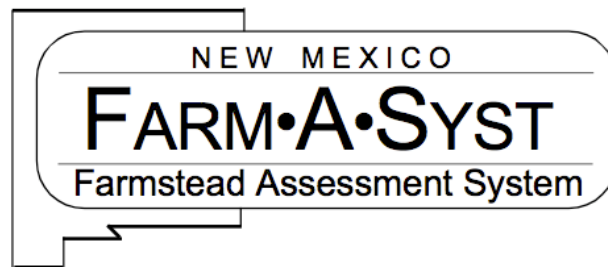




Fact Sheet #2
***Reducing the Risk of Groundwater Contamination by
Improving Pesticide Storage and Handling***





Fact Sheet #2

Reducing the Risk of Groundwater Contamination by Improving Pesticide Storage and Handling

We'll look at five areas of pesticide management on your farmstead: 1) pesticide storage practices; 2) mixing and loading practices; 3) spill cleanup; 4) container disposal practices; and 5) other management practices.

When handling pesticides, wear proper protective clothing at all times. Personal protection is not addressed in Farm•A•Syst, because its focus is groundwater and drinking water protection. The Cooperative Extension Service and New Mexico Department of Agriculture can provide personal safety information regarding pesticide handling.

1. Pesticide storage practices

If stored safely in a secure location, pesticides pose little danger to groundwater. Common sense suggests keeping them dry and out of the way of activities that might knock over a jug or rip open a bag. Short-term storage (during seasonal use) poses a lower risk than year-round storage, but **any** storage, regardless of length of time stored, poses a risk to groundwater.

If a spill does occur, an impermeable (waterproof) floor, such as concrete, should virtually eliminate any seepage of chemicals into the ground. Putting a curb around the floor will prevent chemicals from spreading to other areas.

Secondary containment provides an impermeable floor and walls around the storage area, which will minimize the amount of pesticide seeping into the ground if a bulk liquid pesticide storage tank should leak.

A mixing/loading pad provides for secondary containment during the transfer of pesticides to spraying equipment or nurse tanks.

Building a new storage facility

Building a new facility just for pesticide storage may be expensive, but generally it will be safer than trying to modify areas meant for other purposes.

When building a new facility, keep in mind a few principles of safe pesticide storage:

1. Locate the building downslope and at least 100 feet away from your well. Separation from the well should be greater if the site has sandy soils or fractured bedrock near the land surface. The risk of pesticide contamination of groundwater is influenced by properties of both the pesticide and the soil on which it is spilled or applied. (Worksheet #11, *Site Evaluation*, assists you in ranking your farmstead soils and geologic conditions according to their ability to keep pesticides and other contaminants out of groundwater.)

*For glossary,
see Worksheet #2.*

2. In the event of a fire, contaminated surface water should drain to a confined area.
3. The mixing and loading area should be close to your storage facility, to minimize the distance that chemicals are carried.
4. The building foundation or secondary containment floor should be well drained and high above the water table. The finished grade should be 3 inches below the floor and sloped to provide surface drainage away from the building. The subsoil should have a low permeability.
5. Provide pallets to keep large drums or bags off the floor. Shelves for smaller containers should have a lip to keep the containers from sliding off. Steel shelves are easier to clean than wood if a spill occurs. Store dry products above liquids to prevent wetting from spills.
6. If you plan to store large bulk tanks, provide a containment area large enough to confine 125 percent of the contents of the largest bulk container, plus the displaced volume of any other storage tanks in the area.
7. A locked storage cabinet or building provides security. Preventing unauthorized use of pesticides reduces the chance of accidental spills or theft. Provide signs or labels identifying the cabinet or building as a pesticide storage area. Labels on the outside of the building give firefighters information about pesticides during an emergency response for fire or a spill.
8. Provide adequate road access for deliveries and emergency equipment.
9. Keep pesticides separate to prevent cross-contamination. Herbicides, insecticides and fungicides should be kept on separate shelves or areas.
10. For information on other factors to consider in the design of a storage facility—such as ventilation, water access, temperature control and worker safety—contact your county Extension office or New Mexico State University, College of Civil, Agricultural, and Geological Engineering at (505) 646-3801.

Modifying an existing storage facility

Even if you decide to improve your current storage building, applying the above principles can be expensive. Compared to the cost of a major accident or a lawsuit, however, storage improvements are a bargain. (Items 5-10 above are also important points to remember for existing storage.)

The cheapest alternative you may have is to cut back on the amounts and types of pesticides stored. If that's not practical, consider how you can protect the pesticides you keep in storage. Sound containers are your first defense against a spill or leak.

If a container is accidentally ripped open or knocked off a shelf, the spill should be confined to the immediate area and cleaned up promptly. The building should have a solid floor and, for liquid pesticides, a curb. The secondary containment space should be large enough to hold 125 percent of the contents of the largest full container, plus the displaced volume of any other storage tanks in the area.

Remodeling existing facilities that serve other uses may be less expensive than building a new facility, but remodeling can be complicated. When existing buildings

must accommodate other activities, using them also to store pesticides could compromise the safety of people and the environment. Storing chemicals in a separate facility reduces the risk associated with fire or accidental spills. Never store pesticides inside a wellhouse or a facility containing an abandoned well.

You can reduce damages by anticipating emergencies. Fires in a storage area present a special hazard to people and the environment. If containers are damaged, the stored chemicals may be carried away by water and spread over a large area.

Windows and doors can be labeled to alert firefighters to the presence of pesticides and other products stored in the structure. It's a good idea to keep a separate list of the chemicals and amounts stored. Keep a copy of the list in the house or away from the storage area.

If a fire should occur, consider where the surface runoff water will go and where it might collect. For example, a curb around a floor can help confine contaminated water.

In making the storage area secure, also make it accessible, to allow getting chemicals out in a hurry.

2. Mixing and loading practices

Groundwater contamination can result even from small spills in the mixing and loading area. Small quantities spilled regularly in the same place can go unnoticed, but the chemicals can build up in the soil and eventually reach groundwater. By mixing and loading on an impermeable surface, such as concrete, you can contain and reuse most spilled pesticides.

A mixing and loading pad

Containing pesticide spills and leaks requires an impermeable (waterproof) surface for mixing and loading. The pad should be large enough to contain leaks from bulk tanks, wash water from cleaning equipment, and spills from transferring chemicals to the sprayer or spreader. (See Figure 1.)

The size of the pad depends also on the equipment you use. It should provide space around the parked equipment for washing and rinsing. Having several separate rinsate (rinse water) storage tanks allows you to keep rinsate from different chemicals separate. That way, it can be used as mixing water on subsequent loads.

Locate the pad next to the storage area. Make sure that any water from the pad moves away from the well. At sites where runoff water could reach the well, construct a diversion so runoff is directed to another area.

If you are considering constructing a mixing and loading pad, contact your county Extension office.

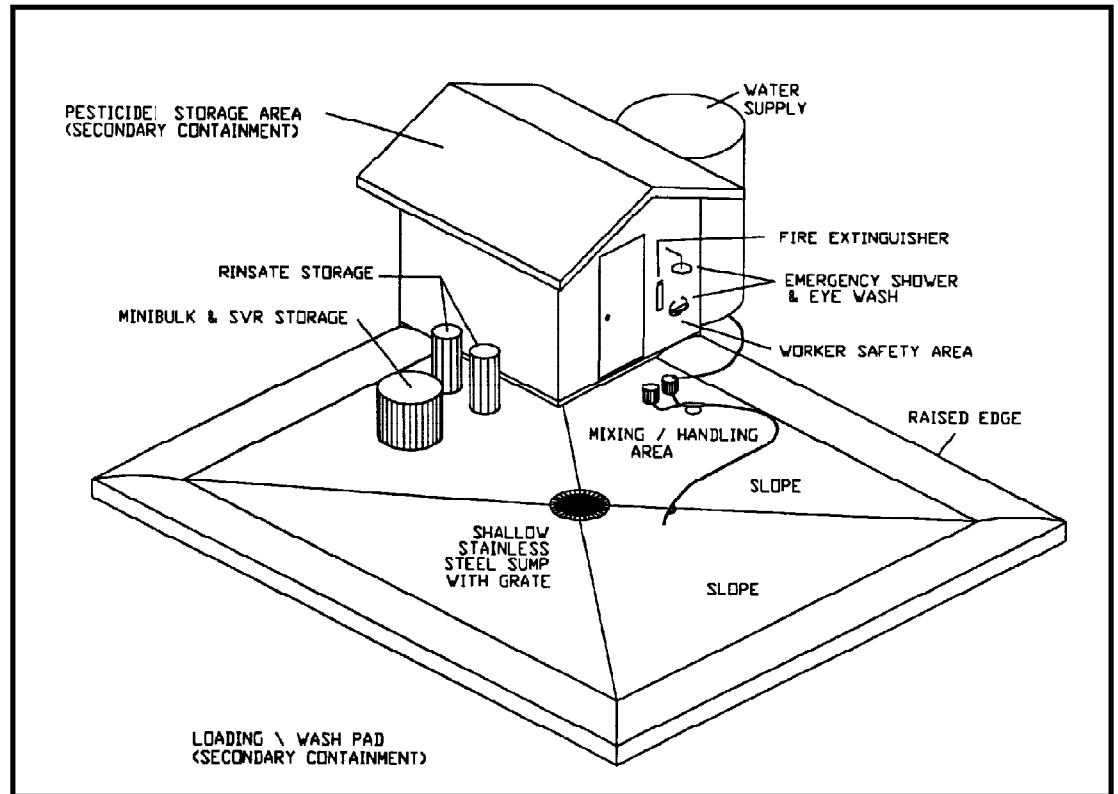


Figure 1: Farm-sized pesticide facility. Source: *Farm-Sized Mixing/Loading Pad and Agricultural Storage Facility*, by D.W. Kammel and D. O'Neil, presented at Summer Meeting of the American Society of Agricultural Engineers, June 24-27, 1990.

Better management on your existing mixing and loading site

Spills and leaks are bound to occur from time to time. Even if you don't have an impermeable mixing and loading pad, you can minimize contamination by following some basic guidelines:

- Avoid mixing and loading pesticides near your well. One way to do this is to use a nurse tank to transport water to the mixing and loading site. Ideally, the mixing site should be moved each 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.
- Install a backsiphon prevention device on the well or hydrants to prevent reverse flow of liquids into the water supply. Never put the hose in the sprayer tank. Provide an air gap of 6 inches between the hose and the top of the sprayer tank.
- Always supervise sprayer filling. For restricted-use pesticides, a trained and certified applicator must supervise operations.
- Consider a closed handling system, which transfers the pesticide directly from storage container to applicator equipment (through a hose, for example). Humans and the environment are never inadvertently exposed to the pesticide.
- Use rinsate for mixing subsequent loads. Spray the last rinsate load on the labeled crop.

3. Spill cleanup procedures

For dry spills, promptly sweep up and reuse the pesticide as it was intended. Dry spills are usually very easy to clean up.

For liquid spills, recover as much of the spill as possible and reuse as it was intended. It may be necessary to remove and field apply some contaminated soil.

New Mexico Water Quality Act (NMSA 1978), Section 74-6-4, Paragraph C and subsequent Water Quality Standards for Interstate and Intrastate Streams in New Mexico, Section 1.100, Paragraphs B and D, require that spills of any amount to streams or lakes be reported. New Mexico Environment Department (NMED) recommends the policy of reporting spills, which occur on soil or on mixing/loading pads, greater than one quart of concentrate material or greater than five gallons of dilute solutions. It is also advised to report spills of smaller quantities if there is a threat to water resources because of the particular compound or spill location.

To report a spill, call the 24-hour Emergency Hotline of NMED, Hazardous and Radioactive Materials Bureau at (505) 827-9329. Collect calls are accepted.

Remove the spilled material and contaminated soil no matter what the quantity, and dispose of according to recommendations you receive when you report the spill.

Have an emergency response plan for the site. Know where the runoff water will go, how to handle your particular chemicals, and whom to call for help.

4. Container disposal practices

Unwashed and improperly stored containers can lead to groundwater contamination by allowing chemical residues to leak onto the ground. Some basic guidelines can help avoid similar problems:

- As often as possible, use returnable containers and minibulks and take them back to the dealer.
- Pressure-rinse or triple-rinse plastic containers immediately after use, since residue can be difficult to remove after it dries. Pour rinse water into the spray tank. Puncture containers and store them in a covered barrel until you can take them to a permitted landfill.
- Recycle plastic and metal containers whenever possible.
- Shake out bags, bind or wrap them to minimize dust, and take them to a permitted landfill.
- Do not bury or burn pesticide containers or bags on the farm.

Your drinking water is least likely to be contaminated if you follow appropriate management procedures or dispose of wastes in an approved location that is **off the farm site**.

However, proper offsite disposal practices are essential to avoid risking contamination that could affect the water supplies and health of others.

(For more detailed information about proper disposal of pesticide containers, refer to Worksheet and Fact Sheet #5, *Hazardous Waste Management*. Fact Sheet #5 also discusses the risks of burning these containers.)

5. Other management practices

Reducing pesticide 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 to apply, keeping records of what you have on hand, and using older products first.

- Buying only what you need makes long-term storage unnecessary. In addition, you avoid cold weather problems, which can make some pesticides useless.
- Recordkeeping may seem like a task unrelated to groundwater contamination, but knowing what you've used in the past and what you have on hand allows you to make better purchasing decisions.

Producers should keep records of past field application rates and their effectiveness. Along with field records, you can add information such as the manufacturer's name and address, chemical types and handling precautions. This information can be important if you must respond quickly to an accident.

- Using older products first keeps your inventory current and effective. Before using chemicals that have been stored for a few years, though, check with your county Extension agent about possible restrictions on their use. (Worksheet and Fact Sheet #5, *Hazardous Waste Management*, provide information on how to safely and legally dispose of unwanted and banned pesticides.)