



Minnesota  
Pollution  
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Agency

# Leak Detection for Underground Storage Tank Pressure Piping

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**M**innesota law requires Underground Storage Tank (UST) systems to have leak detection.

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.

Many leaks from UST systems are a result of piping failure. In fact, piping failures occur more than twice as frequently as tank failures. Since piping is assembled in the field, the piping integrity is sensitive to field conditions. Also, with numerous possible connections in a piping run, leaks are more likely to occur at connection points. Leaks from pressurized piping can cause great environmental harm because the pressure in the line will continually force product through a hole in the piping into the ground.

This fact sheet will discuss requirements for pressurized piping leak detection.

## What is a pressurized piping system?

A pressurized piping system has a submersible pump located above the tank. Product is pumped from the tank at a typical pressure of 30 pounds per square inch (psi). Some piping systems may be pressurized as high as 60 psi.

## What are the leak detection requirements for pressurized piping?

Pressurized piping must use **one** of the following leak detection options:

- continuous automatic line leak detector (electronic or mechanical) plus annual line tightness testing (*In lieu of annual line tightness testing, an electronic line leak detector capable of performing a 0.1 gallons per hour (gph) test may be put in test mode once a year. Or, an electronic line leak detector capable of performing a 0.2 gph test may be put in test mode once a month.*)
- continuous automatic line leak detector plus monthly statistical inventory reconciliation (SIR)
- continuous automatic line leak detector plus interstitial monitoring of secondarily contained piping

**Note:** Pressurized piping installed after December 22, 2007, must be secondarily contained and must have a liquid-tight submersible pump sump and under-dispenser sumps. This piping must use a continuous automatic line leak detector plus interstitial monitoring.

## What performance standard must the piping leak detection methods meet?

Each leak detection method must meet certain performance standards according to Minn. R. ch. 7150. The following is a summary for each method.

- Automatic line leak detectors must be capable of detecting a leak of three gph at a line pressure of ten gallons per square inch within one hour, and alerting the operator by sending an audible or visual alarm, by restricting flow, or by shutting off flow.
- Line tightness tests must be capable of detecting a leak of 0.1 gph from any part of the piping that routinely contains product, at one and one-half times the operating pressure.
- SIR must be capable of detecting a leak of at least 0.2 gph and be performed according to Minnesota Pollution Control Agency (MPCA) guidelines by a listed SIR vendor.
- Continuous interstitial monitoring must be able to detect a leak from the inner piping wall by gravity flow to a liquid-tight sump with an automatic leak-sensing device which alerts the operator by sending an audible or visual alarm, by restricting flow, or by shutting down flow.
- Non-continuous interstitial monitoring must be able to detect a leak from the inner piping wall by gravity flow to a liquid-tight sump which is visually inspected on a monthly basis.

## How do I know if my piping leak detection system meets the performance standards?

Line tightness testing methods and automatic line leak detectors must be evaluated by a third-party testing laboratory to determine if it meets the required performance standards. The evaluation is then reviewed by the federal government; if the minimum standard is met, the method and vendor are federally listed and are acceptable to the state of Minnesota. The test results from this evaluation are known as performance claims and must be provided to you.

Eligible SIR vendors are listed by the MPCA in the SIR fact sheet.

## Do I have to report a possible leaking pipe based on test results?

Any time that:

- piping fails a line tightness test
- piping fails an SIR evaluation for two consecutive months
- a leak is signaled by a line leak detector
- a leak is discovered through interstitial monitoring,

the tank owner must immediately call the Minnesota Duty Officer at 651-649-5451 or 800-422-0798. The Minnesota Duty Officer will then relay the information to the MPCA so they can give guidance about what actions should be taken. You must immediately investigate and resolve all suspected leaks.

## How must the piping leak detection system be maintained?

All manufacturers' maintenance and calibration schedules must be followed. These schedules may be found in the manufacturers' instruction manual.

Sumps for interstitial monitoring must be maintained liquid-tight and free of water and product. The sump itself must be visually inspected once a year to ensure that it remains liquid-tight, especially where piping penetrates the sump wall.

Automatic leak-sensing devices (sump sensors) must be tested annually for proper function. Testing can be done by either the tank owner or a third party, should follow any manufacturer's instructions, and should verify that the alarm sounds or the pump shuts off or restricts flow when the sensor is in contact with water or product.

Automatic line leak detectors (both mechanical and electronic types) must be tested annually for proper function. Testing must be conducted by an MPCA-certified contractor; by a person approved by the manufacturer of the equipment to test the detector; or by a person qualified by reason of training or experience to test the detector. Testing of the detector must comply with the manufacturer's testing requirements and involve creation of a physical leak in a piping segment in order to verify the applicable leak detection threshold used by the tank owner (3 gph, 0.2 gph, or 0.1 gph).

## What records must be kept on file?

Without written records, there is no way to verify that leak detection is being performed. Owners and operators are required to maintain certain written records. These records must be kept at the facility where the tanks are located, or if kept elsewhere, must be immediately submitted to the MPCA upon request.

The following records must be kept **as long as any automatic line leak detector is used**:

- documentation of the manufacturer's written performance claims
- documentation of the manufacturer's written maintenance and calibration schedules

The following records must be kept for at least **ten years**:

- **for line leak detectors:** monthly test results; annual function test results, and documentation of any repairs or maintenance
- **for line tightness testing:** third-party test results, or monthly or annual line leak detector test results (if detector is used in lieu of third-party tightness testing)
- **for SIR:** inventory control sheets and monthly SIR provider reports
- **for interstitial monitoring:** monthly visual sump check record (if no sump sensor), or annual sump sensor function test results

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## 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 800-657-3864.

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