

OKLAHOMA

Farm & Ranch*A*Syst

Worksheet 3

Assessing the Risk of Ground Water Contamination from Fertilizer Storage and Handling

Why should I be concerned?

Over the years, commercial fertilizers have increased farm production dramatically. Commercial fertilizer is a major source of nitrate. Nitrate-nitrogen ($\text{NO}_3\text{-N}$) levels that exceed the drinking water standard of 10 mg/l have been found in many drinking water wells. There are many sources of nitrate in the environment that can enter ground water. The nitrate in commercial fertilizer is one source that can be controlled to a great degree with proper application, storage, and handling. The other major components of commercial fertilizer—phosphorus and potassium—are not generally ground water contamination concerns.

Nitrate-nitrogen drinking water levels that exceed the drinking water standard can threaten the health of infants. Also, young livestock are susceptible to health problems from high $\text{NO}_3\text{-N}$ levels. While mature livestock may be able to tolerate several times the 10 mg/L level, levels of 20-40 mg/L may prove harmful to young livestock, especially in combination with high levels (10,000 ppm) of $\text{NO}_3\text{-N}$ from feed sources.

Farmstead handling of fertilizers can affect ground water by allowing materials containing nitrogen to seep through the ground after a leak or spill. Other potential farmstead sources of nitrogen are septic systems, livestock yards, livestock waste storage facilities, and silage storage. Your drinking water is less likely to be contaminated if you follow appropriate management procedures for storing and handling fertilizers on the farm site.

How will this worksheet help me protect ground water?

- * It will take you step by step through your fertilizer storage and handling 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 fertilizer storage and handling 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.

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

STORAGE	SCORE (circle)
Location of Storage Facility	
Low Risk: 100 ft. or more downslope from well.	1
Mod. Risk: 50 to 100 ft. downslope from well.	2
High Risk: Within 50 ft. downslope or within 100 ft. upslope from well.	3
Containment System	
Low Risk: Impermeable floor (i.e., sealed concrete or steel) with curb installed to contain leaks and spills.	1
Mod. Risk: Impermeable floor without curb or permeable floor (i.e., unsealed concrete).	2
High Risk: Gravel or dirt floor.	3
Protection from Moisture	
Low Risk: Sealed facility with dry environment.	1
Mod. Risk: Moist environment, but protected from weather.	2
High Risk: Open to weather or moisture.	3
Containers	
Low Risk: All materials in original containers. All containers in good condition and clearly labeled.	1
Mod. Risk: Some materials in questionable containers.	2
High Risk: Containers in poor condition and susceptible to leakage. Labels are hard to read.	3
Formulation	
Low Risk: All dry formulation products.	1
Mod. Risk: Some liquid formulation and some dry formulation.	2
High Risk: All liquid formulation.	3

HANDLING

Location of Mixing/Loading Area	
Low Risk: 100 ft. or more downslope from well or in field with site relocated often.	1
Mod. Risk: 50 to 100 ft. downslope from well or in field at one location.	2
High Risk: Within 100 ft. upslope from well.	3
Containment at Mixing/Loading Area	
Low Risk: Impermeable floor (i.e., sealed concrete, or steel) with curb installed to contain leaks and spills.	1
Mod. Risk: Impermeable floor without curb or permeable floor (i.e., unsealed concrete), or load in field at new site each load.	2
High Risk: Gravel or dirt floor.	3

HANDLING (con't.)	SCORE (circle)
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Applicator Cleaning and Rinse Water Disposal	
Low Risk: Washed out in field or on sealed loading pad, rinsate captured and reused.	1
Mod Risk: Washed out on sealed loading pad, rinsate sprayed near well.	2
High Risk: Washed out near well without containment pad, rinsate dumped near well.	3

TOTAL SCORE:

Check the appropriate overall risk category of your fertilizer storage and handling system based on your total score.

Low Risk (8-12)
 Mod. Risk (13-19)
 High Risk (20-24)

* **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.

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