Improving Pesticide Storage and Handling

Keeping Idaho's Water Clean

There are six important components of pesticide management on your homestead: 1) pesticide storage practices; 2) mixing and loading practices; 3) spill cleanup; 4) container disposal practices; 5) proper use according to label directions; and 6) other management practices.

When handling pesticides, wear proper protective clothing at all times. Personal protection is not addressed in Home*A*Syst, as its focus is ground water and drinking water protection. For more information on personal protection when handling pesticides, refer to label directions, contact your county Cooperative Extension System (CES) office or the Idaho State Department of Agriculture (ISDA) (see *Contacts and References* section).

1. Pesticide Storage Practices

If stored safely in a secure location, pesticides pose little danger to ground or surface water. Keep 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 may pose a risk to ground water.

The risk of contamination increases the closer the pesticide storage area is to your well. Pesticide storage areas should be downslope and as distant from your well as possible to provide reasonable assurance that well water will not be contaminated. Separation should be greater if the site has sandy soils or fractured bedrock near the land surface.

The risk of pesticide contamination of ground water is influenced by properties of both the pesticide and the soil on which it is spilled or applied. Several publications in the Contacts and References section provide more information on these topics. Also, Worksheet A, Site Evaluation, can help you rank your homestead soils and geologic conditions according to their ability to keep pesticides and other contaminants out of ground water.

Managing your existing storage facility

Proper management of your existing pesticide storage facility will often allow you to protect your water supply without major expense. Even when needed changes require expensive modifications to your facilities, keep in mind that compared to the cost of a contaminated well or a lawsuit, storage improvements can be a bargain.

The cheapest alternative you may have is to cut back on the amounts and types of pesticides stored, if practical. Also consider how you can protect the pesticides you keep in storage.

- Pesticide storage areas should be locked or pesticides stored in a locked cabinet out of reach of children and other unauthorized people. A locked storage cabinet or building provides security, prevents unauthorized use of pesticides, and reduces the chance of accidental spills or theft. Provide signs or labels identifying the cabinet or building as a pesticide storage area. Areas in which pesticides are stored are required by state law to be posted as a pesticide storage area. For further information, call the Idaho State Department of Agriculture (ISDA), (208) 332-8500.

- Pesticides should always be stored in sound, properly labeled, original containers. 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 immediately.

- Steel shelves are easier to clean than wood if a spill occurs. Shelves for smaller containers should have a lip to keep the containers from sliding off.

- Store dry products above liquids to prevent wetting from spills. Never store dry bagged materials under liquids. Provide pallets to keep large drums or bags off the floor.

- Keep pesticides separate to prevent cross-contamination. Herbicides, insecticides, and fungicides should be kept on separate shelves or areas.

- 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.

- Proper ventilation must be provided for enclosed storage areas. Check with ISDA to see if your storage area falls under requirements for mandatory secondary containment.

- Have an emergency response plan for the site.

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 to store pesticides could compromise the safety of people and the environment. Storing pesticides 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.

Fires in a pesticide storage area present a special hazard to people and the environment. You can reduce damages by anticipating emergencies. Entrances should be posted to alert fire fighters to the presence of pesticides and other products stored in the structure. It's a good idea to keep a list of the pesticides and amounts stored. Keep a copy of the list in the house or away from the storage area and keep it up-to-date.

If a fire should occur, consider where the surface water runoff will go and where it might collect. For example, a curb around a floor can help confine contaminated water. When making the storage area secure, also make it accessible, so you can get pesticides out in a hurry if feasible.

Building a new storage facility

Building a new facility just for pesticide storage may be expensive, but generally is safer than trying to modify areas meant for other purposes. If you build a new facility, apply the principles of safe pesticide storage mentioned above. Remember that this is your opportunity to provide the maximum amount of safety possible for your family and your drinking water supply. Safe storage can minimize the risk of spills around your pesticide storage area. If a spill does occur, an impermeable (waterproof) floor, such as coated or sealed concrete, should virtually eliminate any seepage of pesticides into the ground. Putting a curb around the floor will prevent chemicals from spreading to other areas.

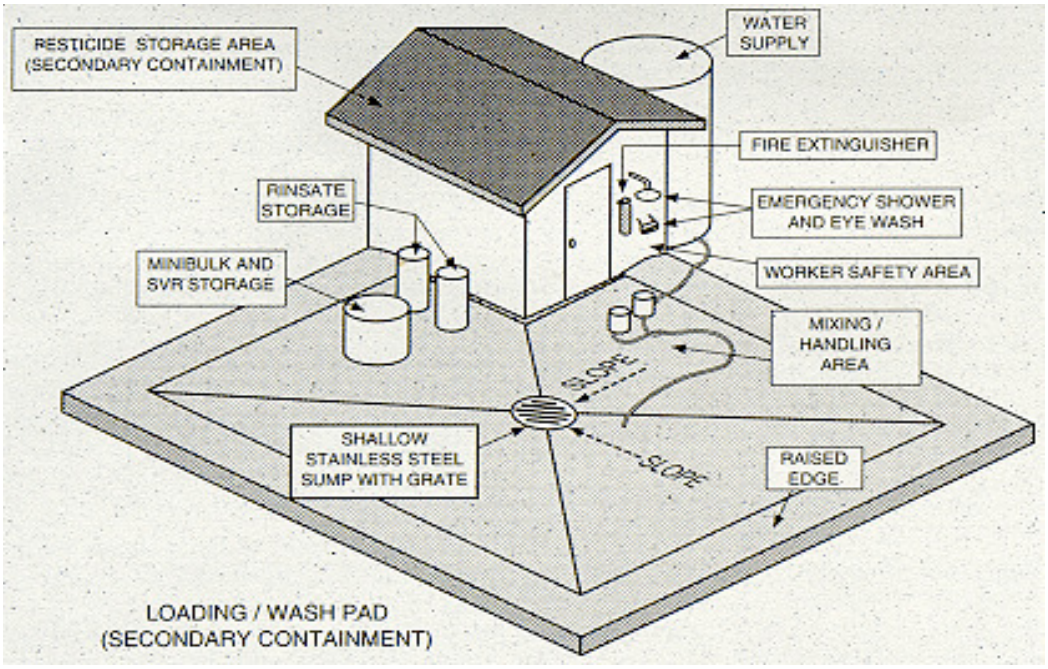

Figure 1. Farm-sized pesticide facility. *Source: Farm-Sized Mixing/Loading Pad adn Agri-chemical Storage Facility, by D.W. Kammel and D.O'Neil, presented at Summer Meeting of the American Society of Agricultural Enginneers, June 24-27, 1990.*

Secondary containment provides an impermeable floor and walls around the storage area, which will allow for the recovery of pesticide products if a bulk liquid pesticide storage tank should leak. Contact ISDA for specifics on secondary containment rules which are being developed (208) 332-8597. A mixing/loading pad provides for secondary containment and recovery of pesticide products during the transfer of pesticides to spraying equipment. Although sumps are recommended, there should not be any underground plumbing or storage tanks.

For information on other factors to consider when designing a storage facility, such as ventilation, temperature control, and worker safety, contact your county Cooperative Extension System office, USDA Service Center or the Idaho State Department of Agriculture.

2. Mixing and Loading Practices

Ground-water 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 ground water. Mixing and loading on an impermeable surface, such as coated or sealed concrete, will allow containment of spilled pesticides for recovery and use as intended. Spills should be cleaned up immediately.

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, or to collect inadvertent spills and prevent the transfer of chemicals to the sprayer or spreader (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 rinsate (rinse water) storage tanks allows you to keep rinsate from different chemicals separate. That way, the rinsate can be used as mixing water on subsequent compatible loads.

Locate the pad next to the storage area. 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 Cooperative Extension System office, the Cooperative Extension System agricultural engineer at (208) 885-7627, your local USDA Service Center, or the Idaho State Department of Agriculture for more detailed information.

Better management of your existing mixing and loading site

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 mix and load pesticides at the field to be sprayed using a nurse tank to transport water. Mixing should not be done routinely in the same place.

- Avoid mixing and loading on gravel driveways or other surfaces that allow spills to travel or move quickly through the soil. A clay surface is better than sand or gravel.

- Install a backsiphon or back flow prevention device on the well or hydrants to prevent reverse flow of liquids into the water supply. Never submerge the hose end inside the sprayer tank. Provide an air gap of six inches between the hose and the top of the sprayer tank, free fall the water into tank or use oversize slotted pipe extended out of the tank.

- Always supervise or observe 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 the original container to applicator equipment (through a hose, for example). Humans and the environment are never inadvertently exposed to the pesticide with this system.

- Use rinsate for mixing subsequent compatible loads. Spray the rinsate according to label directions. Ideally, rinsate should be used on the application location from which the rinsate was created.

3. Spill Cleanup Procedures

For dry spills, promptly sweep up and use 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. Recovery in the original liquid form is recommended. Otherwise use soil, sawdust, or other absorbent material, and place it in a sealable container. It may have to be disposed of as hazardous waste. Contact a hazardous material contractor, ISDA, or DEQ for disposal procedures.

Spills are generally considered a threat to human health or the environment. Spills or discharges to water should be reported immediately. Immediate clean up is urgent to prevent migration to ground water, wells, and waterways. Spills to porous soils should be reported immediately.

Spills within or discharges to containment structures should be cleaned up in a timely manner. For example, shop floors, concrete pads, or drip pans could be considered barriers to the environment if they prevent contact with the environment. Containment structures are not to be used to store or accumulate dangerous or hazardous wastes.

For further information or assistance or to report spills, contact the Idaho State Department of Agriculture at (208) 332-8610, Idaho Emergency Response Commission, Idaho Communication Centers (Poison Control) (800) 632-8000, or the EPA Hotline (208) 424-4372.

4. Container Disposal Practices

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

- As often as possible, use returnable containers and minibulks and take them back to the dealer.

- Pressure-rinse or triple-rinse plastic and metal containers immediately after emptying, since residue can be difficult to remove after it dries. Pour rinse water into the spray tank. Do not dump rinsate on the ground or into storm drains. Puncture or cut rinsed containers and store them in a dry storage area until you can take them to a container recycling event or to a permitted landfill.

- Shake out bags (do not let material blow around), bind or wrap them to minimize dust, and take them to a permitted landfill.

- Due to current and future health risks, do not bury or burn pesticide containers or bags on the farm.

Your drinking water is less likely to be contaminated if you follow appropriate management procedures and properly recycle or dispose of pesticide containers. Unused pesticides may be

disposed through the ISDA Pesticide Disposal Program (PDP). PDP provides the agricultural producer and homeowner a safe, convenient, and environmentally friendly way to dispose of unusable pesticides. This program is free for the first 1,000 pounds of unusable pesticides per participant. If you have any questions regarding PDP or unused pesticide disposal, please contact Victor Mason at (208) 465-8442 (vmason@agri.idaho.gov). Plastic containers can be recylced through the ISDA Container Recycling Operation Program (CROP). CROP is a free program to chip clean, empty plastic containers (pesticide or fertilizer). The containers must be triple rinsed. The CROP truck can come to your site or a central location and chip HDPE #2 plastic. The chipper equipment can handle containers up to and including 5 gallons whole. Thirty-gallon and 55 gallon containers must be cut up by the participant prior to chipping. If the 5 gallon containers are thick-walled they must also be cut up by the participant prior to chipping. If you have questions about the CROP program, please call either Victor Mason at (208) 465-8442 (vmason@agri.idaho.gov), or Brian Allen at (208) 442-2816 (ballen@agri.idaho.gov)

For more information about proper recycling or disposal of pesticide containers, contact Victor Mason at (208) 465-8442 (vmason@agri.idaho.gov) or refer to Fact/Worksheet 5, Improving Farm and Home Waste Management.

5. Other Management Practices

Pesticide management and 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 for the current year, keeping records of what you used and 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.

- Federal USDA record keeping requirements are applicable to farmers utilizing restricted use pesticides (RUPS). Keeping accurate records of commercial pesticide applications is required by state law. Contact ISDA at (208) 332-8500. Record keeping may seem like a task unrelated to ground-water contamination, but knowing what you've used in the past and what you have on hand allows you to make better purchasing decisions.

- Keep records of past field application rates and their effectiveness. Keep field records and add information such as the manufacturer's name and address, types, and handling precautions. This information can be important if you must respond quickly to an accident or wish to review historical pesticide use on a field for crop rotation or crop yield information.

Contacts and References

Who to call about...

General pesticide information

• National Pesticide Information Center, (800) 858-PEST(7378) (http://www.npic.orst.edu). NPIC provides 24-hour information (365 days a year) on pesticide poisoning, pesticide products, pesticide cleanup and disposal, enforcement contacts, pesticide certification and training programs, and pesticide laws.

• Idaho Emergency Response at 1-800- 424-8802. The center provides information on who to contact in case of exposure to or spill of pesticides or any toxic substance.

Health effects of pesticides in drinking water

• Idaho Department of Heath and Welfare, Idaho State Department of Agriculture (ISDA) (208) 332-8500, or your local public health district for all health related issues. The reporting numbers for the DEQ regional offices are:

North (Coeur d' Alene):	(208) 769-1422
North Central (Lewiston):	(208) 799-4370
Southwest (Boise):	(208) 373-0550
South Central (Twin Falls):	(208) 736-2190
Southeast (Pocatello):	(208) 236-6160
Eastern (Idaho Falls):	(208) 528-2650

Drinking water quality and treatment and health advisories

• EPA Safe Drinking Water Hotline, Monday through Friday, 5:30 a.m. to 3 p.m. Pacific Standard Time, call (800) 426-4791. DEQ can be reached at the numbers above.

Further information on chemicals

• Chemical Referral Center, sponsored by the Chemical Manufacturers Association. Call (800) 262-8200. The Center will refer a caller to the manufacturer of the chemical in question. It will also provide telephone numbers of other hotlines that address chemicals.

Pesticide storage, handling, disposal, and safety

• Your county Cooperative Extension System office, University of Idaho Ag. Engineer, or the ISDA Division of Agriculture Resources (208) 332-8500, has extensive information on many facets of chemical pesticides, including environmental fate and human health effects.

What to read about...

Health effects

• The product label. Read your product labels carefully for specific information on pesticide health effects.

• Health Fact Sheets from Idaho State Department of Agriculture (208) 332-8607 or http://www.agri.idaho.gov.

• Health Advisory Summaries. 1989. U.S. Environmental Protection Agency, Washington, D.C. Prepared for nearly 60 substances with potential to reach drinking water, each two-page Health Advisory Summary describes a pesticide, its brand names, its potential health effects, sugested action steps, and where to go for more information.

• First Aid for Pesticide Poisoning, PNW0278

Pesticide storage, handling, disposal, and safety

• Your Home, Your Health, and Pesticides, 1990.
• A Consumer's Guide To Safer Pesticide Use. 1987. Free 25-page special reprint from the EPA Journal.
• Chemicals in Your Community: A Guide to Emergency Planning and Right To Know Act. 1988. Contains information on implications of this law for farmers.
• Disposing of Crop Protection Chemical Containers. 1990. ACRE Fact Sheets, numbers 5 and 12. Fact Sheet 5 provides an eight-point check list of procedures to follow for safe disposal of chemical containers. Fact Sheet 12 discusses pressure-rinsed and triple-rinsed containers and rinsed container disposal.
• Constructing an Inexpensive Chemical Rinse Pad. 1990. ACRE Fact Sheet 14. Discusses capturing wastewater, storage of chemicals, site selection, and the design of a simple rinse pad.

Integrated pest management and other alternative pest control strategies

• Puget Sound Pest Management Guidelines Manual, 1993. A comprehensive manual that addresses chemical and integrated pest management (IPM) strategies, and costs and benefits of both.
• Concepts of Integrated Pest Management in Washington, EB0753 The Washington Toxics Coalition provides an extensive information service on alternative pest control methods .
• Universtity of Idaho Pest Management Center, www.ag.uidaho.edu/pmc/pests/croppests.htm

Publications available from...

• Your county Cooperative Extension System office.
• Your local health district
• Idaho State Departement of Agriculture (http://www.agri.idaho.gov).
• Idaho Department of Environmental Quality (http://www.deq.idaho.gov)
• For more information on how to obtain full health advisories or health advisory summaries, call the EPA's toll free Safe Drinking Water Hotline, (800) 426-4791, 5:30 a.m. to 3:00 p.m. Pacific Standard Time.
• U.S. Environmental Protective Agency, Office of Pesticide Programs (TS-766C), 401 M Street S.W., Washington, D.C. 204060.
• Washington Toxics Coalition, 4516 University Way NE, Seattle, Washington 98015.
• Freshwater Foundation at Spring Hill Center, 725 County Road 6, Wayzata, Minnesota 55391, (612) 449-0092.