



Indiana Farmstead Assessment for Drinking Water Protection

Fertilizer Handling & Storage



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Introduction

This fact sheet discusses ways to reduce risks of water contamination associated with fertilizer handling and storage on the farmstead. An important decision for today's farmers is whether or not to store bulk quantities of fertilizer on the farm. Bulk fertilizer storage represents a greater potential for a large fertilizer spill, but even small spills or leaks can contaminate water sources. For the most part, you can control the factors that reduce the risk of contamination without investing a lot of time or money. Taking steps to reduce risk is the best way to protect your drinking water and property value.

Mixing and loading

Water contamination can result from small quantities spilled regularly in the same place. This may be the case at the site where fertilizers are mixed and loaded into the application equipment. If this site is near the water well, the risk that spilled fertilizer could contaminate your well water is relatively high. The risk increases if the site has a gravel or soil surface, especially a sandy soil through which water can pass relatively quickly.

Mixing and loading pad

A concrete or asphalt pad with curbs around the edge is the best method of containing spills and leaks of liquid fertilizer that can occur during mixing and loading (Figure 1). A concrete and asphalt pad, designed by a professional engineer, is recommended to ensure the proper mixture of materials for an impermeable surface to prevent spilled fertilizer from leaching through the soil to the groundwater. Curbs prevent contaminated washoff from reaching nearby surface waters.

The pad should be large enough to accommodate your equipment and contain leaks from tanks, wash water and spills that occur during fertilizer transfer to the application equipment. There are special rules regarding mixing and loading pads for bulk fertilizer storage.

Figure 1. Example of a fertilizer mixing and loading pad.

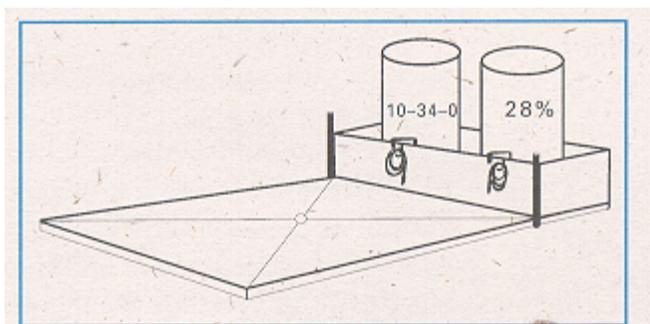


Figure 1. Example of a fertilizer mixing and loading pad.

Management during mixing and loading

Spills and leaks are bound to occur from time to time. Even if you don't have a concrete pad for mixing and loading you can minimize the risk of water contamination by following these basic guidelines:

- Avoid mixing and loading fertilizers near your water well. Use a nurse tank to transport water to the mixing and loading site. Ideally, this site should be moved from year to year within the field of application.
- Avoid mixing and loading on gravel driveways or other surfaces that allow spills to sink quickly through the soil. A clay surface is better than sand.
- Always supervise sprayer filling to minimize the chance that a spill could occur.
- Use the spray tank rinsate for mixing subsequent loads of liquid fertilizer. Spray the last tank of rinsate in the field at the appropriate application rate.

Fertilizer storage Non-bulk quantities

Fertilizers pose little danger to water resources when stored safely in a secure location. The following simple guidelines help ensure a safe fertilizer storage area.

- Locate the storage area downslope and as far away from the water well as practical. The Indiana State Board of Health suggests a minimum separation distance of 100 feet between a fertilizer tank and the water well. Also, consider the potential risk to nearby surface waters if a spill should occur.
- Separate the fertilizer storage from other activities as much as possible. This minimizes the chance that fertilizer containers will be spilled or torn.
- A solid floor, such as concrete, is recommended for the storage area. This makes spill cleanup easier.
- Note where any floor drains or tiles lead. In case of a liquid spill, do not allow spilled fertilizer to drain to a nearby stream. Try to contain as much of the spill as possible and use the fertilizer appropriately. Floor drains are not recommended for new construction.
- Use pallets to keep fertilizer bags off the floor. Store dry products separate from liquids to prevent wetting from spills.
- Storage containers in good shape minimize the risk of a spill or leak.
- Provide proper labels on all containers.
- Lock the storage area to prevent vandalism and accidents. Label the area indicating that the building is a fertilizer storage area. This will also help fire fighters recognize the contents of the building.
- Anticipate emergencies. Have a plan of action to clean up spills and keep the equipment you will need on hand.

Bulk quantities

On-farm storage of bulk fertilizer quantities is common. Bulk storage is regulated by the Office of Indiana State Chemist. Fertilizer storage of the following quantities is defined as bulk storage and must be registered with the Office of Indiana State Chemist:

-- a liquid tank with capacity

- greater than 2,500 gallons
- more than 12 tons of dry fertilizer
(in an undivided quantity) stored in
one location

Listed below are some key guidelines for bulk storage. Note that this list is not complete and you should check with your local Extension educator or the Office of Indiana State Chemist for further information.

- Liquid tanks manifolded together with a total capacity greater than 2,500 gallons are considered bulk storage.
- If the bulk tank is under a roof, the secondary containment area must be large enough to confine 100 percent of the contents of the largest bulk container plus the displaced volume of any other storage tanks in the area.
- If the bulk tank is outside, the secondary containment area must have 6 inches of freeboard (additional wall height) in addition to the confinement volume required for bulk storage under a roof.
- A load/unload pad is required to load into or out of a bulk storage tank. The pad must be a minimum of 10 x 20 feet, able to contain at least 750 gallons and have a minimum 4 inch high curb around it.
- Bulk fertilizer storage must be separate from bulk pesticide storage.
- Lock valves when not in use.
- A gauge is required to determine liquid level in a tank. This device should be lockable and secured to prevent leaks.
- Conduct routine inventory to check for leaks.
- Label contents of bulk storage tanks.
- Cover dry storage if material cannot be applied right away.

Spill cleanup and container disposal For dry spills, promptly sweep up and reuse the fertilizer as it was intended. Dry spills are usually very easy to clean up, however, a mixing/loading pad would help in recovering as much of the spilled product as possible. Dry impregnated fertilizer is considered a pesticide and, if spilled, should be recovered and applied to the target crop at the approved rate. For liquid spills, recover as much of the spill as possible and reuse as it was intended. Some contaminated soil may need to be removed and field applied. Contact the Office of Indiana State Chemist for details. Be prepared in case a spill or leak occurs. Have telephone numbers and cleanup supplies readily available. Spills that enter or threaten to enter the waters of the state should be reported to the Indiana Department of Environmental Management. You must also call the U.S. Environmental Protection Agency's National Response Center within 15 minutes of a release to the environment if the material and quantity spilled are on the EPA's required list for reporting. Check with your dealer if you are uncertain about this list. You may also want to call your local emergency planning committee and fire department. Bulk deliveries of liquid and dry fertilizers have greatly reduced the need to dispose of containers; however, bagged fertilizers are still in use. After loading a bag's contents, split the bag and shake it out. Bundle empty bags and dispose of them in a landfill. You may be able to recycle empty fertilizer bags after removing the plastic vapor barrier. Check local ordinances first. Open burning of empty bags on the farm is not legal in Indiana. Other management factors Reducing fertilizer waste makes financial as well as environmental sense, but it means more than just reducing spills. It also means not buying more than you need and keeping records on what you do have on hand. Knowing how much you've used in the past and what you have on hand allows you to make better purchasing decisions. Buying only what you need makes long term

storage unnecessary and decreases the risk of spills or accidents. Although this fact sheet focuses on protecting groundwater, fertilizer spills are a threat to surface water quality, too. As you evaluate risks of water contamination on your farmstead, don't forget to consider the potential impact of fertilizer spills on surface waters.

Authors

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Joe Egle

Contacts and References

General information & regulations
Purdue University Cooperative Extension
Service 888/EXT-INFO or local office

Office of Indiana State Chemist
1154 Biochemistry Building
West Lafayette, IN 47907-1154
765/494-1492

Purdue Pesticide Programs
1155 Lilly Hall West Lafayette, IN 47907-1155
765/494-4566

Emergency

Report spills to:

EPA National Response Center
(within 15 minutes for reportable quantities)
800/424-8802

Indiana Department of
Environmental Management
Emergency Response Spill Line
888/233-7745 (toll free Indiana only)

(optional)
Office of Indiana State Chemist
1154 Biochemistry Building
West Lafayette, IN 47907-1154
765/494-1492

What to read about...

MWPS-37 Designing Facilities for Pesticide and Fertilizer Containment (1)

PPP-28 Pesticides and Spill Management (2)

PPP-32 Pesticides and Community Right-to-Know (2)

Rules and Regulations Under the Indiana Fertilizer Law (for Bulk Quantities) (Title 355 Indiana Administrative Code) (3)

On-Farm Fertilizer Storage (CD-ROM)

<http://www.ecn.purdue.edu/SafeWater/farmasyst/surveys/factsheets/fertilizer3.htm>

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Nitrate and Pesticides in Private Wells of Indiana xbu

Sources:

The number's correspond to the numbers listed above)

1. Purdue University Cooperative Extension
offices 888/EXT-INFO or
Media Distribution Center
301 S. 2nd Street Lafayette, IN
47901-1232317/494-6794 or 1-888/EXT-INFO
2. Purdue Pesticide Programs
1155 Lilly Hall
West Lafayette, IN 47907-1155
765/494-4566
3. Office of Indiana State Chemist
1154 Biochemistry Building
West Lafayette, IN 47907-1154
765/494-1492
4. Center for Technology Transfer and
Pollution Prevention
1146 Agricultural and Biological
Engineering Bldg.
West Lafayette, IN 47907-1146
765/494-1172
5. Indiana Farm Bureau, Inc.
P.O. Box 1290
Indianapolis, IN 46206
317/692-7851

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Click here for Survey 3:

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