

O K L A H O M A

Farm & Ranch*A*Syst

Worksheet 4

Assessing the Risk of Ground Water Contamination from Petroleum Product Storage

Why should I be concerned?

Leakage of liquid petroleum products, such as motor fuel and heating fuel, presents a threat to public health and the environment. The U.S. Environmental Protection Agency (EPA) estimates that nearly one out of every four underground storage tanks in the United States is now leaking. As an underground petroleum storage tank ages, the potential for leaking increases dramatically—especially if it's not protected against corrosion. Newer tanks and piping can leak too, particularly when not properly installed.

A leak as small as one drop per second will release about 400 gallons of gasoline in one year. A few quarts of gasoline in the ground water can severely pollute a ranch or farmstead's drinking water. At low levels of contamination, petroleum products in water may not be detected by smell or taste, but they can affect your health.

Preventing tank spills and leaks is especially important because gasoline, diesel, and fuel oil can move through surface soil layers and into ground water. Petroleum fuels contain a number of toxic compounds, including benzene, toluene, and xylene. They also contain additives such as ethylene dibromide (EDB), and sometimes organic lead compounds. Vapors from an underground leak that collect in basements, sumps, or other underground structures might explode.

Selling property with an old underground tank may also be difficult. Lenders and buyers are concerned about potential liabilities and clean-up costs caused by leaking underground storage tanks.

This worksheet focuses on storage of gasoline, diesel, and liquid heating fuels. It does not apply to liquefied petroleum (LP) gas, since leaks vaporize quickly and do not threaten ground water.

The goal of the Oklahoma Farm & Ranch*A*Syst program is to help you protect the ground water that supplies your drinking water.

How will this worksheet help me protect my drinking water?

- * It will take you step by step through your drinking water well condition and your management practices.
- * It will rank your activities according to how they might affect the ground water that provides your drinking water.
- * It will provide easy-to-understand rankings that will help you analyze the "risk level" of your drinking water well condition and your management practices.
- * It will help determine which of your practices are reasonably safe and effective, and which practices might require modification to better protect your drinking water.

How do I complete the worksheet?

1. Use a pencil. You may want to make changes.
2. For each category that is appropriate to your farm or ranch, find the statement that best describes your conditions. (Leave blank categories that don't apply.)
3. Look to the right of the statement under "score" and circle 3, 2, or 1.
4. Add all circled scores to obtain the total score for the worksheet.
5. Using your total score and the ranges provided at the end of the worksheet, mark your risk rating in the appropriate box for low, moderate, or high risk.

The procedure doesn't take long to complete.

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**LOCATION AND INSTALLATION—
ALL TANKS**

SCORE
(circle)

Tank Location

- Low Risk: Tank downslope more than 300 ft. from drinking water well. Well-drained soils with deep water table. 1
- Mod. Risk: Tank downslope more than 150 ft. from drinking water well. Moderately drained soils with occasionally high water table. 2
- High Risk: Tank at grade or upslope less than 300 ft. from well. Poorly drained, frequently saturated soils with high water table. 3

Tank Installation

- Low Risk: Installed by state-certified installer with setback, secondary containment, anchors, and other protections. 1
- Mod. Risk: Installed according to recommendations provided with new tank by seller with setback, secondary containment, anchors, and other protections. 2
- High Risk: Installed without setback, secondary containment, anchors, and other protections. 3

**UNDERGROUND TANK DESIGN
AND INSTALLATION**

Type and Age of Tank/Corrosion Protection

- Low Risk: Synthetic tank, or steel tank with cathodic protection. 1
- Mod. Risk: Coated steel tank less than 15 years old, or bare steel tank less than 10 years old. 2
- High Risk: Coated steel tank more than 15 years old, or bare steel tank more than 10 years old. 3

Piping

- Low Risk: Piping protected from rust by cathodic protection and isolated from tank. Piping sloped back to tank with check valve at pump (not at tank). 1
- Mod Risk: Pipe galvanized, not isolated from tank. Piping sloped back to tank, check valve located at tank (foot valve). 2
- High Risk: Piping and tank isolated and of dissimilar metals. Non-isolated pipe bare, cannot drain freely to the tank. Pipe systems are high pressure rather than suction. 3

**ABOVE-GROUND TANK DESIGN
AND INSTALLATION**

Tank Enclosure

- Low Risk: Tank surrounded by non-combustible building or 6 ft. high fence with lock. Building well ventilated. 1
- Mod. Risk: Firewall in place if setbacks do not conform to code. Tank surrounded by low or unocked fence. 2
- High Risk: No enclosure. No fire wall. 3

**ABOVE-GROUND TANK DESIGN
AND INSTALLATION (con't.)**

SCORE
(circle)

Secondary Containment

- Low Risk: Tank on concrete pad with curb or synthetic dike able to hold 125 percent of tank capacity. 1
- Mod. Risk: Tank placed on pad with low-permeability earthen dike. 2
- High Risk: No pad and no secondary containment. 3

MONITORING

Leak Monitoring and Testing

- Low Risk: Regular monthly monitoring for leaks. 1
- Mod. Risk: Daily accounting for inventory and annual testing for leaks. 2
- High Risk: No inventory control, no testing, and no monitoring. 3

Spill and Tank Overfill Protection

- Low Risk: Impermeable catch basin plus automatic shut off or overfill alarm. 1
- Mod. Risk: Impermeable catch basin or concrete catch pad. 2
- High Risk: No protection. 3

**TANK CLOSURE FOR UNUSED
UNDERGROUND TANKS**

- Low Risk: No unused tanks. Any unused tank removed from ground and excavation checked for evidence of contamination. 1
- Mod. Risk: Tank removed or filled with inert material. Excavation not checked for contamination. 2
- High Risk: Tank left in ground and not checked (illegal after 12 months). 3

TOTAL SCORE:

Check the appropriate overall risk category for your well based on your total score.

- Low Risk**
(9-14)
- Mod. Risk**
(15-21)
- High Risk**
(22-27)

* **Low Risk**—Your system is generally functioning well, but a few improvements could be made. Look at those areas where your assessment of risk was greater than the “low risk” category and identify which improvements could be made.

* **Moderate Risk**—Several deficiencies need improvement. Identify areas where your rating was greater than “low risk.” Areas rated as “high risk” should be improved as soon as possible.

* **High Risk**—Your system has several serious problems and major changes are needed. All areas rated as “high risk” should be improved immediately. Continued use of your current system could pose a serious threat to your family’s water supply.