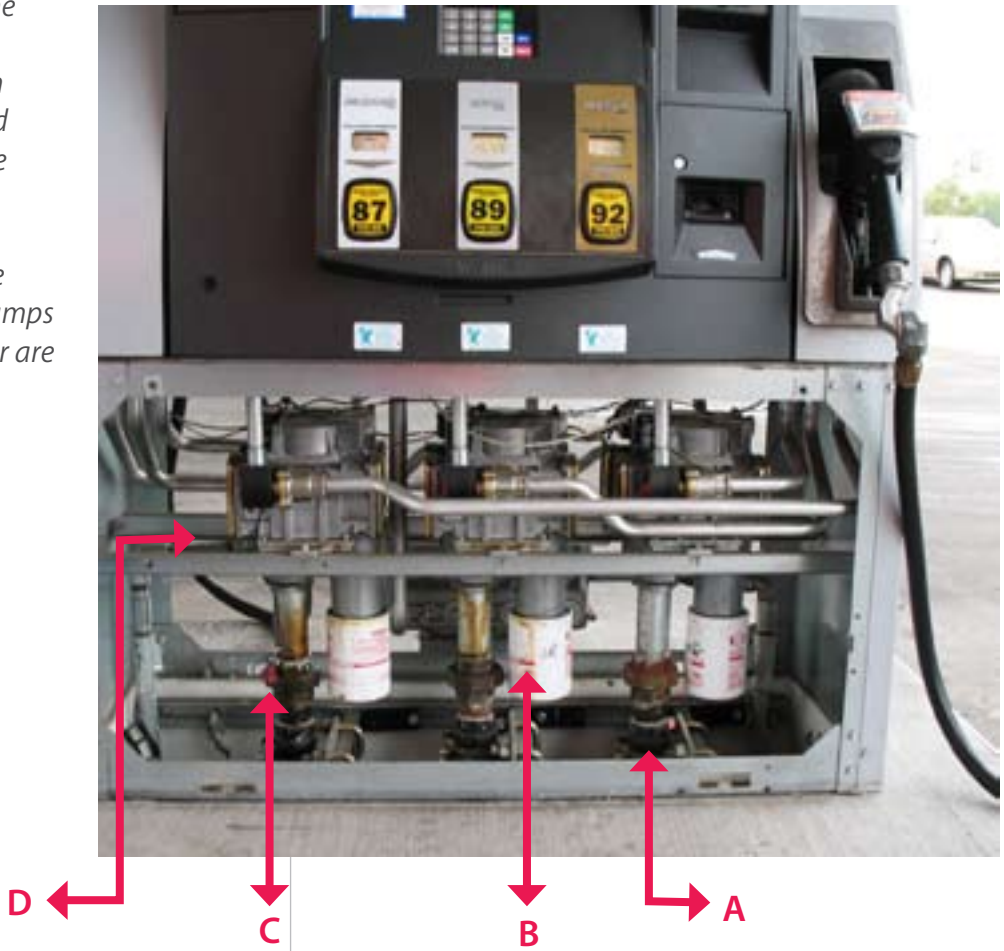


Photo 4: Different examples of mechanical line leak detectors (MLLDs).



Photo 5: Example of an electronic line leak detector (ELLD).



Photo 6: Examples of sump sensors.



Photo 7: A common rectifier for an impressed current cathodic protection system. The photo shows the volt meter (A) and ampere meter (B). Neither meter should read zero if the rectifier is functioning properly. Some rectifiers also have an hour meter (C).



Photo 8: Contained tank sump showing the submersible pump. Rubber boots (A) seal the sump at all penetration points. These are susceptible to cracking and tearing.

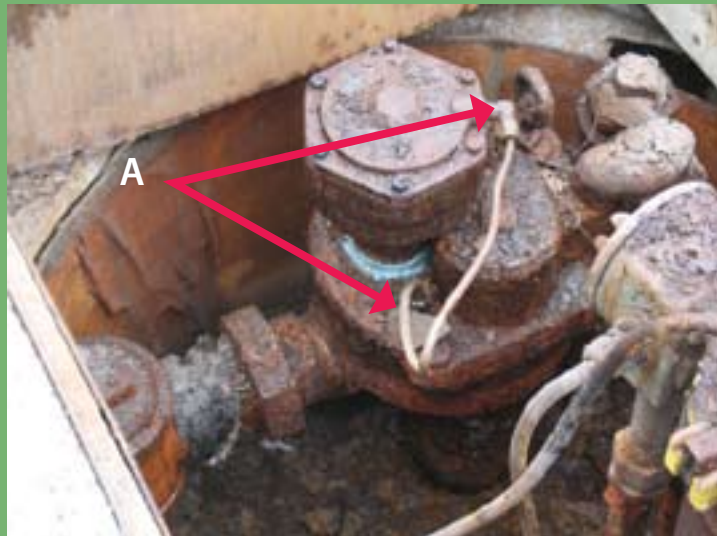


Photo 9: Uncontained tank sump showing the submersible pump, which has a mechanical line leak detector. The copper line (A) is susceptible to leaking.



Photo 10: *Spill bucket*

Photo 11: *Examples of overfill alarms. Some alarms only come with horns (left) and some also feature warning lights (right).*



Photo 12: *Coaxial stage one vapor recovery. The space (A) between the inner drop tube and the outer drop tube allows the vapors to be recovered while product is added to the tank. The automatic shutoff (flapper) valve overfill protection is shown as an obstruction partway down the drop tube (B). It is located below the top of the tank.*

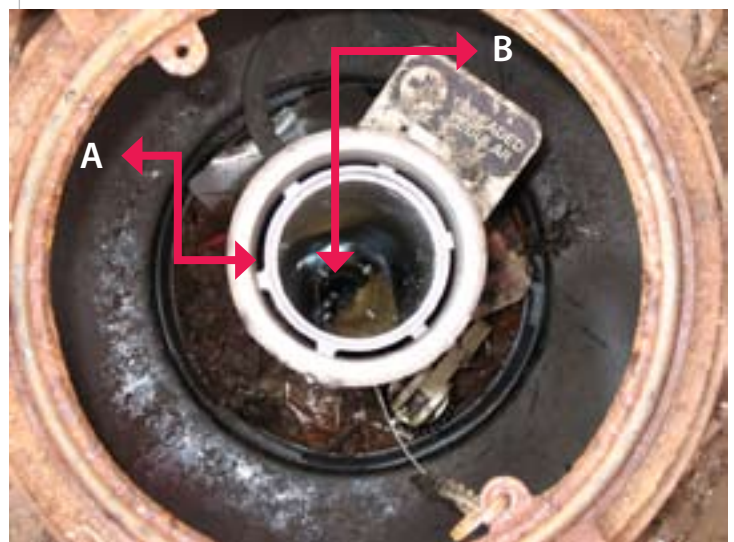


Photo 13: *Dual point vapor recovery. Vapors are recovered from the riser on the left. A probe cover sump is on the right. A ballfloat is the overfill protection.*



Photo 14a: *The small vent cover (A) is a regular rain cover for diesel tank systems, which do not require stage one vapor recovery. The rest of the vent pipe covers are pressure vacuum covers.*

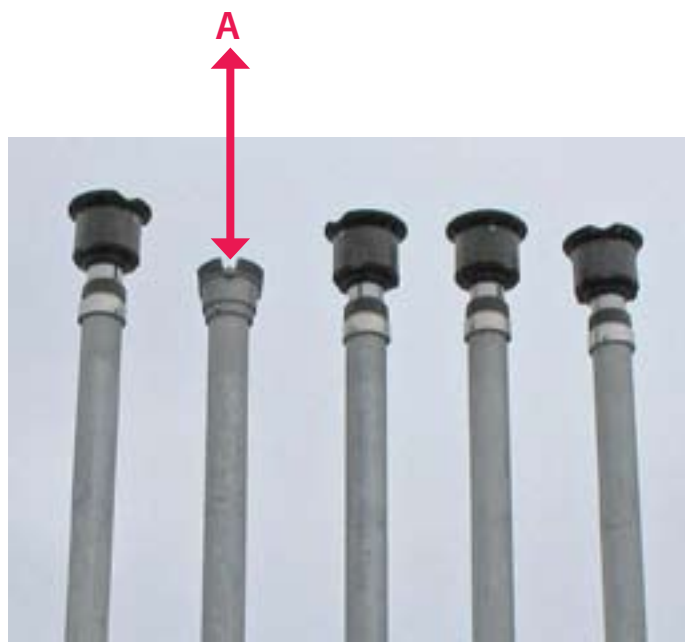


Photo 14b: *Close up of the pressure vacuum vent covers.*

Testing/inspection frequencies

Test/Inspection Type	Minimum Frequency
Tank Leak Detection	Monthly
Piping Leak Detection (pressurized) <ul style="list-style-type: none"> • 0.1 gallons per hour or • 0.2 gallon per hour 	Annually Monthly
Piping Leak Detection (non-safe suction)	Every Three Years
Line leak detector function test (mechanical and electronic)	Annually
Dispenser Sump Visual Inspection	Monthly
Sump Sensor Test	Annually
Tank Interstitial Sensor	Annually
Tank Sump Visual Inspection	Monthly
Spill Bucket Visual Inspection	Monthly
Sacrificial Anode – Tank and/or Piping Cathodic Protection Test	Every Three Years
Impressed Current – Tank and/or Piping Cathodic Protection Test	Annually
Impressed Current – Rectifier Check	Every 60 Days
Internal Lining Inspection	Every Five Years

MPCA tanks regulation at a glance

1. What is the purpose of the MPCA storage tanks program?

The purpose of the MPCA tanks program is to protect groundwater from contamination due to leaks of petroleum and hazardous materials. This is done by ensuring tank systems are in compliance with MPCA storage tank requirements. The MPCA educates storage tank owners about rules, conducts routine inspections of sites, and issues enforcement actions for violation of the rules.

2. The inspector from Weights and Measures checked my dispensers and fuel the other day. Is the MPCA affiliated with Weights and Measures?

No. Weights and Measures is part of the Minnesota Department of Commerce. Weights and Measures regulates fuel quality, metering accuracy, fuel pricing, and other consumer-related issues.

The MPCA is a separate state agency that conducts its own inspections of underground storage tank systems. MPCA inspections include checking leak detection and corrosion protection records, spill and overfill prevention equipment, and general maintenance. MPCA tanks inspectors are based in offices throughout the state and conduct inspections on a regular basis. The MPCA also inspects aboveground tanks. The federal Environmental Protection Agency (EPA) occasionally inspects storage tank sites in Minnesota as well.

3. Is a license or certification required to operate an underground storage tank?

Yes. As of 2010, people who own or operate underground storage tanks must be trained and/or pass an MPCA test, depending on their job duties. Also, a trained or MPCA-certified operator must be on site during operating hours, with certain exceptions. More detail on training and certification can be found in the appendix, on the MPCA's Web site at www.pca.state.mn.us or by contacting the MPCA at 800-657-3864.

Documenting compliance

Recordkeeping is one of the most important aspects of maintaining your system. Records, such as cathodic protection testing and leak detection records, must be made available upon MPCA request. Records must be kept at the site or may be at an alternate location, such as a corporate office, provided that the records are immediately available. Recordkeeping can also be helpful to tank repair contractors who need to troubleshoot the system, leading to timelier and cheaper repairs.

4. What records must I keep for my tank system, and how long must I keep them?

You must keep the following records:

- as of 2010, operator certification and/or training records (three years past termination of employment)
- tank leak detection results (10 years)
- piping leak detection results (10 years)
- LLD function test (10 years)
- cathodic protection test results (last three tests)
- 60-day rectifier check results for impressed current systems (three years)
- record of monthly submersible pump, dispenser, and spill bucket inspection results (10 years)
- record of all calibration maintenance and repairs made to tank systems (retain for life of tank system)
- internal lining inspection results for internally-lined tanks (life of system)

Be sure to review the records prior to filing them to make sure each test is "passing."

5. Where should I keep my records?

Records should be kept at the tank site and be immediately available for inspection. Records can, however, be kept at an alternate location as long as they are immediately available for inspection.

6. Are there any requirements for how I organize my records?

No. However, the MPCA recommends keeping records in a single, organized file. Keeping records in separate files and in a disorganized manner increases the risk of records being lost and increases the duration of an MPCA inspection.

7. Should I make copies of my records?

It is a good idea to make and keep copies of all records, especially automatic tank gauge leak test printouts. The ink on these printouts fades over time and will eventually become unreadable.

8. If I sell my station, should my records be transferred to the new owner?

Yes. Tank records provide a history of the tank and therefore should stay with the tank site.

Exemptions from underground storage tank regulations

Due to different sizes, construction, and uses of underground tanks, different regulations apply to different tanks. With the exception of heating oil tanks, most tanks containing petroleum products or hazardous materials are fully regulated, but some exemptions apply in specific situations, as described below.

9. I have a 1,000 gallon heating oil tank for my shop. Is this tank regulated?

If the tank is used only for heating the building where it is located, then it is not subject to MPCA regulations. Tanks 1,100 gallons or less used strictly for heating the building are exempt. This means the tank does not have to be registered, and leak detection requirements do not apply, although the MPCA strongly recommends that the product level in the tank be routinely checked to help prevent contamination by a leaking tank or pipe.

This tank is subject to Fire Code regulations which are administered by the State Fire Marshal's Office (SFMO). These regulations are usually enforced through the local fire department or, in some cases, a Fire Marshal. The telephone number for the SFMO is 651-201-7200.

10. I have a 1,000 gallon used oil tank at my station. I use the oil for heating the building. Is this tank regulated?

If this tank is used only for heating the building where it is located, it is not subject to MPCA regulations as long as the used oil has not been removed for disposal--for example, pumped out for disposal or recycling. Used oil tanks 1,100 gallons or less that are used only

for heating the building where stored are exempt. This means the tank need not be registered and leak detection requirements do not apply. The MPCA strongly recommends, however, that the product level in the tank be routinely checked to help prevent contamination by a leaking tank or pipe.

This tank is subject to Fire Code regulations which are administered by the State Fire Marshal's Office (SFMO). These regulations are usually enforced through the local fire department or, in some cases, a Fire Marshal. The telephone number for the SFMO is 651-201-7200.

11. The church I attend has an 8,000 gallon heating oil tank. Is this tank regulated?

Heating oil tanks larger than 1,100 gallons are partially regulated by the MPCA. This tank must be registered, and the MPCA must be notified if the tank is to be removed or if new piping or corrosion protection equipment is added to the tank. MPCA-certified contractors must be used to perform any of the above work on the tank. If this tank was installed after August 1, 1985, the tank must be protected from corrosion or constructed of material that will not corrode, such as fiberglass. Any piping installed on this tank after June 1, 1991 must be protected from corrosion as well. Although not a requirement, the MPCA recommends testing the corrosion protection system periodically. Leak detection is not required on this tank, but the MPCA recommends that product level in the tank be routinely checked to help prevent contamination by a leaking tank or pipe.

12. I have a 4,000 gallon tank for an emergency generator. Is this a regulated tank?

This tank is partially regulated. Tanks larger than 110 gallons used only to store fuel for emergency generators must have corrosion protection on the tank and piping, periodic

testing of the corrosion protection system, and must have spill containment and overfill prevention equipment. Although leak detection is not required for emergency generator tanks and piping installed on or before December 22, 2007, the MPCA recommends that the product level in the tank be routinely checked to help prevent contamination by a leaking tank or pipe. Tank systems installed after this date are required to be double-walled and use interstitial monitoring on the tank and piping for leak detection.

13. I would like to install a 4,000 gallon tank to use for storage of fuel for emergency power generation. Does this tank have to be double-walled?

Yes. Tanks installed after December 22, 2007 larger than 110 gallons used for storing fuel for emergency power generation must be double-walled. This requirement applies even if the tank is "dual use," meaning it is used both for emergency power generation and heating.

Registering your tank

Registration and notification procedures

Tanks must be registered with the MPCA and the MPCA must be notified of changes in the tank system. This section answers common questions about the notification process.

14. What do I need to notify the MPCA Tanks Program about?

There are two types of tank notifications. In some situations both are required. Copies of these forms can be found on MPCA's Web site or by contacting the MPCA toll free at: 800-657-3864.

- 10-Day Advance Notice form – used for:
 - notification of tank or piping install, removal, or repair
 - dispenser install or replacement
 - internal lining inspection

If the scheduled start date of the job changes by more than 48 hours, the MPCA must be re-notified of this change.

- Notification/Change in Status for Underground Storage Tanks form – used for:
 - verification of completion of work identified in a 10-day Advance Notice
 - initial registration of a new tank
 - installation or replacement of a dispenser
 - change in ownership
 - change in tank uses or system components (for example: change in product stored,

change in corrosion protection or leak detection method, etc.)

- change in tank status (active or inactive)
- The form must be signed and submitted within 30 days after the change.

Even though these notifications are often given by the MPCA-certified contractor performing the work, it is the responsibility of the tank owner or operator to make sure that notifications are taken care of.

15. I just bought a gas station. Must I notify the MPCA, and if so, when?

You are required to file a "Notification/Change of Status for Underground Storage Tanks" form described in question 14 within 30 days after taking possession of underground storage tank systems. The form is available from an MPCA office, the MPCA Web site, or by calling the MPCA at 800-657-3864. This form must be completed and sent back to the MPCA at the address on top of the form. The seller is also required to submit written notice to the buyer of their responsibility to notify the MPCA. A Notification Form is included in the Appendix.

16. Do I have to notify the MPCA if I make a change to my tank system?

Yes. The MPCA must be notified of changes including changes in the product stored, changes in leak detection method or equipment, or changes in the corrosion protection method within 30 days of the change, using the Notification Form.

17. Do I have to notify the MPCA if I close my tank?

Yes. The MPCA must be notified within 30 days after a tank is taken out of service, using the Notification Form.

18. Do I have to register my tank?

If your tank is larger than 110 gallons, contains a petroleum product or a hazardous material, and the product is or was used for business use, such as business motor vehicles, equipment, or retail sale, the tank must be registered with the MPCA. If you have questions about the registration status of your tank(s), contact the MPCA at 800-657-3864, or call your nearest MPCA office. A list of MPCA phone numbers can be found in the Appendix.

19. When do I have to register my tank?

Once the tank is installed, it must be registered within 30 days using the Notification Form. Both the owner and the contractor who installed the tank must sign the Notification Form.

20. Is there a cost to register my tank?

No. The MPCA does not charge a fee to register tanks. However, check with the community where your facility is located, since a local permit or license fee may be required.

21. I'm replacing product piping and/or dispensers. Do I have to notify the MPCA?

Yes. You must notify the MPCA two times: 10 days in advance of the repairs and within 30 days after the completion of the work. Use the appropriate forms discussed in question 14.

You are also required to notify the MPCA if you replace product dispensers, even if no other changes are made to the associated product piping.

There are many things to consider when purchasing property with a tank. The MPCA must be notified if a tank changes ownership. This section answers common questions about owning, leasing and purchasing property with a tank.

22. Who is responsible for compliance with MPCA storage tank regulations at my site?

MPCA rules state that both owners and operators of tank sites are responsible for maintaining compliance with tank regulations. This means you are responsible whether you own, lease, operate, or otherwise have an interest in a tank system. All of these parties can be cited and penalized simultaneously for violations of tank rules.

23. Is a license or certification required to operate an underground storage tank?

Yes. Individuals who own or operate underground storage tanks must be trained or pass an MPCA test, depending on their job duties. A trained or MPCA-certified operator must also be on-site during operating hours with certain exceptions. More details on training and certification can be found in the appendix on the MPCA's Web site at www.pca.state.mn.us or by contacting the MPCA at the phone numbers in the Appendix.

24. I am thinking about buying a gas station. What should I know before I decide to buy it?

Be aware that if you buy property with petroleum or hazardous material storage tanks, you also become responsible for any contamination and tank compliance issues that already exist at the site. Rules state that the current owner and operator are responsible for addressing contamination and tank compliance issues, even if those issues are a result of conditions that existed before you purchased the station. (Minnesota Statute §115C.021 states "a person is responsible for a release from a tank if the person is an owner or operator of the tank at any time during or after the release.")

Owning, leasing, or purchasing property with a tank

Prior to purchase, it is advisable to request information from the current owner such as information regarding the condition of the tanks, installation or upgrade work that has been performed, leak detection records, and corrosion protection test records. Also inquire as to whether or not a petroleum release has occurred from the tank system where no corrective action has been taken.

Contact the MPCA if you have any regulatory questions about the purchase of a tank facility or if you need specific information about a particular site. The MPCA maintains a database that includes general information about tank systems and any contamination that has been reported at specific locations.

25. **The gas station I'm planning to buy has been closed for a while. What do I need to do to start using the tanks again?**

Regulations differ depending on the length of time the station has been closed. In all cases, the MPCA must be notified of the change in ownership within 30 days after the site is purchased.

If the station has been closed for less than one year, you must ensure that the system is in compliance before it is brought back into service. If you purchase the site, you will be responsible to correct compliance issues. A tank service provider can help you determine whether the site is in compliance. MPCA must be notified within 30 days after the tanks are brought back into service, using the Notification Form.

If the station has been closed for one year or more, you must receive MPCA approval before you can put the tanks back into service. The tanks must be permanently closed unless an extension was applied for and granted by the MPCA. Permanent closure means either removing the tanks or filling them in place. Local ordinances or fire codes may have more stringent requirements than the MPCA.

Tanks that are inactive for five years or more can not be placed back into service and must be permanently closed. MPCA inspectors affix an "Orange Tag" to the fill pipes of inactive tanks as they encounter them. The Orange Tag contains MPCA contact information.

Working on tank systems

Companies that install, repair, or permanently close regulated underground tank systems must take an MPCA class and pass a test in order to be certified to work on these systems. Secondary containment must be added with certain repairs or additions to existing tank systems. This section answers common questions about this process.

26. I am planning to install a new tank. Who can install it?

If your tank is regulated under MPCA rules, only an MPCA-certified contractor under the supervision of an MPCA-certified supervisor can perform installation or repair work. A list of MPCA-certified contractors can be found on the MPCA's Web site at www.pca.state.mn.us.

27. Who can install piping on my tanks?

If your tank system is regulated under MPCA rules, only an MPCA-certified contractor under the supervision of an MPCA-certified supervisor can perform installation or repair work on piping.

28. I'd like to install a new tank and/or piping. Does the system need secondary containment?

Yes. Except for heating oil tanks, all new tanks and new or replacement piping needs to be double-walled and have liquid-tight containment sumps under the dispenser and at the submersible pumps. Containment sumps must be liquid tight and constructed of synthetic materials. Your MPCA-certified contractor should be familiar with this requirement.

29. Do I need to add secondary containment for my existing system?

No, unless you are making repairs or adding to an existing system. Some examples of when secondary containment is required on an existing system are:

- if an existing piping run has leaked
- if an existing piping run has failed due to corrosion or has developed corrosion pitting
- if replacing more than a 10 foot segment of existing piping
- if replacing submersible pumps or the pump head
- replacing dispensers if work is done below the shear valve (pressurized piping) or piping union (suction piping)
- adding a new piping segment, regardless of length.

Secondary containment means that tanks and piping must be double-walled and containment sumps under the dispenser and at the submersible pump must be added.

30. I am planning to remove some underground tanks. Who can remove them?

An MPCA-certified supervisor must be on-site during the removal of a regulated tank system. Actual removal work can be conducted either by an MPCA-certified contractor or any competent general contractor as long as an MPCA-certified supervisor is on site during all critical junctures. If your tank is less than 1,100 gallons and is used for heating only, it is exempt.

31. I am planning on replacing my dispensers. Who can replace my dispensers?

An MPCA-certified supervisor must be on-site during the install or replacement of dispensers. The MPCA-certified supervisor must be on site during all critical junctures of the project.

General leak detection requirements

Checking for leaks

Regulated tanks and piping must be checked for leaks periodically, and you must retain records to document compliance, as described below. Leak -testing generally must be conducted once a month, but some piping designs allow testing to be conducted once a year. Records of leak -testing must be kept for 10 years.

32. I have a tank smaller than 1,100 gallons. Do I need to conduct leak detection on it?

Yes. If your tank is larger than 110 gallons and is used for petroleum or hazardous material storage, then your tank is regulated and you must provide leak detection for the tank and, with certain exceptions, the piping. If your tank is 1,100 gallons or smaller and is used for private residential use, it is exempt. Emergency generator tanks installed on or before December 22, 2007 and heating oil tanks are exempt from leak detection requirements.

33. I have a small used oil tank that I stick every once in a while to see if it needs to be pumped. Is this adequate leak detection?

No. Sticking your tanks “every once in awhile” is not precise enough to detect small leaks. You must use an approved form of monthly leak detection on this tank.

34. What’s the easiest approved leak detection method to use for my small used-oil tank?

Manual tank gauging can be used as leak detection for tanks 1,000 gallons or less for the life of the tank for tanks installed on or before December 22, 2007. This method involves shutting the tank down once a week by not

adding or removing product for a period of time, then checking the tank for a change in product level. For complete instructions on manual tank gauging, refer to the “Manual Tank Gauging section” of this book. Tanks installed after December 22, 2007 must use interstitial monitoring as the primary form of leak detection, although manual tank gauging can be used as a secondary method.

35. I have a 1,000 gallon gas tank and I’m open for business Monday through Friday. What is the easiest approved leak detection method to use for this tank?

If you can shut down the tank for a minimum of 36 hours once a week, not adding or removing product, then you can use manual tank gauging described in the previous question. This method involves shutting the tank down once a week for a period of time and measuring product level while the tank is out of use.

36. I have a 1,000 gallon gas tank, and I’m open for business seven days a week, so I can’t meet the minimum shut down time for manual tank gauging. What are my options?

You must use another form of leak detection, like an automatic tank gauge or Statistical Inventory Reconciliation (SIR). If the tank is double-walled, you may use interstitial monitoring. If it was installed after December 22, 2007, you must use interstitial monitoring.

Automatic Tank Gauges (ATG) used for leak detection

37. What is an automatic tank gauge (ATG)? (See Photo 1)

An ATG is an electronic instrument installed with an underground tank that measures inventory and determines if the tank is leaking. Each tank contains a probe wired to an electronic monitor. The monitor has either a printer for printing results or a screen that displays results. This method can be used as the primary method of leak detection only for tanks installed on or before December 22, 2007. Tanks installed after December 22, 2007 must use interstitial monitoring as the primary form of leak detection, although an ATG may be used as secondary leak detection method.

The ATG must be operated according to manufacturer's recommendations and third-party certifications. Special conditions on the use of an ATG may apply on some systems; for example, there may be restrictions on whether the ATG can be used with manifolded tank systems.

38. My automatic tank gauge gives me an inventory printout every day. Is this all I need to do for leak detection?

No. In addition to tracking inventory, you must also obtain a valid "passed" leak test at least once a month for each tank. To ensure you obtain at least one monthly "passed" result, it is recommended that you perform a leak test more often than once a month (daily or weekly).

If your tank has been in the ground for less than 10 years, you can alternatively do a precision test of 0.1gph (gallon per hour) once annually if you also conduct complete inventory control each month. Once your tank has been in the ground 10 years, this alternative can no longer be used.

Tanks installed after December 22, 2007, however, must use interstitial monitoring as the primary form of leak detection, although an ATG may be used as a secondary leak detection method.

39. My automatic tank gauge prints out a leak test result every day. Do I need to keep all these printouts?

No. You don't need to keep every printout, but you must keep at least one "passed" result per tank per month. These records must be kept for at least 10 years. The ink on these printouts fades over time and will eventually become unreadable, so it is a good idea to make and keep photocopies of the test results.

40. Will my automatic tank gauge sound an alarm if it finds a leak?

Not necessarily. You must look at ATG printouts to determine if the tank is leaking. A "failed" leak test result could mean that the tank has a leak.

41. If my automatic tank gauge reports a "failed" or "invalid" leak test, what do I do?

A "failed" leak test could mean the tank is leaking. Run another test as soon as possible, preferably the next night. If that also fails, you must investigate the cause of the failed results. The investigation can be done by your tank service provider. **If a leak is found, or if the cause of the "failed" result cannot be determined, you must immediately report this as a suspected leak to the Minnesota Duty Officer at 800-422-0798.** Failing to do so may result in penalties and increased cleanup costs.

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An “invalid” result could mean different things, such as low product level, pumping activity during the leak test, traffic vibrations, a recent fuel delivery or malfunctioning probe. Run another leak test as soon as possible. If you cannot determine why the results are “invalid,” your tank service provider can help you determine the cause of an “invalid” leak test and help you obtain a “passing” leak test for that month.

42. Do I need to check my automatic tank gauge each year?

Check annually to make sure the date and time are correct on the gauge, that the gauge is still doing leak tests, and the test results are readable. Power outages and lightning strikes can reset clocks or the timing of leak tests. Incorrect dates on leak detection receipts are a violation of tank rules.

43. Do I need to keep records of my leak tests?

You must obtain and retain at least one “passed” leak test per tank per month for a minimum of 10 years. The ink on these printouts fades over time and will eventually become unreadable, so it is a good idea to make and keep copies of the test results.

44. Once an MPCA inspector checks my tank leak test records, can I throw them away?

No. You must retain these results to prove compliance with leak detection requirements for a minimum of 10 years. Such records can also be useful to you if you ever decide to sell the station as proof of compliance with leak detection requirements.

45. Do I have to check my tanks for water?

Yes. Once a month, you must check your tanks for water. The presence of water can be an indication that the tank has a leak. ATGs do this automatically, but most people use water finding paste on a gauge stick to check for water. Contact your service provider or fuel

delivery company to help you determine which type of paste will work for your tank.

Statistical Inventory Reconciliation (SIR) as leak detection

46. What is statistical inventory reconciliation?

Statistical inventory reconciliation, or SIR, is a leak detection method that uses daily tank measurement, sale and delivery data to determine if a tank is leaking. SIR accomplishes this by computer analysis of daily inventory data. Those who use SIR must stick their tanks each operating day, read the gallons pumped from each dispenser, and record the measurements. At the end of the month, these records are sent to an approved SIR vendor, where the records are analyzed for trends to determine if a leak could be occurring. SIR methods provide leak detection for both the tank and the associated piping. Because of this, additional tank testing and line tightness testing is not required, unless the SIR method indicates that a leak exists and further confirmation is required. **An annual function test of electronic or mechanical line leak detectors must still be completed.** In order to use SIR, you must use an approved SIR vendor and follow their procedures. This method can be used as the primary method of leak detection only for tanks installed on or before December 22, 2007. Tanks installed after December 22, 2007 must use interstitial monitoring as the primary form of leak detection, although SIR may be used as a secondary leak detection method.

47. My tanks are on an SIR program. Do I need to keep all monthly results?

Yes. A copy of the monthly SIR results for each tank must be kept on file for at least 10 years. **Be sure to review your results carefully and make sure all tanks “pass.” The vendor will not necessarily notify you if one or more tanks “fail.”**

48. If the SIR result for my tank says it failed or is inconclusive, do I need to report this?

Yes. **An SIR result that says “fail” must be reported immediately to the Minnesota Duty Officer at 800-422-0798.** Failing to do so may result in penalties and increased cleanup costs.

A result of “inconclusive” means the vendor could not verify that the tank was tight. **If you get “inconclusive” results two months in a row, it must be treated as a “fail” and you must immediately report this as a suspected leak to the Minnesota Duty Officer at 800-422-0798.** Failing to do so may result in penalties and increased cleanup costs.

49. What else should I be aware of regarding SIR?

Some SIR vendors start over at zero for overages or shortages each month. This means a cumulative shortage for the previous month of 250 gallons, for example, is not carried over to the next month. Dropping shortages at the end of a month and starting over at zero may conceal a persistent small leak. For this reason, it is a good idea to track monthly overages and shortages using daily inventory control for trends that do not balance out, such as several months of shortages in a row.

Also, be sure all your dispensers are properly calibrated so your data is as accurate as possible. Most MPCA-certified contractors can check dispensers for calibration.

50. Can I use my automatic tank gauge instead of a gauge stick for taking tank measurements?

Yes. ATG measurements can be used in place of actual stick measurements; however, periodically compare measurements from the tank gauge with an actual stick measurement to make sure the gauge reads correctly. You

still need to physically check each dispenser for gallons pumped each operating day.

51. How can I make measurements if I don't have an automatic tank gauge?

Measurements can be made using a gauge stick. The measurements must be made with a stick that is not worn, warped or broken. If you do not have a stick or your stick is in poor condition, contact your tank service provider for a new stick.

52. How accurate must I be with my gauge stick measurements?

Measurements must be made to the nearest **1/8 inch**.

Stick readings must be converted to gallons using a tank conversion chart designed specifically for your tank which shows gallons in **1/8 inch** increments. Tanks of different sizes have different conversion charts. If you do not have a tank chart, contact your tank service provider or SIR vendor.

53. What time of the day do I take the measurements?

Any time, but you must take all measurements at approximately the same time each operating day. No fuel can be sold between the time you measure the tanks and read the volume pumped on the dispensers. The best time to measure the tanks is prior to opening or after closing when fewer customers are present.

54. Do I have to check my tanks for water?

Yes. Once a month, you must check your tanks for water. The presence of water can be an indication that the tank has a leak. Water level can be found on inventory reports printed out by the ATG. You can also use water finding paste on a gauge stick to check for water. Contact your service provider or fuel delivery company who can help you determine which type of paste will work for your tank.

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55. How often do I have to submit data to my SIR vendor?

Generally, data must be submitted to your SIR vendor by the 10th day of the following month, but some SIR vendors collect data differently. Coordinate with your SIR vendor to establish acceptable procedures for data submission.

56. If I use SIR for my tanks, does that also count for leak detection on my piping?

Partially. Because SIR analyzes inventory, sales, and delivery data in entire the tank system, the tank and piping are both analyzed for leaks. Additional tank or line tightness testing is not required. If you have pressurized piping, the line leak detectors must still be checked annually for proper functioning. Most MPCA-certified contractors can conduct this test.

57. Can I continue to use SIR in the future for my tank systems?

Yes. For tanks installed on or before December 22, 2007, SIR is currently one of the approved monthly monitoring options. Interstitial monitoring must be the primary form of tank leak detection for tanks installed after December 22, 2007.

58. Can I switch to SIR as my primary form of leak detection?

Yes. If you are unable to get satisfactory “passed” leak test results using your ATG, you may switch to using SIR as a form of leak detection if your tanks were installed on or before December 22, 2007. Tanks installed after December 22, 2007 must use interstitial monitoring as the primary form of leak detection, although SIR may be used as secondary leak detection method.

Also, SIR or another approved monthly leak detection method must be used 10 years after the tank was installed on a tank greater than 1,000 gallons, even if you are currently using manual tank gauging or daily inventory control

and tank tightness testing. Other approved methods are automatic tank gauging or, for tanks 1,000 gallons or less, manual tank gauging.

59. Who can provide SIR for my tank system?

SIR vendors must use methods that have received third-party certification through companies that use EPA-approved testing protocol. In order to provide services to Minnesota tank owners and operators, these companies must also agree to abide by conditions required by the MPCA. For a list of MPCA-approved SIR vendors, visit the MPCA Web site or see the list included in the Appendix.

60. Can I use SIR with my blender dispensers?

Possibly. Coordinate with your tank service provider and SIR vendor to determine how the dispenser influences the result.

Also, to ensure your data is as accurate as possible, be sure all your dispensers are calibrated properly. Most MPCA-certified contractors can check dispensers for calibration.

Manual tank gauging as leak detection

61. What is manual tank gauging?

This method of leak detection involves measuring the product level in the tank before and after a specific time period (ranging from 36 – 58 hours depending on the size of the tank). This is referred to as a “static test.”

A static test means that product is neither added nor removed during that time period. Static tests must be performed at least once per week for each tank using manual tank gauging. This leak-detection method can be used exclusively for tanks 1,000 gallons or less in capacity, and for which the required shut-down time can be met. If the minimum shut-down time cannot be met, then another leak detection method, such as SIR, must be used.

Tank Leak Detection Methods

Manual tank gauging can be used indefinitely for tanks 1,000 gallons or less installed on or before December 22, 2007. Tanks installed after December 22, 2007 must use interstitial monitoring as the primary form of leak detection, although manual tank gauging may be used as a secondary leak detection method. Complete manual tank gauging instructions and data sheets can be found in the Appendix.

62. Can I use manual tank gauging for a 2,000 gallon tank?

Yes. This method can temporarily be used on tanks 1,001 to 2,000 gallons. However, tanks between 1,001 and 2,000 gallons must also be tightness-tested every five years. Within 10 years of the install date, a different method of leak detection must be used, such as an ATG or SIR.

Tanks installed after December 22, 2007 must use interstitial monitoring as the primary form of leak detection, although manual tank gauging may be used as a secondary leak detection method.

63. How often do I need to measure the tanks using manual tank gauging?

Tanks must be measured every week. Typically, readings are taken over a weekend when no product is added or removed.

64. How accurate must I be with my readings?

Measurements must be made to the nearest **1/8 inch**.

Stick readings must be converted to gallons using a tank conversion chart designed specifically for your tank which shows gallons in **1/8 inch** increments. Tanks of different sizes have different conversion charts. If you do not have a tank chart, contact your tank service provider.

65. If I am unable to meet the minimum shut-down time required for my tank, will I be able to use manual tank gauging?

No. You will need to use a different form of leak detection suitable for your tank system, such as SIR. Sites with small used oil tanks or stations that operate more than five days a week, for example, may not be able to meet the minimum shut-down time and have to use another method of leak detection.

66. If I use manual tank gauging on my tanks, do I need to provide leak detection for my piping?

Yes, unless your piping meets the definition of "safe suction." You do not need to provide leak detection for the fill pipes of tanks filled by gravity, such as a small waste oil tank at a repair shop.

67. Can I use my automatic tank gauge instead of a gauge stick for taking tank measurements?

Yes. Tank gauge measurements can be used in place of actual stick measurements; however, you should periodically compare measurements from the tank gauge with actual stick measurements to make sure the gauge is reading correctly.

68. Do I have to check my tanks for water?

No, but checking water level once a month is recommended. The presence of water can be an indication that the tank has a leak. You can use water finding paste on a gauge stick to check for water. Contact your service provider or fuel delivery company, who can help you determine which type of paste will work for your tank.

- 69. If my results show a “fail” because the results exceed the test limits for the month, do I need to report this as a leak?**

Not immediately. If your results indicate a monthly fail, then you should re-check all stick measurements to verify that there are no mistakes in that month’s record. Then, take extra precautions while performing leak detection measurements the next month.

If the second month’s result also fails by exceeding the allowed amount, you must immediately report this as a suspected leak to the Minnesota Duty Officer at 800-422-0798. Failing to do so may result in penalties and increased cleanup costs. A tank tightness test can be conducted to help determine whether the tank is leaking. Contact your tank service provider who can conduct the test or help you find a company that is equipped to do the test.

Daily inventory control as leak detection

- 70. What is daily inventory control?**

At its simplest, this method of leak detection compares what you put into a tank with what you pump out of a tank in a given month. Daily inventory control uses daily inventory readings (sticking), delivery data, and dispenser readings to determine if your tank is leaking. At the end of the month, these records are evaluated to look for inventory discrepancies that show that a leak could be occurring. In order to use this method, you must complete inventory data forms. Five years after the tank is installed, a tank tightness test must be conducted. This method can only be used temporarily for tanks installed on or before December 22, 2007. After 10 years, a different method of leak detection must be used. Tanks installed after December 22, 2007 must use interstitial monitoring as the primary form of leak detection, although daily inventory control can be used as a secondary method. Complete instructions for inventory

control can be found on the MPCA Web site.

- 71. I stick my tanks once per week. Does this qualify as daily inventory control?**

No. Daily inventory control involves comparing the number of gallons in the tank each operating day, the amount of fuel delivered, and the amount of fuel sold each day then reconciling the numbers at the end of the month.

- 72. I measure my tanks with a gauge stick to the nearest 1/2-inch, is that correct?**

No. Measurements must be made to the nearest **1/8 inch**.

Stick readings must be converted to gallons using a tank conversion chart designed specifically for your tank which shows gallons in **1/8 inch** increments. Tanks of different sizes have different conversion charts. If you do not have a tank chart, contact your tank service provider.

- 73. Do I have to check my tanks for water?**

Yes. You must check your tanks for water once a month. The presence of water can be an indication that the tank has a leak. Most people use gauge sticks with water finding paste to check for water. Contact your service provider or fuel delivery company, who can help you determine which type of paste will work for your tank.

- 74. I stick my tanks every day and record a shortage or overage. Is that all I need to do?**

No. In addition to calculating a daily overage or shortage, you must total these overages and shortages at the end of each month and compare them with the allowed amount. You should also track trends of overages and shortages on a daily basis, since a series of overages/shortages over a number of days could indicate a small leak that may not

Tank Leak Detection Methods

be detected by calculations at the end of the month. Typically, daily overages and shortages balance out over a one-month period.

75. If my daily inventory control records show a “fail” because my total shortage exceeds the allowed amount for the month, do I need to report this as a leak?

Not immediately. Recheck all stick measurements, delivery amounts, etc., to verify that there are no mistakes for that month’s record. Then, take extra precautions while performing leak detection measurements the next month. **If the second month shortage/overage total also fails by exceeding the allowed amount, then you must immediately report this as a suspected leak to the Minnesota Duty Officer at 800-422-0798.** Failing to do so may result in penalties and increased cleanup costs. A tank tightness test can be conducted to help determine whether the tank is leaking. Contact your tank service provider who can conduct the test or help you find a company that is equipped to do the test.

76. Can I use daily inventory control with my blender dispensers?

Possibly. Coordinate with your tank service provider to determine how the dispenser influences the result.

Also, to ensure your data is as accurate as possible, be sure all your dispensers are calibrated properly. Most MPCA-certified contractors can check dispensers for calibration.

Interstitial monitoring as leak detection

77. What is interstitial monitoring?

Interstitial monitoring is a method of leak detection for double-walled tanks. The interstitial space is the space between the

primary inner tank and the secondary outer tank. With this method, the space between the walls of the tank is monitored either manually (with a gauge stick) or electronically (with a leak sensor.) Tanks installed after December 22, 2007 must be double-walled and must use interstitial monitoring as the primary form of tank leak detection.

78. Can I use interstitial monitoring as my only form of tank leak detection?

Yes. Monitoring your double-walled tank by checking the interstitial space at least monthly satisfies tank leak detection requirements. The space can be checked manually or with a sensor. You must keep a written record of monthly checks.

It is acceptable to use interstitial monitoring in conjunction with other leak detection methods, such as an ATG or SIR. For tanks installed after December 22, 2007, though, interstitial monitoring must be conducted no matter what other forms of leak detection are used.

79. Do I have to check my interstitial monitoring sensor for proper functioning?

Yes, the sensor must be tested annually. Consult your tank service provider to determine proper testing procedures for your interstitial sensor.

80. What records must I maintain?

You must keep a record of monthly monitoring results and annual sensor tests for at least 10 years.

Piping leak detection methods

Leak detection for suction piping

If designed properly, suction piping poses less threat to the environment because fuel is less likely to leak into the ground if the piping fails. Piping that meets the definition of "safe suction" as described below is exempt from leak detection requirements.

81. What is suction piping? (See Photo 2.)

In a suction system, the pump is located within the dispenser and pulls fuel from the tank with suction. A check valve is used to keep product from flowing back to the tank through the pipe. You can generally see the suction pump, pulley, and belt inside the dispenser if you remove the dispenser access cover.

82. I have suction pumps in my dispensers. Do I need to have my piping tightness tested?

Possibly. It depends on where the check valve is located in each piping run. If the check valve is located at the dispenser and there is not an additional check valve at the tank, and the piping slopes back to the tank, then you do not need line tightness tests on that particular piping run. This type of setup is called a "safe" or "European" suction system.

If there is an additional check valve at the tank, or the only check valve is at the tank, or the piping slopes away from the tank, then a line tightness test is required every three years unless you use SIR or interstitial monitoring with double-walled piping.

If you are not sure where the check valve is located, contact an MPCA-certified contractor who can make that determination and change the valve location if necessary. The contractor can verify that the piping is "safe suction." Keep a description of this for future inspections.

83. I have mounded tanks and suction piping. Is my piping considered "safe suction"?

Piping for tank systems mounded above ground level would not qualify as "safe suction". Such a system requires a line tightness test every three years unless you use SIR or interstitial monitoring with double-walled piping.

A marina with a tank uphill from the dispenser must be treated as a mounded system.

Leak detection for pressurized piping

Pressurized piping generally has more testing requirements than suction piping. Pressurized piping can be made of different materials and have different leak detection equipment and testing methods. This section answers questions about ways in which leak detection can be conducted.

84. What is pressurized piping?
(See photos 3, 8 & 9)

In a pressurized piping system, a pump in the tank pushes fuel under pressure to the dispensers.

85. What leak tests must I do on my pressurized piping?

Pressurized piping must have both of the following forms of leak detection:

1. Periodic - annual (0.1 gallon per hour) or monthly (0.2 gallon per hour) "precision" or "tightness" test; and
2. Continuous – three gallon per hour leak detection for catastrophic leaks.

The questions that follow describe different ways in which these two requirements can be met.

Mechanical line leak detectors as leak detection

86. I have single-walled pressurized piping with a mechanical line leak detector. Do I have to do annual tightness testing of my piping?
(See photo 4.)

Yes. A qualified tester must conduct an annual line tightness test which can detect at least a 0.1 gallon per hour leak. Records of these test results must be kept for at least 10 years.

87. What else must I test if I have a mechanical line leak detector?

The line leak detector must be tested at least annually for proper functioning by a qualified

tester to ensure it can detect a three gallon per hour (3 gph) leak. Retain a record of the tests for at least **10 years**.

88. Customers have been complaining that my pumps are running slowly. What does this mean?

This may mean a leak is occurring. Leak detectors react or "trip" to suspected leaks by restricting the flow of product. A slow-running pump indicates that the leak detector senses a loss of pressure. Shut down that pump and contact your tank service provider, who can help determine if a leak is occurring.

On some occasions, however, if outside air temperatures are very cold in the winter, fuel contracts in the piping overnight. This can cause the leak detectors to "trip." Cycling the pump off and then on should re-set the leak detector. If there is no leak, the pump should then function normally. If it does not, shut down the pump immediately and contact your tank service provider. **If the piping is found to be leaking, or if you cannot determine whether or not there is a leak, you must immediately report this as a suspected leak to the Minnesota Duty Officer at 800-422-0798.** Failing to do so may result in penalties and increased cleanup costs.

Electronic line leak detectors as leak detection

89. I have pressurized piping and an electronic line leak detector. (See Photo 5.) Do I have to do annual tightness testing of my piping?

No, not if the line leak detector can detect a 0.1 gallon per hour (gph) leak, which is equivalent to a "tightness test," and does the test at least once

a year. Most electronic line leak detectors will detect a 0.1 gph leak and will perform this test whenever the line is inactive. If the leak detector generates a 0.1 gph “leak test” printout, retain one “passed” test per line per year for 10 years. If the detector does not generate a leak test printout, check the line leak detector display box and record the line status by hand.

An alternative to an annual 0.1 gph test is to conduct a 0.2 gph leak test monthly. If the leak detector generates a 0.2 “leak test” printout, retain one “passed” test per line per month for 10 years. If the detector does not generate a leak test printout, check the line leak detector display box and record the line status by hand.

90. Do I need to have my electronic leak detectors tested annually?

Yes. Electronic line leak detectors must be tested by a qualified tester annually to make sure they detect a simulated leak. Most MPCA-certified contractors can conduct this test. Retain a record of the tests for at least 10 years.

91. What if my electronic line leak detector has been submerged in water?

Electronic line leak detectors are not designed or certified to operate under water. Leak detectors that have been submerged in water should be tested to make sure they still function properly and replaced if necessary.

Interstitial monitoring as leak detection (double-walled piping)

92. I have pressurized double-walled piping with contained sumps. What do I do for leak detection on the piping? (See Photo 6.)

In order for this method to work, your sumps must have liquid-tight sides and bottom. If your tanks were installed after December 22, 2007, the sumps must either have a sump sensor or you must provide continuous

mechanical (photo 4) or electronic (photo 5) line leak detection and monthly visual inspections of the containment sumps. The sensor must continuously monitor the system for the presence of liquid and shut down the system in event of a leak.

Sump sensors and mechanical or electronic line leak detectors must be tested annually for proper operation.

93. I have double-walled piping with a containment sump and sump sensor. Where must the sump sensor be located?

Sensors must be located within one inch off the bottom of the sump unless the manufacturer has a different specification. Sensors should be located at a level lower than the lowest electrical or piping penetration point in the sump.

94. Do I have to test the sump sensor annually?

Yes. The sensor must be tested or “tripped” annually to ensure it activates a leak alarm or restricts the flow of product. Most MPCA-certified contractors can do this test. Keep a record of the test for **10 years**.

95. My sump keeps filling with water. What should I do?

Repairs should be made to the sump to prevent water from entering and interfering with leak-testing equipment. Any damaged equipment must be repaired. Have your tank service provider check to see if new boots are needed around the electrical or piping penetration points or if a gasket should be installed around the sump cover.

Removing soil from around the edge of the sump lid can also help prevent water from entering the sump by giving water a place to drain away from the sump.

Statistical Inventory Reconciliation (SIR) as pipe leak detection

- 96. I use SIR for leak detection on my tanks. Does this also count for piping leak detection?**

Partially. You also need an electronic or mechanical line leak detector installed on the piping that can detect, shut off, or restrict a sudden, large loss at a rate of three gallons per hour (gph). These line leak detectors must be checked at least annually to make sure they detect a simulated leak.

- 97. Do I need to keep records of leak tests done on my piping?**

Yes. You must keep these records in your file for at least **10 years**.

What about rust?

Corrosion protection for underground storage tank systems

All metallic underground storage tanks and piping must be protected from corrosion with the exception of heating oil only tanks installed before August 1, 1985. The most common type of corrosion protection is called cathodic protection and is generally added at the time the tanks and piping are installed. But the cathodic protection system must be tested periodically to ensure it is functioning properly, and records of the tests must be maintained. Non-metallic tanks, and piping such as fiberglass, do not require corrosion protection testing. The following section answers common questions about corrosion protection.

Sacrificial anode systems

98. What is a sacrificial anode system?

This is a cathodic protection system with a bar or bag of zinc or magnesium attached to an underground storage tank and metal piping to protect them from corrosion. If installed correctly, an anode temporarily protects the tank and piping from corrosion.

99. I have a single-walled steel tank with sacrificial anodes for cathodic protection. Do I need to test the cathodic protection on this tank?

Yes. You must have the cathodic protection on metallic tanks and piping with sacrificial anodes tested at least every three years by a qualified cathodic protection tester. Copies of test results must be submitted to the MPCA within 30 days of the test. You must keep a copy of results of the last three tests; however, the MPCA recommends that these test results be kept for the life of the tank system. Both pressurized and suction piping made of metal require a

corrosion test every three years.

100. I have a double-walled sti-P3® tank. Do I need to test the cathodic protection on this tank in the future?

Yes. Double-walled sti-P3® tanks have the same testing requirements as single-walled sti-P3® tanks and must be tested every three years. The same applies to double-walled steel piping.

101. I am not sure what kind of tank I have. Do I need to test the corrosion protection on this tank in the future?

Possibly. If you don't know what kind of tank you have, check with the company that installed the tank or your tank service provider to find out what kind of tank it is and whether testing is required.

102. Who can test my sti-P3® tanks for cathodic protection?

A tester certified by either the Steel Tank Institute (STI) or National Association of Corrosion Engineers (NACE) can conduct corrosion testing on your system, unless your tanks are equipped with a self-testing station that allows you to test your own system.

103. Is there any way I can test my own tanks for cathodic protection?

Possibly. Sti-P3® tanks installed after February 1, 1993, may be equipped with a PP4 test station. These test stations have a wire lead from each tank and from a reference cell buried beneath the bottom of the tanks. If properly installed, this test station should be accessible to the tank owner or operator and can be quickly checked to see if the cathodic protection is functioning correctly. You must obtain a volt meter that can be used to get a reading from the tanks. The meter used must actually provide a voltage reading. Records of your test must be submitted to the MPCA

within 30 days of the test. Occasionally, these test stations have been known to fail or give inaccurate readings, so it may be best to have your system tested by a certified corrosion tester even if you have a test station.

104. I heard there is a cathodic protection testing program for some sti-P3® tanks called the “Watchdog® Program”. How can I find out if my tanks are in this program?

The “Watchdog® Program” was set up by the Steel Tank Institute (STI) for sti-P3® tanks installed between October 1, 1988 and February 1, 1993. If your tank was installed during this time, this program will provide free testing of cathodic protection on those tanks every three years. However, if your tanks were not registered with the STI when they were installed, or if you didn’t respond to the questionnaires that the STI sent out asking if you wanted to participate in the “Watchdog® Program,” your tanks may not be included, and you are therefore responsible for arranging your own test of your system. Keep the last three test results on file and submit a copy of each test to the MPCA. The Watchdog® Program only covers tanks. You must make other arrangements to test the piping.

105. I have steel piping protected with sacrificial anodes. Do I have to test my pipes for corrosion?

Yes. Steel piping must be tested every three years by a certified cathodic protection tester. The same requirements apply to double-walled steel piping.

106. My tanks are covered by the “Watchdog® Program” through the Steel Tank Institute. Is my piping covered under the Watchdog® Program?

No. The “Watchdog® Program” was set up to test only the sti-P3® tanks. You must make other arrangements to test the piping.

107. I have non-metallic piping. Do I have to worry about corrosion protection?

Yes. Non-metallic piping usually contains steel fittings and couplings where the non-metallic piping connects to the submersible pump or dispenser. It is important to make sure the metal portion of any piping has corrosion protection. The easiest way to provide corrosion protection is to ensure the metal portion of the piping is not in contact with soil. If this is not possible, corrosion protection must be added.

108. Is there any way I can test my own piping for cathodic protection?

Generally no, but your piping may have a test station that allows you to test your own system, as detailed in question 103.

109. What should be done if the cathodic protection test showed that I do not have adequate cathodic protection?

The cathodic protection system must be repaired by a qualified contractor, or the system may develop a hole due to corrosion and cause a costly leak. The repair must be re-tested within six months. Review your test results carefully. Many operators receive a “failed” result but are not aware of it. Discuss the results with the person who did the test.

Impressed current systems

110. What is impressed current? (See photo 7.)

This is a method of applying cathodic protection to tanks and piping using electricity. Zinc or magnesium anodes are buried, and an electric current run, from a rectifier through the anodes and into the soils around the tank systems. A rectifier is a control box with a volt and ampere meter, usually located in a utility room near electrical fuse boxes; it may also be located outdoors.

What about rust?

111. I have older tanks and piping that have impressed current for cathodic protection. Do I need to have the impressed current system tested?

Yes, tanks and piping using impressed current must have a cathodic protection test conducted every year by a qualified tester. These test results must be submitted to the MPCA within 30 days of the test. You are required to keep a copy of the results of the last three tests, but the MPCA recommends you keep all test results for the life of the tank system. Both pressurized and suction systems with impressed current require a cathodic protection test every year.

112. Do I need to do anything else with my impressed current system?

Yes. You must visually check the rectifier at least every 60 days to make sure the unit is functioning properly by recording the voltage and amperage readings on the rectifier. Retain rectifier check records for at least three years; the MPCA recommends you keep all these records for the life of the system.

113. One of the two gauges on my rectifier has a zero reading. Do I still have cathodic protection because the other gauge has a reading? (See photo 7.)

No. A gauge with the needle pointing at "0" indicates the impressed current system is not functioning and your tank system is corroding. This will cause the tank or piping systems to fail and cause a costly leak. Contact a corrosion expert immediately to find out what is wrong with the system and repair it.

114. I am thinking about putting impressed current onto my existing tanks and piping because my sacrificial anodes no longer protect them. Who can install the impressed current system?

Impressed current systems must be installed by a corrosion expert. Corrosion experts have years of education and experience, and

specialize in corrosion protection. Impressed current systems are very complex, and most tank service providers are not equipped to install them.

115. I'm thinking about re-opening a closed station that has an impressed current system. What do I need to know?

The impressed current system must have received a "passing" cathodic protection test within the past year. If electricity has been shut off to the facility, product cannot be added to the tanks until a corrosion expert has conducted a corrosion assessment with "passing" results. If a cathodic protection test has not been conducted within the past year, product cannot be added to the tanks until a cathodic protection test has been conducted with "passing" results.

The MPCA must give written approval before product is added unless it can be shown that the tanks have been closed less than one year.

116. What should I do if the cathodic protection tester says my impressed current system failed the cathodic protection test?

The impressed current system must be repaired by a corrosion expert as soon as possible, or your tank system may fail due to corrosion and cause a costly leak. Review your test results carefully. Many operators receive a "failed" result but are not aware of it. Always discuss results with the person who did the test.

117. Who can make repairs or adjustments to the settings on an impressed current system?

Due to the complex nature of impressed current systems, only corrosion experts can make repairs or adjustments to the settings on the systems.

Internal lining

118. What is an internal lining?

An internal lining is an impermeable coating applied and bonded to the entire inside surface of a tank. Some tanks are internally lined to prevent corrosion on the inside of the tank and to plug corrosion pits that developed from the exterior.

119. I have a tank that was internally lined. Do I need to have the lining inspected at some point?

Yes. You must have a qualified lining inspector inspect the lining within 10 years after the initial lining was completed. An inspection includes: thorough cleaning of the lining, visual inspection of the lining, ultrasonic thickness testing of the tank's steel shell, holiday (spark) testing for lining continuity, lining thickness measurements, and lining hardness testing. After the initial 10-year inspection, you must have an internal inspection every five years. The inspection must be conducted by physical entry. Camera inspections alone are not adequate. If the lining was repaired, you must conduct a precision tightness test to the 0.1 gallon per hour leak rate within 30 days of the repair.

You must notify the MPCA at least 10 days prior to an internal lining inspection. Retain records of internal inspections, any repairs made and tightness testing results for the life of the tank system. A complete record of the inspection must be submitted to the MPCA within 30 days.

120. What if the internal inspection shows that the lining has failed?

If an inspection shows that more than five percent of the lining has failed, the tank must be taken out of service immediately and product can no longer be added to the tank. The tank must be permanently closed by removing it from the ground or filling it in

place with Fire Marshal approval. Repairs to the lining can be made if no more than five percent has failed.

121. If my lining fails, can I add another method of corrosion protection and still use the tanks?

No. If the lining fails, no other method of corrosion protection can be used on the tank and piping. The tank must be permanently closed if more than five percent of the lining fails.

122. My tank has both cathodic protection (sacrificial anode or impressed current) and an internal lining. What if either the lining or cathodic protection failed?

If the impressed current or sacrificial anode system fails, you must have an internal lining inspection conducted. You may continue to use the tank as long as an internal lining inspection shows that the lining has not failed. Internal lining inspections must be conducted every five years.

If the internal lining fails, the tank must be permanently closed. You cannot use another form of cathodic protection (sacrificial anode or impressed current).

You still must conduct proper corrosion protection maintenance. If the corrosion protection on sacrificial anode and impressed current systems has not been continuous, you must conduct the internal lining inspection.

Jacketed tanks

123. I have jacketed (sometimes called composite) tanks. Do I need to do cathodic protection testing on them?

Possibly. Consult your owner's manual or the MPCA-certified contractor who installed the tanks to determine if cathodic protection testing is required.

Monthly inspections

Visually inspecting your system

MPCA rules require you to visually inspect tank systems on a monthly basis and retain a record of the inspections. The purpose of the inspections is to look for leaks and maintenance issues. Such leaks and maintenance issues are commonly found by MPCA tank inspectors. This section discusses common questions about monthly inspections.

124. I've heard that I'm supposed to visually inspect my tank system once a month. What areas must I inspect?

At least once a month, you must visually inspect your tank system for leaks and other maintenance issues. The areas to examine are:

- submersible pump sumps –the area under the access cover on top of the tank where the submersible pump is found in pressurized piping systems (photos 8 & 9)
- dispensers (commonly referred to as “pumps”) –the area inside and under the fuel dispensers (photos 2 & 3)
- spill buckets – the point where product is delivered to the tank (photo 10)

In each of these areas, look for leaks, drips, accumulated liquid or debris, maintenance issues or damaged equipment. Any liquid and debris must be removed and properly managed. Investigate the source of the liquid and take corrective action to prevent liquids from accumulating.

Keep a record of the inspections, including the date, initials of the person doing the inspection and any action taken. An example form can be found in

the Appendix.

The following sections describe what to look for in each of these locations.

125. What if I find a fuel leak?

Always report a leak immediately to the Minnesota Duty Officer at 800-422-0798.

Failing to do so may result in penalties and increased cleanup costs. More information about Duty Officer reporting can be found on the back cover.

Submersible sumps

126. Where are my submersible sumps?

Submersible sumps are underneath the largest round or square covers over the tops of each tank. Some sumps are “contained,” meaning there is a plastic container around the pump head (photo 8). Contained sumps generally have a plastic cover under the driveway cover that you must remove to inspect the sump. Others are not contained, meaning they have dirt or gravel bottoms (photo 9). If you need help locating your submersible sumps, call your tank service provider.

127. What should I look for when inspecting submersible sumps?

Look for the following:

- Fuel leaks
 - Focus on the copper line on mechanical line leak detectors. The line can become loose and result in large leaks. (see photo 9)
 - Focus on pipe unions (see photo 3)
- Make sure the sump does not contain liquid or debris.
- If you have a sump sensor, make sure it is positioned correctly. If it is submerged in liquid and no alarm has sounded, the

sensor must be repaired. (photo 6)

- If you have contained sumps, check that the rubber boots at the penetration points of the contained sumps are not torn or damaged. (photo 8)
- In uncontained sumps, ensure that metal connections or flex connectors on fiberglass pipes are not in contact with soil.
- For double-walled piping, ensure that the outer wall of the piping “opens” in to the sump. Sealed piping will mask leaks because leaked fuel can not flow back to the plastic sump to be detected.

Dispensers

128. What should I look for when inspecting my dispensers? (See photos 2 & 3.)

Look for the following:

- Fuel leaks
 - Focus on pipe unions and fuel filters.
 - It helps to activate the pump when looking for leaks. Some leaks slow or stop when the pump is not running.
- If you have contained sumps, check that the rubber boots at the penetration points of the contained sumps are not torn or damaged.
- In uncontained sumps, make sure that metal connections or flex connectors on fiberglass pipes are not in contact with soil.
- Ensure that shear valves are installed and properly anchored. Anchoring bolts can loosen over time. Brackets can rust.
- Ensure that old fuel filters are disposed of properly and are not left under the dispenser.
- When changing fuel filters, use sorbent pads or a container to catch the fuel that

spills out of the filter. Make sure that fuel is not spilled to the soil. Activate the pump and inspect the new filter to ensure that it does not leak.

Spill buckets

129. What should I look for when inspecting my spill buckets? (See photo 10.)

Look for the following:

- Ensure that liquid and debris have not accumulated in the spill bucket.
- Ensure that all gaskets, covers, and latches are in place and function properly.
- Check that there are no cracks in plastic spill buckets and that metal spill buckets are not rusting.
- Make sure that the drop tube is in place and that it is not obstructed by gauge sticks or other foreign objects.

If you find a crack or hole in your spill bucket or notice a drop tube is not in place, contact your tank service provider to make necessary repairs.

Additional information on monthly visual inspections

130. Where is a leak most likely to be found when conducting monthly visual inspections?

Although you should examine all tank system components, leaks are most frequently found by MPCA inspectors in the following locations:

- Fuel filters --filters can leak because they were installed either too loosely or too tightly. Use caution, avoid spills when changing filters, and ensure that the filter does not leak once the line is pressurized. Filters can also leak in extremely cold weather. (See photo 3)

Monthly inspections

- Other components in the product dispensers. For example, gaskets on meters degrade over time. (See photos 2 & 3)
- Piping unions -- piping unions can begin to weep or drip with age. Piping unions are located at dispensers and submersible pump sumps. (See photo 3)
- The 1/4 inch copper line coming out of the line leak detector on the submersible pump head --lines can loosen or break due to vibration of the pump motor or snowplow damage. (See photo 9)

131. Are there exceptions to the monthly submersible sump inspection requirement?

Yes. If you have contained sumps and a sump sensor that either continuously alerts the tank operator to the presence of liquid or restricts power to the pump, you need not inspect submersible sumps on a monthly basis, **as long as** you inspect them at least once a year. However, the MPCA recommends inspecting submersible sumps more often, in case the sensor malfunctions. Sump sensors must be tested for proper functioning at least once a year, and a record of the test retained for at least 10 years. You are still required to inspect dispensers and spill buckets once a month.

Ensuring tanks are not overfilled

Overfill protection is required on most tanks to ensure that tanks are not filled beyond their intended capacity. Overfills can damage the tank system and can lead to costly spills. This section answers common questions about overfill protection.

132. What types of overfill protection are there?

There are three types of overfill prevention equipment. Regulated tanks must have at least one of the three:

- Automatic shutoff (flapper) valve -- this device is installed in the fill pipe and can be identified by looking down the fill pipe. If you have an automatic shutoff valve installed, you can see the fill pipe partially blocked by the valve, which should be set at the 95 percent level of the tank. (See photo 12.)
- Audible overfill alarm -- an alarm must activate when the tank is 90 percent full. The alarm **must** be installed outside where the delivery person can hear it and shut down the delivery. An automatic tank gauge that alarms indoors is not sufficient. (See photo 11.)
- Ball float valve -- this is installed where the vent pipe connects to the tank and extends down into the tank. Since the vent pipe/tank connection is usually buried, it is difficult to determine if a ball float valve is installed. A ball float valve works by plugging the vent line when the tank is 90 percent full.

Contact your tank service provider if you are not sure of your overfill prevention equipment.

133. Do I need to maintain my overfill protection?

Yes. Occasionally check to make sure the overfill device is working properly. For example, automatic shutoff valves are sometimes obstructed by broken gauge sticks. Overfill alarms can be disabled by bird nests. Occasionally check to ensure that automatic tank gauge probe caps are not damaged or loose. Loose caps can cause catastrophic failure of the ball float valve and lead to tank overfills.

134. My tanks are mounded above ground level, so fuel is pumped under pressure into my tank from the delivery truck. What overfill prevention device will work best for my tanks?

An audible overfill alarm is the only overfill prevention option for a mounded tank system. For pressurized fills, an automatic shutoff valve will not work correctly, and use of a ball float valve will result in excessive pressure in the tank during filling, which could damage or rupture the tank.

135. I have a small waste oil tank that I fill only a few gallons at a time. Do I need overfill protection on this tank?

No. Tanks filled less than 25 gallons at a time are exempt from overfill protection requirements.

Capturing vapors from tank systems

In certain situations, equipment must be installed to recover vapors during the filling of tanks, as described below.

136. What is the purpose of Stage I vapor recovery? (See photos 12, 13, & 14.)

Stage I vapor recovery captures up to 95 percent of petroleum vapors released from a tank containing gasoline or E-85 during fuel delivery. This helps keep these vapors out of the air we breathe. Vapor recovery is accomplished through installation of special equipment on the tank system.

137. Is the MPCA the only agency that requires vapor recovery?

No. The federal Environmental Protection Agency (EPA) also requires vapor recovery. The EPA will likely increase vapor recovery requirements in the future, which may result in sites not currently required to have vapor recovery to install it. The EPA's Web site at www.epa.gov has information about EPA vapor recovery requirements.

138. What tanks are required to have Stage I vapor recovery?

Stage I vapor recovery is required for tanks containing gasoline or E-85 at retail locations in Minnesota's seven-county Metro area (Anoka, Carver, Dakota, Hennepin, Ramsey, Scott and Washington counties).

Taking a tank out of service

Certain requirements must be met if you quit using a tank, even if you only quit using it temporarily. This section describes the requirements.

139. What if I decide to quit using a tank?

Within 30 days after taking a tank out of service, the MPCA must be notified using the notification form found in the Appendix. After 90 days, you must ensure the tank is empty (no more than one inch of material) and secure fill points and dispensers.

140. Can the tank stay in the ground even if it is not used?

Yes, but only for a limited period of time. After one year, inactive tanks must be permanently closed (removed or filled in place). A temporary extension can be applied for and may be granted by the MPCA depending on the specific site and whether or not the site is in compliance with applicable requirements. To apply for an extension, complete the MPCA's "Application for Extension of Temporary Closure" form.

141. Where do I get an "Application for Extension of Temporary Closure" form?

The application can be found on the MPCA's Web site or by contacting the MPCA at 800-657-3864.

142. Can I re-open a site if it has been closed for more than a year?

Possibly. If an extension to the temporary closure period was granted by the MPCA, you must request and receive written permission from the MPCA to bring the tank back into service. If an extension was not applied for, you must first apply for an extension to the

temporary closure period. The MPCA will grant or deny the extension based on the specific site and whether or not the site is in compliance with applicable requirements. If the MPCA does not grant an extension and does not give written permission to open the tank, the tank must be permanently closed by either removing it from the ground or filling it in place with Fire Marshal approval.

Permanently taking a tank out of service

Certain requirements must be met if you quit using a tank permanently, as described below.

143. I want to permanently close the tanks at my site. What are my options?

Regulated tanks can be permanently closed either by removing the tanks from the ground or by filling them in place with an inert solid with Fire Marshal approval. Piping and vent lines must be permanently closed as well.

Permanent closures can only be conducted by MPCA-certified contractors. The MPCA must be notified 10 days in advance of a permanent closure. Soil samples must be taken from the tank basin by a qualified technician and the results assessed for contamination by a qualified lab.

Any contamination found during the removal or found in the soil samples must be reported immediately to the Minnesota Duty Officer at 800-422-0798. The tank owner is responsible for this report, but in many cases the company you hire will make the report for you. The MPCA will notify you if corrective action to address the contamination is necessary.

144. Will the MPCA require permanent closure of the inactive tanks at my site?

Yes, if the tanks have been closed for more than one year and the MPCA did not issue an extension, the tanks must be permanently closed. If the MPCA did issue an extension, inactive tanks must be permanently closed after five years.

Glossary of terms

Anode

a bar or bag of metal, usually zinc or magnesium, attached to underground storage tanks and metal piping to protect them from corrosion. If installed correctly, the anode will corrode instead of the tank or piping.

Audible overflow alarm

a device connected to a probe inside an underground storage tank. A float on the probe detects product level inside the tank and triggers an audible alarm outdoors, alerting a delivery person that the tank is 90 percent full.

Automatic shutoff

a device installed in the drop tube of an underground storage tank. It is usually set at 95 percent of tank capacity. When product reaches that level, a float restricts delivery of additional product. It is also called a “flapper valve.”

Automatic tank gauge

also called an “ATG,” this equipment consists of a probe in each tank or tank compartment, and an electronic monitor which does leak testing on each tank. Automatic tank gauges record product inventory, product temperature, water levels, ullage (amount of empty space in the tank) and delivery gallons, in addition to performing regular tank leak tests. Some ATGs also conduct line leak tests if connected to electronic line leak detectors.

Ball float valve

a device installed at the connection of the vent pipe to the tank. It extends into the tank and should be set at 90 percent of tank capacity. Ball float valves use a ball inside a wire cage that floats up with rising product level, blocking the vent line. When this occurs, the delivery person is alerted by a “jump” in the delivery hose to shut down the delivery.

Cathodic protection

a means of protecting metal tanks and piping from corrosion. It can be provided by attaching sacrificial anodes, usually zinc or magnesium, directly to the tank or piping, or by burying the anodes and running an electric current from a rectifier through the soils around the tank systems. The latter method is called “impressed current.”

Cathodic protection tester

a person who has demonstrated an understanding of the principles and measurements of all common types of cathodic protection systems as applied to buried or submerged metal piping and tank systems. The individual has passed a cathodic protection test given by the National Association of Corrosion Engineers or the Steel Tank Institute. Such persons must also have education and experience in soil resistivity, stray current, structure-to-soil potential, and component electrical isolation measurements of buried metal piping and tank systems.

Check valve

a valve installed in the pipe of suction pump dispensing systems, designed to hold product in the line to maintain prime. If installed only at the dispenser, any leaks in the piping between the tank and dispenser will cause the product in the line to drain back into the tank, if the line is sloped back to the tank.

Contained sump or containment sump

a sump with secondary containment around a submersible pump or under a dispenser which is designed to contain leaks and drips from equipment. Contained sumps around the submersible pumps generally have another plastic cover that must be removed to inspect the sump.

Conversion chart

a chart that shows measurements, usually in 1/8-inch increments, and the corresponding volume in gallons. All new tanks should come with a calibration chart. If you have an older tank without one, contact your tank contractor or manufacturer of the tank. They will need to know diameter and length of the tank.

Copper/copper sulfate reference cell

a device used by cathodic protection testers to check the level of cathodic protection on a tank or pipe. There are both portable

Glossary of terms

reference cells and permanently-installed cells. These are used with volt meters to determine whether the tanks and pipe meet the required -0.85 volts (850 millivolts) level of cathodic protection.

Corrosion expert

a person who, by reason of thorough knowledge of the physical sciences and the principles of engineering and mathematics acquired by a professional education and related practical experience, is qualified to engage in the practice of corrosion control on buried metal piping systems and metal tanks. Corrosion experts must be accredited or certified by the National Association of Corrosion Engineers (NACE), or be a registered professional engineer who has certification or licensing that includes the above requirements. Not all cathodic protection testers are corrosion experts.

Corrosion protection

a method of protecting metal tanks and piping from corrosion. It can be provided by the application of coatings, jackets, and/or the installation of cathodic protection using sacrificial anodes or impressed current.

Double-walled

tanks or piping which have a secondary shell or wall that keeps the primary product wall from coming into contact with the soil and provides protection in the event of a leak past the primary wall of the tank or pipe. There is usually a space, called an "interstitial" space, between the walls that can be monitored for the presence of liquid.

Electronic line leak detector

see "line leak detector"

Environmental Protection Agency

also known as the EPA, this is the Federal agency responsible for oversight of the environment. The regional office that covers Minnesota is located in Chicago, Illinois.

Flapper valve

also known as an automatic shutoff, this device is installed in the fill pipe drop tube of an underground storage tank. It is usually set at 95

percent of tank capacity. When product reaches that level, a float restricts additional product from being delivered to the tank.

Hazardous material

a substance as defined in Minnesota Rule Chapter 7150.0030. The list includes but is not limited to antifreeze, xylene, and many solvents. As of December 22, 1998, hazardous material tank systems must have secondary containment.

Heating oil tank

an underground storage tank used to store heating oil for consumptive use on the premises where stored. A tank storing heating oil for bulk storage and re-sale, for example, is not considered a heating oil tank.

Impressed current

a method of applying cathodic protection to tanks and piping by burying zinc or magnesium anodes and running an electric current from a rectifier through the anodes and into the soils around the tank systems.

Internal lining

an impermeable coating applied and bonded to the entire inside surface of a tank. Some tanks are internally lined to prevent corrosion on the inside of the tank and to plug corrosion pits that developed from the exterior.

Interstitial space

the space in between a primary and secondary wall of a double-wall pipe or tank. This space may be monitored to detect leaks from the pipe or tank.

Jacketed tank

a tank with a non-metallic exterior coating. Examples of jacketed tanks include ACT-100®, Elutron®, and Glasteel™ tanks. Many jacketed tanks are double-walled and are designed to contain and detect a leak. Regulated tanks installed after December 22, 2007 must be double-walled.

Leak test

a check performed to determine if a leak is occurring. Leak test methods must be conducted according to MPCA rules and must be third-party certified.

Glossary of terms

Line leak detector

mechanical or electronic devices installed on pressurized piping lines which detect and alert the operator to catastrophic leaks of three gallons per hour (gph). Mechanical line leak detectors are installed at the submersible pump head and usually work by restricting the flow of product. Electronic line leak detectors work by detecting pressure decreases that may indicate leaks and shutting the system down or alerting the operator. Some electronic units are capable of performing 0.1 gph line tightness tests as well.

Line tightness test

an annual 0.1 gallon per hour (gph) test conducted on pressurized piping to ensure it is not leaking.

Mechanical line leak detector

see "line leak detector"

Minnesota Duty Officer

a state office within the Minnesota Department of Public Safety that receives calls reporting spills and leaks of various products, including petroleum. Tank owners or operators who suspect a tank or piping is leaking must report this to the Duty Officer immediately. They will be asked questions regarding the spill or leak. The information is then forwarded to the MPCA. The 24-hour telephone number for the Duty Officer is 800-422-0798, or 651-649-5451.

MPCA-certified contractor

companies who are certified by the MPCA to install, repair, or permanently close underground storage tanks. A contractor is certified by employing a certified supervisor, completing an application and showing proof of proper insurance coverage. Both contractor and supervisor must be able to show proof of certification to owners/operators of UST systems prior to performing work on those systems. The MPCA maintains a list of all currently certified contractors in Minnesota. Not all certified contractors are certified to do corrosion testing, tightness testing or other types of tank work.

Overage

a term used in daily inventory control and statistical inventory reconciliation referring to the number of gallons left after subtracting book inventory (start gallons + delivery amounts – gallons pumped) from actual stick inventory. If the actual stick inventory is larger than the book inventory, then there is an overage for the day. At the end of the month, all daily overages and shortages are added together to get a monthly overage/shortage.

Overfill prevention or overfill protection

equipment that acts to prevent overfills at the fill pipes of underground storage tank systems. This equipment includes ball float valves, automatic shutoffs, and audible overfill alarms.

Pressurized piping

a piping system supplied by a submersible pump, which delivers product under pressure. Since the product in this piping system is dispensed from the tank under pressure, it poses additional environmental risks and thus has additional leak detection requirements, including line leak detectors to prevent sudden, large losses of three gallons per hour (gph) or more and, in most cases, they require annual line tightness tests to detect smaller leaks.

PP4 Test Station

equipment installed with sti-P3® tanks to provide a port for cathodic protection testing. PP4 test stations are attached to lead wires from each tank and/or pipe run, and from a copper/copper sulfate reference cell. The contact points that correspond to each of these wires are checked using a volt meter.

Rectifier

a device installed as part of an impressed current system that provides cathodic protection for tanks and piping, a rectifier transforms AC current to DC current, which is then routed through the anode bed around the tank systems. Voltage and amperage meters on the rectifier must be checked and recorded at least every 60 days, and the cathodic protection tested annually.

Glossary of terms

Repair

the correction or restoration to operating condition of an underground storage tank or appurtenance. "Piping repair" includes installation of a single run of up to 10 feet of new piping to replace existing piping. Piping repair involving installation of a single run of more than 10 feet of new piping to replace existing piping constitutes replacement. "Dispenser repair" includes installation of a new dispenser to replace an existing dispenser, as long as work is performed entirely on or above any shear valves and check valves. If the work is performed beneath any shear valves or check valves or on any flexible connectors or unburied risers, this is called "replacement."

Replace or replacement

the installation of a new underground storage tank or appurtenance in substantially the same location as another tank or appurtenance in lieu of that tank or appurtenance, not including installation of new piping in connection with certain repairs as described in the definition of "repair."

Safe or European suction

a piping system with a suction pump that has a check valve installed at the dispenser only and the piping run slopes toward the tank. Additional line tightness tests are not required for safe suction systems.

Secondary containment

a term which refers to double-walled tanks and piping. This term is also used to describe a liquid tight container installed on top of an underground storage tank, or under a dispenser, designed to house various storage system components. Secondary containment serves a variety of functions, including:

- Containing leaks from submersible pumps and piping components within the sump,
- Collecting and containing leakage from double-walled piping that enters the sump,
- Containing spills that may occur during maintenance activities associated with components within the sump,

- Keeping ground water away from the components within the sump in areas of high water table,
- Isolating components from the corrosive effects of subsurface moisture and soil.

Shortage

refers to the number of gallons left after subtracting book inventory start gallons and delivery amounts (gallons pumped) actual stick inventory. If actual stick inventory is less than book inventory, there is a shortage for the day. At the end of the month, all daily overages and shortages are added together to get a monthly overage/shortage.

Spill bucket

installed at the fill pipe to contain spills that occur during delivery of product to a tank. This equipment usually ranges from 5-25 gallons in size and must be able to contain the contents of the delivery hose. Regular maintenance of spill bucket is required to prevent water, ice, salt and debris from entering the tank or product overflowing onto surrounding pavement. Spill buckets are sometimes referred to as "spill catchment basins."

Statistical Inventory Reconciliation (SIR)

a monthly leak-detection method. It involves performing daily inventory control and then submitting these records to an SIR vendor each month to be analyzed for potential leaks. The vendor performs that analysis and sends the results back to the owner/operator. These results indicate whether the tank system passes or fails for that month. SIR provides leak detection for both tank and piping. However, SIR cannot test the function of the line leak detectors. When using SIR, you must still have your line leak detectors tested at least once a year.

Statistical Inventory Reconciliation (SIR) vendor

companies that provide SIR leak detection services.

Steel Tank Institute (STI)

an industry organization that provides services to and for steel tank manufacturers. STI provides the standards that most underground steel tanks must meet. These tanks are commonly called sti-P3® tanks.

Glossary of terms

sti-P3® tank

underground tanks manufactured to standards developed by the Steel Tank Institute (STI). Sti-P3® tanks are coated and have anodes attached to prevent exterior corrosion from occurring. In addition, the steel tank is isolated from the metal piping by plastic bushings in the bungs to help ensure adequate cathodic protection.

Submersible pump sump

the area where the submersible pump on an underground storage tank is found. Submersible sumps are generally found under the largest square or round cover at ground level. The submersible pump extends down to the tank and pushes fuel to the dispensers.

Suction piping

a piping system supplied by a suction pump installed at the dispenser. Since the product in the piping for this system is pulled from the tank and is not under pressure, leak detection requirements are less stringent than for a pressurized system. If the check valve on this system is located at the dispenser only (safe or European suction), then no leak detection is required. If there is a check valve located at the tank or at the tank and dispenser, a line tightness test must be conducted at least every three years.

Sump sensor

an electronic device installed in a contained sump to provide a means of monitoring for leaks. Sump sensors are designed to detect liquids and either shut down the flow of product or trigger an alarm. Sump sensors must be tested annually for proper operation.

Tank service provider

a person who provides service and repair work to underground storage tank systems, such as dispenser hose or filter replacement, who is not necessarily an MPCA-certified contractor or supervisor. Only MPCA-certified contractors can conduct installation, repair, or permanent closures of regulated underground storage tank system. Tank service providers can conduct some leak and corrosion tests if they are adequately trained and qualified to do so.

Tank tightness test

a test performed on tanks to determine if a leak is occurring. There are different test methods, but all must be able to detect at least a 0.1 gallon per hour (gph) leak rate. Some methods can detect leak rates smaller than 0.1 gph. Tank tightness tests must be conducted in addition to daily inventory control to provide complete leak detection.

Total gallons pumped

the number of gallons pumped from each tank in a particular month. This number is used in a formula to determine if a tank is leaking and is part of using daily inventory control or SIR as leak detection.

Underground storage tank (UST)

a tank system with 10 percent or more of its volume (tank and piping) buried in earthen material.

Volt meter

an instrument used to perform cathodic protection tests on metal tanks and piping. The volt meter is used with a copper/copper sulfate reference cell to determine if there is adequate cathodic protection to prevent corrosion of the tank or piping.

Watchdog® Program

a program offered by the Steel Tank Institute (STI) for tanks installed between October 1, 1988 and February 1, 1993. It provides free cathodic protection testing for sti-P3® tanks. The program does not include testing metal piping installed on those tanks.

Water finding paste

a substance that can be applied to gauge sticks to help determine the level of water in a tank. The paste turns color when it comes in contact with water. This allows the operator to more accurately measure the levels of these liquids. Ethanol blended fuels require special water finding paste.

Contact Information

If you have any questions about your tank system, you can call the closest MPCA Regional Office and ask to talk to someone in the Tanks Program or visit the MPCA Tanks Program Webpage.

MPCA Regional Offices

Brainerd

218-828-2492

Detroit Lakes

218-847-1519

Duluth

218-723-4660

Mankato

507-389-5977

Marshall

507-537-7146

Rochester

507-285-7343

St. Paul

651-296-6300

Toll Free: 800-657-3864

Willmar

320-214-3786

Web Information

You can search for MPCA's Tanks Homepage on MPCA's website by entering "Tank Compliance and Assistance Program" in the search box at www.pca.state.mn.us. Click go, then click on the link entitled "Tank Compliance and Assistance Program". The Tanks Compliance and Assistance Program Page includes more detailed information about the topics covered in this manual and is the best online MPCA resource for Minnesota's Storage Tank Operators. Topics covered include:

- Searchable database to look up information about your tank system.

- Links for the e-mail reminder service and information on how to report a spill or release

In the left margin of the Tank Compliance and Assistance Page is a link for Underground Storage Tank (UST) Systems. This includes:

- An updated list of MPCA-certified contractors

The Storage Tank Publications link on the left side of the Tanks Compliance and Assistance Web page brings you to a page with all the fact sheets for the tanks program. Some of the fact sheets listed include:

- Contractor Certification fact sheets
- Installation and Closure fact sheets
- Design and Operation fact sheets
- General Requirements fact sheets

Note: Use of this specific form is not required; you can develop your own form to document monthly inspections.

Example form: Acceptable

Date	Tank Sump	Dispenser	Spill Bucket	Comments	Initials
1/5/09	OK	OK	Water	Removed water from unloaded spill bucket	JM
2/8/09	OK	Fuel drip	OK	Fuel filter loose in dis. 1-2. Tightened and called duty officer	JM
3/2/09	OK	OK	Debris	Removed debris from premium spill bucket	JM

Unacceptable:

Date	Tank Sump	Dispenser	Spill Bucket	Comments	Initials
1/2/09	OK	OK	OK		
2/7/09	--	--	--		
3/5/09	--	--	--		

Things to look for:

- Water, debris, and/or product in the sumps and spill buckets.
- Fuel leaks and maintenance issues such as cracked or damaged system components.



**Minnesota Pollution
Control Agency**

520 Lafayette Road North
St. Paul, MN 55155-4194

Underground Storage Tanks

Notification of Installation or Change in Status

Installation, New Information, Closure
Tanks, Piping, Dispensers

Notify the Minnesota Pollution Control Agency (MPCA) **within 30 days** after bringing tank system into use or making a change in status or information. Keep a copy for your records. **Unsigned and incomplete forms will be returned. Guidance on page 4.**

Questions: Call 651-757-2429 or 1-800-657-3864 during normal business hours.

Use this form for:

- Installation or replacement of tank, piping, or dispensers
- Change in information, such as site name, address, owner, or tank contents
- Change in tank status

MPCA Use Only	
Site #:	
County:	
Date rec'd:	

Ways to notify:

- Fax: 651-297-2343 or 651-297-8683, Attn: Joann Henry
- Mail: Attn: Joann Henry at above address

Site Information

Site name: _____ Site # (if known): _____

Address: _____

City: _____ State: **MN** Zip code: _____ County: _____

Contact name: _____ Phone: _____

Is this site located on Native American lands? ☐ Yes ☐ No Is this the initial notification for this site? ☐ Yes ☐ No

Type of facility: ☐ Service station ☐ Government ☐ Education ☐ Industry/Factory ☐ Auto dealer ☐ Utility

☐ Bulk plant ☐ Resort ☐ Office building ☐ Other (specify): _____

Owner Information

Name: _____

Address: _____

City: _____ State: _____ Zip code: _____

Contact name: _____ Phone: _____

A. Action (Enter date [MM/DD/YYYY] of action under tank number)

1. Tank number <i>See Guidance – page 4</i>				
2. Install new tank				
3. Install new piping				
4. Install new tank and piping				
5. Install new dispenser(s)				
6. Change site information				
7. Change owner information				
8. Change tank information				
9. Change piping, pump, or dispenser information				
10. Current tank status <i>See Guidance – page 4</i>	Status: Date:	Status: Date:	Status: Date:	Status: Date:
11. If tank has been removed, list tank sludge disposal company and Hazardous Waste Generator ID#				

B. Tank Information

1. Tank number <i>See Guidance – page 4</i>				
2. Capacity	Gallons:	Gallons:	Gallons:	Gallons:
3. Stored substance <i>See Guidance – page 4</i>	Type: Specify:	Type: Specify:	Type: Specify:	Type: Specify:
4. Compartmental tank only <i>See Guidance – page 4</i>				
Compartment 1	Gallons: Type: Specify:	Gallons: Type: Specify:	Gallons: Type: Specify:	Gallons: Type: Specify:
Compartment 2	Gallons: Type: Specify:	Gallons: Type: Specify:	Gallons: Type: Specify:	Gallons: Type: Specify:
Compartment 3	Gallons: Type: Specify:	Gallons: Type: Specify:	Gallons: Type: Specify:	Gallons: Type: Specify:
5. Special use (check either or both if applicable)	<input type="checkbox"/> Heating <input type="checkbox"/> Generator fuel	<input type="checkbox"/> Heating <input type="checkbox"/> Generator fuel	<input type="checkbox"/> Heating <input type="checkbox"/> Generator fuel	<input type="checkbox"/> Heating <input type="checkbox"/> Generator fuel
6. Tank type <i>See Guidance – page 4</i>	Type: Specify:	Type: Specify:	Type: Specify:	Type: Specify:
7. Tank corrosion protection <i>See Guidance – page 4</i>				
8. Fill pipe spill containment (spill bucket)	<input type="checkbox"/> Yes <input type="checkbox"/> No	<input type="checkbox"/> Yes <input type="checkbox"/> No	<input type="checkbox"/> Yes <input type="checkbox"/> No	<input type="checkbox"/> Yes <input type="checkbox"/> No
9. Overfill prevention type <i>See Guidance – page 4</i>				
10. Stage 1 vapor recovery for gasoline tanks	<input type="checkbox"/> Yes <input type="checkbox"/> No	<input type="checkbox"/> Yes <input type="checkbox"/> No	<input type="checkbox"/> Yes <input type="checkbox"/> No	<input type="checkbox"/> Yes <input type="checkbox"/> No
11. Primary method of tank release detection <i>See Guidance – page 4</i>				

C. Piping, Pump, and Dispenser Information:

1. Tank number <i>See Guidance – page 4</i>				
2. Piping type <i>See Guidance – page 4</i>	Type: Specify:	Type: Specify:	Type: Specify:	Type: Specify:
3. Piping corrosion protection <i>See Guidance – page 4</i>				
4. Primary method of piping release detection <i>See Guidance – page 4</i>				
5. Dispensing type <i>See Guidance – page 4</i>				
6. Submersible pump containment <i>See Guidance – page 4</i>	Type: Specify:	Type: Specify:	Type: Specify:	Type: Specify:
7. How many dispensers serve this tank?				
8. Dispenser containment <i>See Guidance – page 4</i>	Type: Specify:	Type: Specify:	Type: Specify:	Type: Specify:

Comments:

Certification:

Tank Owner

I certify that the information submitted is accurate and complete to the best of my knowledge; that installation of tanks, piping, and dispensers is according to Minn. R. ch. 7150.0100 and 7150.0205, including secondary containment of new and replacement tanks, piping, and dispensers; and that all tanks and piping have release detection according to Minn. R. ch. 7150.0300 to 7150.0340. (For owners purchasing tanks after March 1, 2008, only) I certify that all tank operators, including lessees, have read this chapter and have sufficient knowledge in the operation and maintenance of underground storage tank systems.

Name of owner or owner's authorized representative (print): _____

Title: _____ Date: _____

Signature: _____

Tank Contractor

I certify that all work was performed as specified by the manufacturer's instructions; that all work was performed according to the applicable codes of practice in Minn. R. ch. 7150.0205; that all work was performed according to applicable state and federal regulations, including this chapter; and that I am in compliance with contractor certification requirements imposed by Minn. R. ch. 7105.

Licensed tank supervisor on site during tank work (print): _____

Title: _____ Date: _____

Signature: _____ MPCA Supervisor #: _____

Licensed Tank contractor or authorized representative (print): _____

Title: _____ Date: _____

Signature: _____ MPCA Contractor #: _____

Guidance for Underground Storage Tanks Notification Form

A. 1. Tank number:

Enter tank number. If filling out form electronically, this number will automatically be added to B-1 and C-1 (Select "print preview" or "print" to activate automatic feature).

A. 10. Current tank status:

Choose from drop-down menu or list below.
If status has changed, enter date.

Active
Abandoned
Closed in Place
Removed
Temporarily Closed

B. 1. Tank number:

Enter tank number. If filling out form electronically, this number will automatically be added to B-1 after you have typed it into A-1 (Select "print preview" or "print" to activate automatic feature).

B. 3. Stored substance:

Choose from drop-down menu or list below.
If asked to specify in Box 1, describe substance in Box 2. If this tank is compartmental, leave blank.

Gasoline, Aviation
Gasoline, E10
Gasoline, E20
Gasoline, Non-oxygenated
Diesel, B2/5
Diesel, Petroleum
Biodiesel, B100
Fuel Oil #2 (light)
Fuel Oil #6 (heavy)
Kerosene
Mineral Spirits
Jet Fuel
Mineral Oil
Lubricating Oil
Used Oil
Petroleum, Other (specify)
Ethanol, E100
Ethanol, E95 (denatured)
Ethanol, E85
Chemical, Antifreeze
Chemical, Acidic (specify)
Chemical, Caustic (specify)
Chemical, Other (specify)
Other Substance (specify)

B. 4. Compartmental tank only:

Identify capacity and substance for each compartment. Choose substance from drop-down menu or use list in B.3 above. If asked to specify in Box 2, describe substance in Box 3.

B. 6. Tank type:

Choose from drop-down menu or list below.
If "Other" is chosen, describe tank type in Box 2.

Steel, Single Walled
Steel, Double Walled
STIP3, Single Walled
STIP3, Double Walled
Jacketed Steel, Single Walled
Jacketed Steel with Interstitial Monitoring, Single Walled
Jacketed Steel, Double Walled
Fiberglass, Single Walled
Fiberglass, Double Walled
Other (specify)

B. 7. Tank corrosion protection:

Choose from drop-down menu or list below.

Sacrificial Anode
Impressed Current
Internal Lining
None
Not needed (use if Tank Type is any Jacketed Steel type or any Fiberglass type)

B. 9. Overfill prevention type:

Choose from drop-down menu or list below.

Fill pipe flapper valve
Vent pipe ball float
Audible high level alarm
None

B. 11. Primary method of tank release detection:

Choose from drop-down menu or list below.

Automatic tank gauging (ATG)
Inventory control
Statistical inventory control (SIR)
Manual tank gauging
Interstitial monitoring

C. 1. Tank number:

Enter tank number. If filling out form electronically, this number will automatically be added to C-1 after you have typed it into A-1 (Select "print preview" or "print" to activate automatic feature).

C. 2. Piping type:

Choose from drop-down menu or list below.
If "Other" is chosen, describe piping type in Box 2.

Steel, Single Walled (includes coated, wrapped, and galvanized)
Steel, Double Walled
Jacketed Steel, Single Walled
Jacketed Steel with Interstitial Monitoring, Single Walled
Jacketed Steel, Double Walled
Fiberglass, Single Walled
Fiberglass, Double Walled
Copper
Flexible Nonmetallic, Single Walled
Flexible Nonmetallic, Double Walled
Other (specify)
None (use if tank has no piping)

C. 3. Piping corrosion protection:

Choose from drop-down menu or list below.

Sacrificial Anode

Impressed Current

None

Not needed (*use if Piping Type is any Jacketed
Steel type, any Fiberglass type, or any
Flexible Nonmetallic type*)

C. 4. Primary method of piping release detection:

Choose from drop-down menu or list below.

Automatic line-leak detector

3-year tightness testing (*use if other suction dispensing*)

Interstitial monitoring

Not needed (*use if safe suction dispensing*)

C. 5. Type of dispensing:

Choose from drop-down menu or list below.

Submersible pump

Safe suction pump

Other suction pump

Gravity

C. 6. Submersible pump containment:

Choose from drop-down menu or list below.

*If "Other" is chosen, describe containment type
in Box 2.*

Synthetic

Other (specify)

None

C. 8. Dispenser containment:

Choose from drop-down menu or list below.

*If "Other" is chosen, describe containment type
in Box 2.*

Synthetic

Other (specify)

None





**Minnesota Pollution
Control Agency**

520 Lafayette Road North
St. Paul, MN 55155-4194

Manual Tank Gauging Form

Underground Storage Tank Program

Doc Type: Monitoring Results

Facility Information

Facility name: _____ Month/Year: ____/____/____
Address: _____
City: _____ State: _____ Zip code: _____
Tank number: _____ Tank size: _____ Product: _____

Week 1 - Test Results

Test	Date (mm/dd/yy)	Time	Gauge stick readings (to nearest 1/8")			Gallons in tank (converted from stick readings)	Gallons at start of test - Gallons at end of test = Weekly net gain or loss
			1	2	Average		
Test start:							(+)(-) gals.
Test end:							Weekly test result is:
Test duration:		Total hours	(see bottom of form for minimum test time)				<input type="checkbox"/> Pass <input type="checkbox"/> Fail

Week 2 - Test Results

Test	Date (mm/dd/yy)	Time	Gauge stick readings (to nearest 1/8")			Gallons in tank (converted from stick readings)	Gallons at start of test - Gallons at end of test = Weekly net gain or loss
			1	2	Average		
Test start:							(+)(-) gals.
Test end:							Weekly test result is:
Test duration:		Total hours	(see bottom of form for minimum test time)				<input type="checkbox"/> Pass <input type="checkbox"/> Fail

Week 3 - Test Results

Test	Date (mm/dd/yy)	Time	Gauge stick readings (to nearest 1/8")			Gallons in tank (converted from stick readings)	Gallons at start of test - Gallons at end of test = Weekly net gain or loss
			1	2	Average		
Test start:							(+)(-) gals.
Test end:							Weekly test result is:
Test duration:		Total hours	(see bottom of form for minimum test time)				<input type="checkbox"/> Pass <input type="checkbox"/> Fail

Week 4 - Test Results

Test	Date (mm/dd/yy)	Time	Gauge stick readings (to nearest 1/8")			Gallons in tank (converted from stick readings)	Gallons at start of test - Gallons at end of test = Weekly net gain or loss
			1	2	Average		
Test start:							(+)(-) gals.
Test end:							Weekly test result is:
Test duration:		Total hours	(see bottom of form for minimum test time)				<input type="checkbox"/> Pass <input type="checkbox"/> Fail

Monthly Reconciliation

Test for the month	Total gain or loss of product
Week 1:	(+)(-) gals.
Week 2:	(+)(-) gals.
Week 3:	(+)(-) gals.
Week 4:	(+)(-) gals.
Monthly average:	(+)(-) gals.

(The monthly average is the sum of the weekly averages divided by four.)

The monthly test result indicates (check one):

☐ Pass
☐ Fail

Water check:

Date: _____
Inches: _____

Standards

Weekly and monthly standards			Duration
Tank capacity (gallons)	Weekly variance	Monthly variance	Hours required for test
Less than 550	10 gals.	5 gals.	36 hours
551 - 1000 (64" dia tank)	9 gals.	4 gals.	44 hours
551 - 1000 (48" dia tank)	12 gals.	6 gals.	58 hours
*1001 - 2000	26 gals.	13 gals.	36 hours

*Tanks between 1001 - 2000 gallons must be tightness tested every five years and must switch to a different leak test method (such as automatic tank gauge) after ten years of installation.

Instructions for Tanks installed after December 22, 2007

- a. *Must use interstitial monitoring as the primary form of leak detection.*

Instructions for Tanks installed on or before December 22, 2007

- a. *For tanks of 1,000 gallons capacity or smaller, Manual Tank Gauging may be used indefinitely as the only method of release detection.*
- b. *For tanks larger than 1,000 gallons capacity but smaller than 2,000 gallons, Manual Tank Gauging may be used **only** if combined with a tank tightness test every five years. Within ten years of the install date, a different method of leak detection must be used, such as an automatic tank gauge or statistical inventory reconciliation.*
- c. *Manual Tank Gauging may **not** be used for tanks larger than 2,000 gallons capacity.*

Conducted weekly, Manual Tank Gauging monitors the product level in a tank for a period of at least 36 hours during which nothing is added to or removed from the tank. See the chart on the reverse side of this page for minimum test period for each size of tank.

Take two (2) consecutive gauge readings to the nearest one-eighth (1/8) inch and record them under numbers 1 and 2 in the "Test Start" row. Enter the average of the two readings in the "Test Start" row under "Average." From the tank chart appropriate for this tank, determine the gallonage that corresponds to this gauge stick reading and place it in the "Test Start" row under "Gallons in Tank."

At the end of the test period, repeat these steps above but place the new numbers in the "Test End" row instead.

To take a proper gauge stick reading, carefully place the stick into the top of the tank through one of the tank openings until the end of the gauge stick makes contact with the tank bottom. Product finding paste is recommended so the test is accurate in determining the level of product in the tank. It is recommended the tank be checked monthly for water. Water finding paste is recommended, to determine the quantity of water present in the tank, if any. The presence of water may indicate a leaking tank.

Conversion charts are available from the tank manufacturer or your tank service provider. These charts may not express gallonage for fractions of an inch. If your stick reading includes a fraction, you may have to interpolate to obtain the correct gallonage that corresponds to your gauge stick reading.

Example:

The gauge stick reads 17 3/8", but your conversion chart only lists gallonage figures for 17" and 18", not for fractions between. How do you find the gallonage for 17 3/8"?

If, according to the conversion chart, 17" of product corresponds to 220 gallons, and 18" of product corresponds to 236 gallons, multiply the difference ($236 - 220 = 16$) by the extra fraction ($3/8$). In this case, $16 \times 3/8 = 6$ gallons. Add the 6 gallons to the lower gallonage number to obtain the gallonage for 17 3/8". In this case, add 6 gallons to 220 gallons and come up with 226 gallons. Therefore, a stick reading of 17 3/8" corresponds to 226 gallons of product in the tank.

At the end of the test period, take two more stick readings and average them. Convert the average reading into gallons and compare this gallonage to the gallonage obtained from the stick reading at the start of the test. If the end gallonage is greater than the start gallonage, record the difference as a "+" difference. If the end gallonage is smaller than the start gallonage, record the difference as a "-" difference. This difference should be within the weekly test standards for your tank (listed on the reverse of this form).

To interpret test results for a given month, add the four weekly variances together and divide by four. Compare this average of the four weekly variances with the monthly standard listed on the reverse of this form.

Note: If your tank fails to conform to the monthly standard, review all stick measurements to verify that there are no mistakes. Take extra precautions while performing leak detection measurements the next month. If the next month's result also fails by exceeding the allowed amount, you must immediately report this as a suspected leak to the Minnesota Duty Officer at 800-422-0798. Failing to do so may result in fines and increased cleanup costs.

Questions:

Contact the MPCA at 651-296-6300 or 800-657-3864.



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Statistical Inventory Reconciliation for Underground Storage Tank Systems

Tanks/Underground #3.26 • May 2008

Minnesota law requires Underground Storage Tank (UST) systems, including tanks and piping, to have leak detection.

If your USTs do not have leak detection, you can be cited for violations and fined. Leak detection violations can also keep you from getting reimbursement for cleanup costs. Without leak detection, you risk discovering a leak only after it becomes an environmental problem and a major financial burden.

Inspections conducted nationwide indicate that many who are doing leak detection are not performing leak detection in a way that is likely to find leaks or complies with state and federal requirements.

If you use Statistical Inventory Reconciliation (SIR) for leak detection, then this document may help you perform SIR properly.

When is SIR allowed?

The Minnesota Pollution Control Agency (MPCA) has conditionally approved SIR as an alternative method of leak detection for regulated UST systems installed prior to March 24, 2008. UST systems installed after this date are required to have secondary containment with interstitial monitoring.

An owner of a new tank may use inventory control (with a tightness test after five years) as the primary method of leak detection, but only for a period of ten years after installation. If you plan to substitute SIR for inventory control, you must begin data gathering and submittal a couple of

months prior to the ten year anniversary of installation, in order that a valid SIR analysis can be performed by the ten year anniversary.

How does SIR work?

Data on tank inventory, receipts, and withdrawals is recorded by the tank owner on a regular basis. Data is sent to the SIR vendor for statistical analysis to determine if the tank system is leaking.

Important elements of SIR for tank and piping leak detection include:

- Proper selection of SIR vendor.
- Proper collection and analysis of data.
- Proper recordkeeping.

Without these elements, you may fail to meet the leak detection requirements. Steps one through five on the following pages show you how to perform SIR correctly.

SIR methods have certain limitations regarding the size and configuration of the system. You should contact the SIR vendor to determine which system would fit your needs.

There are several important restrictions for SIR. They are listed here.

What are the SIR restrictions?

The tank owner must use an MPCA-approved SIR vendor, method, version and analysis. A list of approved SIR vendors is found at the end of this fact sheet.

Inventory data must be taken daily and must follow the SIR vendor's instructions and the MPCA Inventory Control fact sheet. Tank contents, deliveries, and sales must be calculated.

If a tank system has two consecutive months of inconclusive results, a tightness test must be performed.

SIR may not be used on manifolded tank systems.

Do you have the right equipment?

Gauge stick or other gauges

The gauge stick used to measure the depth of liquid in an underground storage tank must be marked or notched to the 1/8 of an inch (with zero at the bottom end). Check your stick to be sure that the end is not worn or cut off and that the stick is not warped. The stick should be made of non-sparking material such as wood. Wooden sticks should be varnished to minimize the creeping of fuel above the actual fuel level reading on the stick.

Instead of using a gauge stick, you may use a mechanical or electronic tank monitor. Whatever measuring device is used, it must be capable of measuring the entire volume of the tank to the nearest 1/8 of an inch of product. It is important to make sure that the correct gauge chart from the manufacturer is used when converting tank volumes.

Pastes for finding water or fuel

You must check for water in the bottom of the tank at least once each month by smearing a water-finding paste along the bottom of the gauge stick. The paste changes color when it comes in contact with water. Many operators improve their stick readings by smearing a fuel-finding paste on the stick. Fuel-finding paste changes color when it comes in contact with fuel.

Forms

The SIR vendor will have forms that are specific to the needs of their system. These forms will have to be completed according to the instructions of the SIR method. Forms that are not completed properly will result in inconclusive results. This may lead to unnecessary tank tightness testing.

Here are the steps to follow to determine if SIR is the appropriate leak detection option for you.

Step 1 – Selecting an SIR vendor

When selecting an SIR vendor, you should look at many factors like cost, training, system limitations, and customer service. Remember that the SIR vendor is providing a service that will keep you in compliance with leak detection regulations. This service should be a partnership. If either partner fails to meet its obligation, the tank owner will be the one penalized for insufficient leak detection records.

When selecting an SIR vendor, you should analyze the following:

- Is the SIR vendor approved by the MPCA? The companies approved by MPCA are listed at the end of this fact sheet.
- Does the SIR method cover my specific tank situation? You should check with the vendor to make sure you comply with the limitations. Remember, it is the tank owner that is responsible for leak detection, not the SIR vendor.
- Does the SIR vendor provide good training for method requirements? The SIR vendor should provide training on what data to collect and how to collect and record the data properly. You must understand system needs and what the system results mean.
- What is the cost of the SIR system? You should look at the total cost, not just the monthly cost. Customer service and training are important parts of an effective SIR system. If inconclusive results happen because of inadequate training, you will be responsible for expensive tank tightness tests.

Step 2 – Performing inventory control properly

Proper data gathering is the key for effective leak detection using SIR. The SIR vendor will provide you with training, instructions, and forms for this data-gathering task.

Refer to the fact sheet titled "Inventory Control for Underground Storage Tanks," for proper inventory control instructions. Inventory control is an important aspect of SIR.

Inventory control requires the following actions:

- Measure the tank contents every day. This data is usually put on a daily inventory worksheet.

Remember to use the proper tank chart for data conversions.

- (b) Record the amount pumped every day. This is done at the same time that the contents of the tank are measured.
- (c) Record fuel deliveries. Failing to record deliveries properly on the correct day is the largest source of error for SIR analysis. Make sure that proper training on data gathering is incorporated into your SIR program.
- (d) Measure water once a month. This step must also be documented.

Tank owners should train all personnel who will be involved in data gathering in the proper procedures.

Step 3 – Sending data to the SIR vendor

Data gathered during the month must be submitted to the SIR vendor by the tenth day of the next month. SIR vendors have special forms for information gathering and in some cases allow data gathered to be faxed or sent on a computer disk.

The SIR vendor will analyze the inventory data and send you the results within ten working days after receiving the data. Since you might not get the results back until late into the next month, it is critical that the inventory data is gathered correctly. If the first month has bad data gathering (e.g., improper sticking, deliveries written on wrong days) and you do not get those results back until the end of the second month, chances are that the data gathering techniques did not improve. This will lead to a second inconclusive result. Two inconclusive results require you to conduct a tank tightness test at additional cost.

Sending data to the SIR vendors includes:

- (a) Gathering data every day and filling out the required vendor forms. Data gathering is the most important task when using SIR as a leak detection method.
- (b) Sending the data by the tenth day of next month.
- (c) Receiving the results within ten working days from the vendor.

Step 4 – Analyzing results and record keeping

The SIR vendor will send the results of the monthly analysis within ten working days of receiving the data.

Each SIR vendor has a particular way of showing the results of the SIR analysis. Regardless of the form used for the results, you must know how to read the results so that you know if the tank system is tight or leaking.

Many vendors also provide suggestions for improving the quality of the data such as calibrating the equipment or making sure to record deliveries on the correct day. This information can be very useful for your operation if you know what to look for. Again, you should select a vendor because they provide good customer service not because they are inexpensive.

If your tank system shows a failure greater than or equal to 0.2 gallons per hour (gph), the system is considered to be leaking and you must report it as a suspected release and begin an investigation. During the next month, you should make sure that your inventory data gathering practices are perfect.

Generally, SIR is non-specific. SIR will not indicate the specific tank or piping that is leaking. Therefore, confirmation of the source of a release should always be completed before corrective action begins to avoid unnecessary work.

Analysis and record keeping should include the following steps:

- (a) Review the SIR results immediately after receiving them from the vendor.
- (b) If the results show that the tank system is tight, you need to file the results with your leak detection records.
- (c) If the results show a leak greater than 0.2 gph, you must report it to the Minnesota Duty Officer within 24 hours by calling 800-422-0798 or 651-649-5451. The telephones are answered 24 hours a day.
- (d) If the SIR results show a leak rate between 0.1 gph and 0.2 gph, you may continue SIR for an additional month. If the next month's result is also 0.1 gph or greater, it must be reported as a suspected release.
- (e) Keep the SIR results for at least ten years. These records are the only way to prove that you are performing leak detection properly. It can also help in the sale of the property by showing that no releases have taken place.

SIR Vendors Approved by MPCA

The MPCA has conditionally approved SIR as an alternative method of leak detection for UST systems. This list represents MPCA-approved SIR providers in Minnesota.

Company	Address	Telephone	SIR Version
Minnesota Petroleum Marketers Association	2345 Rice Street, Suite 173 St. Paul, MN 55113	651-484-7227	USTMAN SIR 95.2
Simmons Corporation	106 East Main Richardsen, TX 75081	800-848-8378	SIR 5.7
USTMAN Industries, Inc.	12265 West Bayaud Avenue, Suite 110 Lakewood, CO 80228	303-986-8011	USTMAN SIR 95.2
Warren Rogers Associates Inc.	747 Aquideck Middleton, RI 02842	401-846-4747	SIRA 5.2
Total SIR	PO Box 2040 Cornelius, NC 28031	704-892-9941	V 1.0

Need more information?

Visit the UST Program at <http://www.pca.state.mn.us/cleanupust.html>. The site has forms, fact sheets, and other information about USTs and UST requirements.

You can also call the MPCA at 651-296-6300 or 1-800-657-3864.

Eight ways to achieve good inventory measurements:

1. Measure each tank every operating day.
2. Measure just before each delivery.
3. Measure through the same drop tube each time.
4. Use gauge sticks that are:
 - Marked to the 1/8 of an inch.
 - Not cut off or worn off at the “0” end.
 - Varnished and not warped.
5. Use good stick practices:
 - Slowly lower the stick.
 - Gently touch the stick on the tank bottom.
 - Quickly pull stick out.
6. Wait an appropriate amount of time after delivery, then measure again. The tank should be given sufficient time after delivery to settle before measuring.
7. Read and record totalizer meters carefully, daily.
8. Check for water at least once a month using water-finding paste.





Class A, B and C Operator Requirements

Underground Storage Tanks Program

TanksUnderground #4.26 • March 2010

The Minnesota Pollution Control Agency (MPCA) has recently adopted new requirements for operators at underground storage tank facilities. Every facility must designate a Class A, Class B, and Class C operator, with the exception of unattended card-lock facilities which only need a Class A and Class B operator. Facilities which have tanks used solely for heating purposes are exempt from these requirements.

All designated operators must either be the owner, operator, or an employee of the owner or operator.

Class A Operator

This is a person who has general oversight of operations at the facility, and has a broad understanding of legal requirements related to owning and operating an underground storage tank (UST) system. This person is commonly viewed as the owner of a facility, but does not necessarily have to be the owner.

Class B Operator

This is a person who oversees the daily operations of the facility. They have an in-depth understanding of the tank system and how its components are properly operated and maintained. This person is commonly viewed as the manager or maintenance supervisor of a facility, but does not have to be.

Class C Operator

This is a person who controls the dispensing of fuel and is the first line of response in the case of a spill, alarm, or other emergency at the facility. This person would be trained in the proper procedures for responding to spills and alarms at the

facility. This person is commonly viewed as an attendant, but does not have to be.

Unattended Card-lock Facility

Unattended card-lock facilities are those where the operation of the tank, including dispensing of fuel, is done without the constant on-site presence of a Class A, Class B, or Class C operator. Examples include unattended service stations, some fleet fueling facilities, and facilities with tanks that serve emergency generators.

Operator Responsibilities

Class A Operator

In general, the Class A operator has the primary responsibility to operate and maintain the UST system. Their focus is on the broader aspects of regulatory requirements and standards. The Class A operator would ensure that the appropriate individuals are assigned and trained to properly operate and maintain the UST system, maintain appropriate records, and properly respond to emergencies such as spills or releases.

The Class A operator will be tested on their general knowledge, so that they can make informed decisions regarding compliance and ensure the operation and maintenance tasks are being properly completed. Test topic areas include: spill prevention, overfill prevention, release detection, corrosion protection, emergency response, secondary containment requirements, notification requirements, release and suspected release reporting, temporary and permanent closure requirements, and operator training requirements.

Class B Operator

The Class B operator is responsible for implementing the applicable requirements and standards at the facility. This individual typically monitors, maintains, and ensures: release detection method, record keeping, and reporting requirements are met; release prevention equipment, recordkeeping, and reporting requirements are met; and all equipment complies with performance standards.

The Class B operator must be present on-site at least once per month. Unattended card-lock facility operators must be on-site at least once per week. While on-site the operator must validate that:

- Release detection is being conducted properly.
- Monthly sump and basin monitoring has been conducted and appropriate measures taken.
- Required reporting is being performed.
- Spill, overflow, and corrosion protection systems are in place and operational.
- Cathodic protection testing has been performed.
- Unusual operating conditions or release detection system indications have been reported and investigated.
- Routine operation and maintenance tasks have been accomplished.

The Class B operator will only be tested on the tank system components and methods that are in place at the facility. Topic areas include: spill prevention, overflow prevention, release detection, corrosion protection, emergency response, reporting and record keeping requirements.

Class C Operator

The Class C operator is responsible for responding to spills, alarms, and other conditions that could indicate an emergency. The Class C operator would notify the Class B or A operator and appropriate emergency responders when necessary.

Class C operators may commonly be employees responsible for the control/monitoring of the dispensing or sale of product. At least one Class C operator must be present at all times during the operation of the tank system, with the exception of unattended facilities.

The Class C operator is not required to pass an exam, however he/she must be trained in the appropriate emergency response procedures.

Designating Operators

There are multiple ways to designate Class A and B operators:

- Designate separate people for Class A and Class B operator
- Designate the same person for Class A and Class B operator (also referred to as A/B operator)
- Designate multiple people for each operator class at one or multiple facilities
- Designate one person for multiple facilities

Training Requirements

The MPCA highly recommends that Class A and B operators attend training before taking the exam, however it is not required. Training is required in two circumstances: the operator failed the exam, or the facility is found to be out of compliance. Below are compliance problems that would require training:

- failure to properly operate and maintain cathodic protection systems
- failure to properly install spill and overflow prevention equipment
- failure to properly conduct release detection
- failure to properly place tank in temporary closure

The MPCA approves instructors able to offer training courses. The list of approved training providers and courses is available at <http://www.pca.state.mn.us/cleanup/ust.html>

Operator Exams

Class A and B operators are required to take and pass an exam with a score of 75 percent or higher. The exam is administered online by the MPCA and can be found at <http://www.pca.state.mn.us/cleanup/ust.html>.

MPCA will accept operator certification from other states. Owners/operators must submit certification and information to demonstrate the other state's examination is equivalent to the MPCA exam.

MPCA developed deadlines to phase-in the examination requirements. This will be done regionally using telephone area codes.

- Facilities with area codes 651, 952, 612, and 763 have to pass the exam by August 8, 2011.
- Facilities with area codes 507, 218, 320, and all others have to pass the exam by August 8, 2012.



Need more information?

Visit the UST Program at <http://www.pca.state.mn.us/cleanup/ust.html>. The site has forms, fact sheets, and other information about USTs and UST requirements.

You can also call the MPCA at 651-296-6300 or 1-800-657-3864.





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MPCA Offices

Ask to speak to your regional tanks inspector.

Rochester
507-285-7343

Mankato
507-389-5977

Marshall
507-537-7146

Willmar
320-214-3786

Detroit Lakes
218-847-1519

Brainerd
218-828-2492

Duluth
218-723-4660

St. Paul
651-296-6300

Toll-Free Number
800-657-3864

Underground Storage Tanks:

Are you doing the Big Five?

Tanks/Underground Storage Tanks #1.12 • September 2009

The Minnesota Pollution Control Agency (MPCA) requires all regulated underground storage tank (UST) systems to comply with specific requirements. This fact sheet is designed to highlight the five main requirements for managing USTs. This is a guidance document for owners and operators, to be used as a compliance tool.

The Big Five requirements cover:

1. tank leak detection
2. line (pipe) leak detection
3. corrosion testing
4. tank operation
5. record keeping

Tank leak detection

There are four main tank leak detection methods:

- Automatic tank gauging (e.g., TLS-350) requires a passing leak test at least once a month.
- Monthly Statistical Inventory Reconciliation (SIR).
- Inventory control (may be used only during the ten years following installation of the tank).
- Interstitial monitoring may be used if the tank is double-walled. (This method must be used on tanks installed after December 22, 2007.)

Line leak detection

There are four main line leak detection methods:

- annual line tightness tests coupled with annual function checks on mechanical line leak detectors
- sump alarms with an annual function test—used with some double-walled piping applications
- electronic line leak detectors with an annual function test
- SIR (mechanical line leak detectors must still be function-tested annually)

Corrosion testing

Metal tanks or piping with impressed current must be tested annually. Metal tanks or piping with sacrificial anodes must be tested every three years. These tests must be performed by a qualified cathodic protection tester according to MPCA rules.

Tank operation

Once a month, all product dispensers, submersible sumps and spill buckets must be visually inspected for leaks and maintenance issues.

New UST rules passed in 2009 require owners/operators to pass an MPCA test relating to the operation of their tank system. Employees must be trained to operate and maintain the USTs at their site and how to respond to spills and releases.

Record keeping

You must keep records on file to prove that you are in compliance with all testing, employee training and inspection requirements. You must also retain records of all repairs made to the tank system.

Additional information

More detailed information is available on the MPCA tanks Web site at www.pca.state.mn.us/cleanup/ust.html.

Questions? Call your MPCA regional tanks inspector at one of the numbers in the left-hand column on the first page of this fact sheet.





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Heating Oil Underground Storage Tanks

Tanks/Underground Storage Tanks#1.08 • September 2008

This fact sheet explains the requirement for underground storage tanks (USTs) containing heating oil.

Note: USTs that are used both for fueling emergency generators and for heating (dual use tanks) must follow the emergency generator requirements. See the "Emergency Generator Underground Storage Tanks" fact sheet.

Which tanks are regulated?

USTs larger than 1100 gallons that are used to store fuel oil for heating the premises where the tank is located are regulated by the Minnesota Pollution Control Agency (MPCA). Heating oil tanks of 1100 gallons or less are not regulated by the MPCA.

Bulk heating oil tanks (storage for distribution rather than for use on the premises) must follow the additional requirements for commercial petroleum tanks.

Tanks containing used oil intended solely for heating the premises where the tank is located follow these heating oil requirements. However, if any used oil is ever pumped from the tank for recycling or re-use elsewhere, the tank must follow the additional requirements for commercial petroleum tanks.

Because heating oil tanks contain a combustible material, they are also regulated under the Minnesota State Fire Code, including tanks of 1100 gallons or less. For more information contact your local fire department, or visit the State Fire

Marshal Web site at: www.dps.state.mn.us/fmarshal/FireCode/FireCode.html.

What notification is required for tank installation?

Heating oil tanks may only be installed by MPCA certified contractors. At least ten days in advance of starting tank installation, the contractor or owner must notify the MPCA of the project by fax, e-mail, regular mail, or telephone, using the "Ten-day Advance Notice" form.

Within thirty days after putting the tank into service, the contractor or owner must notify the MPCA by fax or regular mail of the contents, design, and other tank and facility information using the "Notification of Installation or Change in Status" form.

Thereafter, the tank owner must re-notify within 30 days after of any change to the tank status or information, such as changing owners or closing the tank. Both forms are available on the UST Program Web page. There is no fee for notification.

What tank and piping designs are required to prevent corrosion?

Heating oil tanks are required to be designed so as to prevent corrosion and degradation during the life of the tank.

Note: Systems installed prior to August 1, 1985, are exempt from corrosion protection requirements.

Tanks and piping meet corrosion protection requirements if they are made of fiberglass-reinforced plastic (FRP), steel with an FRP jacket, or steel with a cathodic protection system. Piping may use any of these designs, or be made of a flexible nonmetallic material. Tanks and piping may be either single walled or double walled.

Periodic testing of cathodic protection systems for continued effectiveness is highly recommended, but not required.

What about containing spills during tank filling?

At this time, heating oil tanks are not required to follow spill containment requirements. However, the MPCA strongly recommends that tank owners equip heating oil tanks with liquid-tight spill buckets to catch spills that may occur when the delivery hose is disconnected from the fill pipe. Spill buckets should be checked following deliveries and kept clear of fuel, water, and debris.

How do I prevent overfills?

At this time, heating oil tanks are not required to follow overfill prevention requirements. However, the MPCA strongly recommends that tank owners equip heating oil tanks with a device to prevent tanks from being overfilled. There are three overfill prevention options – an automatic shutoff (flapper valve), an audible high-level overfill alarm, or a vent pipe flow restrictor (ball float valve).

Used oil tanks are susceptible to overfilling, because the fill opening is usually located inside a building at a higher elevation than the other openings of the tank. An overfilled tank could have oil leaking out of another opening without being noticed. It is important to make sure that all tank openings are liquid tight.

How do I monitor the tank for leaks?

At this time, heating oil tanks and piping are not required to be monitored for leaks. However, the MPCA strongly recommends that tank owners conduct leak detection, which will help prevent contamination and costly cleanups from a leaking tank or piping.

Tank leak detection methods that can be used include: automatic tank gauging, statistical inventory reconciliation, and interstitial monitoring of double-

walled tanks. Any sumps should be checked monthly and kept clear of fuel, water, and debris.

The MPCA does not consider leak detection to be necessary for safe suction piping systems. For other suction systems, the MPCA recommends precision tightness tests every three years, statistical inventory control, or interstitial monitoring of double-walled piping.

What is required when the tank is no longer used?

Contractors who permanently close a heating oil tank must be certified by the MPCA. A list of certified contractors is found on the UST Program Web site. At least ten days in advance of beginning permanent closure of the tank, the contractor or owner must notify the MPCA of the tank closure project by fax, e-mail, regular mail, or telephone, using the "Ten-day Advance Notice" form. Within thirty days after completing work, the contractor or owner must notify the MPCA by fax or regular mail using the "Notification of Installation or Change in Status" form.

At this time, heating oil tanks are not subject to technical closure requirements. However, the MPCA strongly recommends that heating oil tanks be properly closed when taken out of service. An abandoned heating oil tank will eventually leak and collapse as the tank corrodes.

To permanently close a heating oil tank, it may either be closed in place by being filled with grout or a foam that hardens up, or it may be removed from the ground. The tank and piping should first be emptied and cleaned, and the contents disposed of properly. A removed tank should be disposed of properly. A site assessment (soil sampling) in the area of the tank should be performed.

When taking a tank out of service, be sure to remove or permanently cap all fill pipes, and notify your fuel oil supplier that the tank has been taken out of service.

What if the property is sold?

If property containing a heating oil tank is sold, the seller must notify the buyer of the existence of the tanks. Notification must be in writing prior to closing the transaction. It is the buyer's duty to notify the MPCA of the change in ownership.

Is there funding for cleanup?

The Petrofund administered by the Department of Commerce provides up to 90 percent reimbursement for costs related to petroleum contamination cleanup. Both commercial and residential heating oil USTs are eligible for this funding. If you have questions, you can visit the Petrofund Web site at: www.state.mn.us/portal/mn/jsp/content.do?id=-536881377&agency=Commerce

Need more information?

Visit the UST Program at www.pca.state.mn.us/cleanup/ust.html. The site has forms, fact sheets, and other information about USTs and UST requirements.

You can also call the MPCA at 651-296-6300 or 1-800-657-3864 and ask for the UST Program.





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Temporary and Permanent Closure of Underground Storage Tanks

Tanks/Underground Storage Tanks #1.38 • January 2009

From time to time, underground storage tanks (USTs) may not be actively used, for example during a major construction project or during a business closure or sale. An owner may also decide that a tank will never be needed in the future. Certain requirements must be followed by tank owners and operators to ensure that the tank system is protected from corrosion and does not begin to leak when leaving a tank inactive for a period of time, returning a temporarily closed tank to active service, or taking the tank out of service permanently.

Temporary tank closure

A tank containing product may stand idle for up to 90 days as long as the routine safeguards (corrosion protection and leak detection) continue to be followed. If a tank will be idle for more than 90 days, the owner must do the following:

- Notify the Minnesota Pollution Control Agency (MPCA) of the change of status to Temporarily Closed, by fax or regular mail, using the "Notification of Installation or Change in Status" form.
- Empty the tank (one inch or less of liquid).
- Lock out the fill pipe and ensure the cap is tight to prevent water from entering the tank.
- Secure all pumps and dispensers.
- Leave the vent line open and functioning.

- For any cathodic protection system, continue to meet normal requirements for both tank and piping, i.e. test system every three years (sacrificial anode type) and keep power on, check rectifier bi-monthly, and test system annually (impressed current type).

It is not necessary to conduct monthly leak detection or sump checks on a tank once it has been emptied.

A MPCA inspector who observes a tank which is not in use will place an "orange tag" on the fill pipe, which states that the tank should not be filled or put back into service before contacting the inspector to ensure that requirements have been met.

Extended temporary closure

Temporarily closed tanks must be permanently closed (see below) at the end of one year, unless the owner has requested and received written MPCA approval to continue in temporary closure. Typical MPCA conditions for extended temporary closure will include:

- For any cathodic protection system, normal requirements have been met and will continue to be met.
- Conduct a site assessment for contamination (soil sampling with laboratory analysis). For more information, see the fact sheet "Site Assessment for Underground Storage Tanks with No Apparent Contamination."

Returning a tank to service

If a tank has been temporarily closed for more than one year, the owner must request and receive written MPCA approval to return the tank to service. Typical conditions for MPCA approval will include:

- Notify the MPCA of the change of status to Active, by fax or regular mail, using the "Notification of Installation or Change in Status" form.
- Demonstrate that temporary closure requirements have been met.
- Check for and remove any water in the tank.
- Test any cathodic protection system to make sure it is still working properly.
- For a lined tank, perform an internal tank inspection.
- Conduct a site assessment for contamination.

Permanent tank closure

Proper procedures for permanently closing a tank are important, because an abandoned tank will eventually leak and collapse as the tank corrodes. There are two methods of permanent closure:

- **Removal:** the tank, piping, and vent line are pulled from the ground.
- **Closure-in-place:** the tank and piping are filled with an inert solid material and left in the ground.

Requirements for permanent closure include:

- Use an MPCA certified contractor. A list of certified contractors is found on the UST Program Web site.
- At least ten days in advance of beginning work, notify the MPCA of the tank closure project by fax, e-mail, regular mail, or telephone, using the "Ten-day Advance Notice" form.
- For closure-in-place, contact the local fire chief who must also give approval.
- Empty and clean the tank and piping (remove any liquids and sludges). The fact sheet "Tank and Waste Petroleum Recyclers" has a list of contractors who perform these services.
- A tank that is removed must be disposed of properly. It may not be reused as a regulated aboveground tank, and may not be reused as a regulated underground tank unless it has been re-certified by the manufacturer. A steel tank may be recycled as scrap metal.

- Conduct a site assessment for contamination.
- Within thirty days after completing work, notify the MPCA of the change in status to Removed or Closed-in-Place, by fax or regular mail, using the "Notification of Installation or Change in Status" form.

For more information on tank removal, see the fact sheet "Planning Ahead for an Underground Storage Tank Removal".

If your tanks have been unused since prior to December 22, 1988, you may be eligible to have the tanks removed by the Petrofund Abandoned Tank Program. For more information, call the Petrofund at 1-800-638-0418.

What if contamination is found during closure?

The Petrofund administered by the Department of Commerce provides up to 90 percent reimbursement for costs related to cleanup of petroleum contamination from USTs that are eligible for this funding. If you have questions, you can visit the Petrofund Web site at www.state.mn.us/portal/rmn/jsp/content.do?d=-536881377&agency=Commerce or call 651-215-1775.

What if the property is sold?

If property containing an active, temporarily closed or permanently closed tank is sold, the seller must notify the buyer of the existence of the tank. Notification must be in writing prior to closing the transaction. It is the buyer's duty to notify the MPCA of the change in ownership, by fax or regular mail, using the "Notification of Installation or Change in Status" form.

Keep in mind that if you purchase or lease property containing closed tanks, or take over a business which previously operated tanks, you become responsible for meeting and maintaining these tank closure requirements.

Need more information?

Visit the UST Program at www.pca.state.mn.us/cleanup/ust.html. The site has forms, fact sheets, and other information about USTs and UST requirements.

You can also call the MPCA at 651-296-6300 or 1-800-657-3864.





Minnesota
Pollution
Control
Agency

Planning Ahead for an Underground Storage Tank Removal

Tanks/Underground Storage Tanks #2.20 • December 2008

The Minnesota Pollution Control Agency (MPCA) suggests that you plan ahead for what might be found when removing an underground storage tank (UST). The suggestions below should help you avoid delays and unexpected expenses during removal and clean-up work.

Make sure your tank is registered

By this time, your UST should be registered. If it is not, fill out a "Notification of Installation or Change in Status" form and return it to the MPCA.

Hire a qualified, MPCA certified contractor

Removing an UST can be dangerous work. Hire a contractor who will take measures to eliminate explosion and fire hazards, such as removing ignition sources and purging the explosive vapors inside the tank.

Contractors who remove regulated UST systems must be certified by the MPCA and have some form of insurance coverage. The contractor employs a certified supervisor who must be on site during the critical procedures of the tank removal. The supervisor must have at least two years of tank-related work experience, have completed an MPCA approved UST course and have actively participated in a minimum of five tank projects within the previous four years.

A list of certified contractors and a fact sheet about how to select a certified contractor may be found on the UST Program Web site. We recommend that you contact several contractors and obtain references. This is an important investment and you want to make sure that you are receiving quality work at a reasonable price.

Notify the MPCA at least ten days before removing the UST

At least ten days in advance of beginning work, notify the MPCA of the tank removal project by fax, e-mail, regular mail, or telephone, using the "Ten-day Advance Notice" form. You must re-notify the MPCA if the date of the UST removal changes by more than two days.

Also, remember to notify your local fire marshal and any other appropriate local officials.

Arrange for a site assessment during UST removal

A site assessment for contamination (soil sampling and laboratory analysis) is required at the time of tank removal. The fact sheet "Site Assessment for Underground Storage Tanks with No Apparent Contamination" provides further details on the site assessment process. Most certified contractors can make arrangements for the necessary site assessment.

Note that if contamination is observed during the removal project, you must call the Minnesota Duty Officer immediately at 651-649-5451 or toll-free at 1-800-422-0798. You must also arrange for clean up of the site. If you already have a consultant on site or on stand by, clean-up work can proceed with a minimal amount of interruption.

Find a suitable location for storing any contaminated soils that may be excavated

To prevent infiltration and run-off while any contaminated soil is being stored, place the soil on plastic and cover it. The MPCA must approve soil treatment plans. Local officials must approve soil storage and land treatment plans. Thinking ahead about these issues before the tank is removed can keep things running smoothly.

Recycle the UST's liquid contents and properly dispose of the tank and its sludge

Before removing the tank from the ground, remove and properly dispose of any remaining liquids and sludges. Fuel and fuel water mixtures can be recycled. The sludge that collects in the bottom of a tank is considered a hazardous waste unless tested and proven otherwise. Facilities that clean USTs and properly recycle waste liquids and sludges must have a Hazardous Waste Generator Identification number. The fact sheet "Tank and Waste Petroleum Recyclers" has a list of contractors who perform these services.

The tank itself must be properly disposed of, since sludge remaining in the tank may be considered hazardous. If a steel tank has been cleaned, it can be disposed of as scrap metal.

Notify the MPCA that the tank has been removed

Submittal of the "Notification of Installation or Change in Status" form is required within 30 days of completing the removal project. Both the tank owner and the contractor performing the work must sign the form.

Need more information

Visit the UST Program at www.pca.state.mn.us/cleanup/ust.html. The site has forms, fact sheets, and other information about USTs and UST requirements.

You can also call the MPCA at 651-296-6300 or 1-800-657-3864.



Spill Response Steps

Step 1: Stop the spill. The leak or spill should be stopped if this can be done safely. Hit the **EMERGENCY STOP** button (if available), or turn off nozzles or valves from the leaking container.

Step 2: Contain the spill. Contain the spill if it can be done safely. Soil, sand, or granular absorbents (floor-dry/kitty litter, etc.) can be used to build a berm around the flowing liquid on the ground. **Build the berm to keep the liquid from entering floor drains, curb drains, and parking lot drains!** Buckets, pails or other containers can be used under leaking valves or punctured tanks.

State law requires companies to be prepared to respond to spills. Therefore, stocking basic spill-response equipment/supplies is expected.

Step 3: Recover the spill. Once contained, the liquid must be recovered. If company personnel are trained and can perform these tasks safely, recovery should begin immediately. Otherwise, a contractor may be needed. Some community fire departments are willing to help stabilize larger spills until a contractor arrives. If the spill has already reached water in a ditch, pond or wetland, petroleum recovery should be started using oil-only absorbent pads.

Collect contaminated absorbents. Brooms can be used to sweep up granular absorbent material. Place into buckets, garbage cans, drums or into heavy-duty plastic bags. Remember to control ignition sources. On slippery roadways, fresh granular material such as sand or absorbents can then be re-spread on the roadway for traction. With the exception of used oil, waste generated from petroleum spills that have been reported and cleaned up immediately are exempt from Minnesota's Hazardous Waste Rules.

Step 4: Arrange for disposal of the wastes. Your business may have arrangements in place for a company to pick up and dispose of waste materials you "generate." If so, notify them of your disposal needs. If not, contact a facility and make the necessary arrangements.

Your responsibility under state law (Condensed, see rule citation for complete requirements):

- *MN Stat §115.061. Duty to Notify and Avoid Water Pollution.* Report petroleum spills over 5 gallons immediately and begin cleanup immediately. Report and recover any other materials which could cause pollution to waters of the state.
- *MN Stat § 115E: Oil and Hazardous Substance Discharge Preparedness:* Requires all handlers of oil and hazardous substances to prevent and prepare for spills of these substances. Handlers shall be prepared at all times to rapidly and thoroughly recover discharges.

For more information on spill prevention, cleanup and disposal, call the MPC-A at (651) 296-6300 or 1-800- 657-3864 and ask for a member of the Emergency Response Team or go to www.pca.state.mn.us/cleanup/pubs/cetpubs.html on the internet.



EMERGENCY NOTIFICATIONS

If you have a spill in Minnesota, you must call:

1. Call 911: When there is a threat to life, safety, or property

2. Company Representatives

(Persons authorized to implement your spill response plan: 24-hour name and number)

- Business Owner: _____
- Shift or General Manager: _____
- Spill Response Contractor: _____

3. Minnesota Duty Officer

1-800-422-0798 or **(651) 649-5451** **TDD: 1-800-627-3529**

Call the Minnesota Duty Officer to report a spill, request state assistance, or if there is a threat to public safety or the environment. *Note: in Minnesota, a spill of five (5) gallons or less of petroleum does not need to be reported but does need to be recovered and cleaned up.*

4. The National Response Center: 1-800-424-8802

When federal notification is required.



Minnesota Pollution Control Agency • 520 Lafayette Road North, St. Paul, Minnesota 55155-4194 • www.pca.state.mn.us
651-296-6300 • 800-657-3864 • TTY 651-282-5332 or 800-657-3864 • Available in alternative formats