Safe Storage and Disposal of Pesticides and Farm Chemicals

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STORAGE OF PESTICIDES

Improperly stored pesticides cause millions of dollars in losses every year. Accidents with pesticides don’t have to happen; we let them happen.

The majority of all pesticide accidents can be avoided by storing chemicals in safe, secure, designated and properly posted areas.

Children might explore and sample leftovers, especially if the chemicals are in different or unlabeled containers. Animals can be poisoned if pesticide leftovers, such as sacks that contained insecticide, are carelessly left in old buildings or fields. Dumping unused chemicals can damage the environment and even endanger lives and wildlife.

Most people consider application the most dangerous time for using toxic pesticides, but application problems are expected to happen. Applicators are more careful, aware and prepared for problems. Actually, the majority of pesticide accidents happen before and after application when farmers and applicators are not expecting trouble. Empty containers are accidentally tossed into creeks, pens or sheds. Leftovers are dumped at the end of each job. New supplies are stored where convenient.

At times like these, pesticides get stored or disposed of anywhere but where they should be. Your first job in helping to prevent any accident is to find a safe, easily secured area to store your pesticides—one single location where they can be locked when not in use.

An area at ground level, located in a fire-resistant building with concrete floors and good ventilation would make a good storage space. Also, the area should not be in danger of water from heavy rains or floods that might wash into ponds, streams, feedlots or ground water. The best site is one where pesticides can be stored in dry, locked, well-ventilated areas where humans, livestock and pets cannot reach them. Remember, young children and animals are curious and cannot read labels. They do not know the hazards of pesticides.

After choosing your storage area, post it with large, easy-to-read warning signs. Don’t ever convert it to any other use. Once designated and used for pesticide storage, satisfactory decontamination is impossible.

To prevent one pesticide from contaminating another, or accidental use of the wrong chemical, store herbicides, fungicides, insecticides and rodenticides separately within the storage area. Place each container with the label facing out. Should a label become loose or torn, repair it with plastic tape. To prevent disastrous mistakes, protect these original labels on all containers.

Isolate extremely toxic pesticides. These deserve extra care. They bear the skull-and-crossbones symbol and the signal words, "DANGER" or "POISON." Placing movable, highly visible placards will remind you or anyone else which materials are in which areas.
Once you’ve safely put away your pesticides, follow these ideas to help prevent any further problems.

First, read and reread the labels. If a label doesn’t answer all your questions about handling and using the pesticide, call the company’s toll-free telephone number listed on the label. To read labels more easily, provide adequate natural or artificial lighting in the storage area.

Protect all stored chemicals from extreme heat and cold. Well-insulated storage areas will prevent chemical breakdowns, package and product deterioration, and possible leakages. Good ventilation not only will help avoid heat build-up, but also will remove any toxic fumes before they become dangerously dense.

Rusted, leaking cans or water-damaged sacks may spill chemicals, seriously contaminating the floor. Protect containers from water or other moisture by storing them on wooden palettes or metal shelves. If a container is damaged or leaking, transfer the contents to a container that has held exactly the same pesticide. Clean up the spill.

Keep nothing except pesticides and pesticide equipment in a pesticide storage facility. Never store respirators or protective clothing with pesticides. Post a list of the stored chemicals on the outside door and keep the list updated as to quantities stored.

Finally, install a fire alarm system in your storage area. Buildings that store large quantities of chemicals should have a sprinkler system in case of fire. Minimum protection for smaller structures should be a 10-pound, ABC (all purpose) fire extinguisher. Give the fire department a list of all chemicals stored in the building. Then the fire department will know what is in the building and how to combat each chemical fire. Burning pesticides give off fumes that can kill people and animals.

Before leaving your storage area, securely lock all doors and windows. The only pesticides that should leave this secured area are those for immediate application or those to be returned to the dealer or manufacturer.

Any leftovers not mixed for application must be returned immediately in their original containers to the secured storage area. Misplacing these leftovers or putting them in anything other than their original, labeled containers invites disaster.

If you have any doubts or questions concerning the proper storage of pesticides and containers, call the manufacturer’s toll-free number on the label.

**DISPOSAL OF CHEMICALS**

**What Is the Problem?**

Each year thousands of agricultural chemical containers are emptied and become waste items that require disposal. To a lesser extent, unused chemicals or unused materials treated or contaminated with chemicals (e.g., seed grain) also require disposal. Mostly, these chemicals are registered pesticides. Other chemical wastes may include fertilizers, organic solvents (from parts cleaning), and caustic cleaning solutions. Dilute solutions of pesticides from barrel rinsing and equipment cleaning also pose potential problems for the farm applicator. Numerous chemical incidents have occurred resulting in livestock losses, contamination of domestic wells, and damage to valuable croplands.

Farmers, more so than other businesses producing potentially hazardous waste materials, are given a great deal of flexibility in how they may dispose of wastes. With this freedom of choice comes a high degree of responsibility to choose a safe, effective disposal method. Sound management procedures for hazardous wastes are as important on the farm as in the industrial plant.

**What Are the Pertinent Legal Requirements?**

For many years, the laws and regulations governing the safe use of pesticides also have placed some restrictions upon their disposal. Label instructions include warnings about container and rinse water disposal, and caution against the contamination of foods, feeds and water supplies. Disposal inconsistent with label instructions is a violation. Newer product labels show more extensive disposal instructions.

Additionally, environmental programs enforced by the Montana Department of Health and Environmental Sciences contain certain requirements applicable to the disposal of waste chemicals. Open burning regulations under the state air quality program prohibit the burning of hazardous waste and other toxic chemicals, thus eliminating the open burning of chemical bags is a disposal alternative. State water quality water law prohibits the placement of any waste in waters of the state or in a location likely to contaminate state waters. The Health Department’s solid waste management
program licenses sanitary landfills and controls the types of wastes that may be handled at such facilities.

More recently, the federal Resource Conservation and Recovery Act and its state companion, have added a new set of requirements for handling and disposing of hazardous waste materials. In many instances, these program requirements mean that the person or business that produces hazardous wastes has to provide for shipping the waste material to another state for disposal. Montana does not have any commercial sites or facilities for handling hazardous wastes. These businesses receive hazardous wastes for treatment and disposal.

What Options Are Available to Farmers?

On-Site Disposal

The regulations adopted under the hazardous waste program, both federal and state, contain an exemption for farmers: "A farmer disposing of waste pesticides from his own use, which are hazardous wastes, is not required to comply with the hazardous waste standards provided he triple-rinse each emptied pesticide container . . . and disposes of the pesticide residues on his own farm in a manner consistent with the disposal instructions on the pesticide label."

Pesticide residues, emptied containers and contaminated rinse liquids may be disposed of on farm property. Farmers are not required to obtain any permit or meet any special standards to do this. They are bound only by the disposal precautions stated on the label and the requirement to triple-rinse all emptied containers before disposing of them.

Farmers who wish to construct and operate a pesticide waste disposal site on their land can get design help and advice on operation from either the U.S. Soil Conservation Service or the Solid Waste Management Bureau of the Montana Department of Health and Environmental Sciences. A farm disposal site always should be located away from streams, ponds, springs, wells, marshy areas and areas of shallow groundwater.

The following guidelines will help reduce the hazards of disposing of surplus pesticides and empty containers:
- Remember that empty containers are never completely empty.
- Keep all empty containers in a locked storage area before disposal.
- Never puncture or burn aerosol containers.
- Do not reuse pesticide containers.

<table>
<thead>
<tr>
<th>Container Size</th>
<th>Solution Required</th>
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<tbody>
<tr>
<td>1-gallon container</td>
<td>Add 1 quart of rinse solution</td>
</tr>
<tr>
<td>5-gallon container</td>
<td>Add 1 gallon of rinse solution</td>
</tr>
<tr>
<td>30-gallon container</td>
<td>Add 5 gallons of rinse solution</td>
</tr>
<tr>
<td>50-gallon container</td>
<td>Add 5 gallons of rinse solution</td>
</tr>
</tbody>
</table>

- Triple-rinse and break all glass containers and dispose of them in a licensed sanitary landfill.

Use the triple-rinse method for all metal containers.

Step 1- Empty containers in the normal manner and drain an additional 30 seconds.

Step 2- Add the correct amount of rinse solution (usually water); can use a detergent if needed (See Table 1).

Step 3- Replace closure, lid or bung.

Step 4- Rotate and up-end the container for complete rinsing.

Step 5- Drain rinse into your spray and mix tank.

Step 6- Second rinse-repeat Steps 2 through 5.

Step 7- Third rinse-repeat Steps 2 through 5.

- Puncture head of metal container with Posidrain tool (to achieve maximum drainage) and drain remaining material into tank.

- After rinsing, dispose of containers in a sanitary landfill or with a scrap metal dealer.

Many pesticide applicators are switching to jet-spray rinsing systems. With these systems, the container is punctured and a spray nozzle completely rinses the inside of the container. The rinse liquid is collected and added to the sprayer tank. These systems can be implemented easily and inexpensively, and quickly pay for themselves in chemical and labor savings.

Recycle/Reuse

Except for pesticides, which have been suspended for use or canceled by the EPA or the Montana Department of Agriculture, the first option that a farmer with excess pesticide materials should investigate is
recycle/reuse. If a pesticide has not deteriorated in quality and if it is still registered for use, someone else may be able to use the material. Even if it is no longer usable, the manufacturing company should be contacted to see if it will accept the pesticide for reprocessing.

Also, scrap metal dealers might recycle steel drums that have been triple-rinsed or rinsed with an equivalent procedure. Scrap recycling is not appropriate for unrinsed containers.

**Sanitary Landfill Disposal**

Emptied chemical containers that have been triple-rinsed are always considered, under state law, to be acceptable for sanitary landfill disposal. Be sure the landfill operator in your area knows that you carefully rinse all emptied containers before you take them to the site for disposal. If he knows the containers are clean, he will not be reluctant to accept them for burial.

Classification of Landfills: The Montana Department of Health and Environmental Sciences has developed a system for classifying sanitary landfills for disposal of various types of hazardous waste materials. When classification is completed, some landfills will be approved for disposal of pesticide wastes. These wastes include excess pesticides, tank washings, containers and contaminated commodities and soils.

Classification is based on geological and soil characteristics, depth of ground water, lack of surface water or flooding, and the proximity to population centers. Sanitary landfills are classified as either Class I, II or III sites. Class I sites allow burial of the most toxic substances. Class II and III sites allow burial of moderately toxic to low toxic materials.

Under certain conditions, unrinsed containers or small amount of waste pesticide chemicals can be taken to sanitary landfills for disposal. Before delivering any such wastes, however, first contact the Solid Waste Management Bureau, then the landfill operator to determine what is allowed. Many of the state’s landfill sites are simply not adequate for the disposal of chemical wastes, even in small amounts. Other landfills may be acceptable for small amounts of less toxic, less persistent chemicals. None of the sanitary landfills in Montana may receive large amounts of chemical wastes or toxic, persistent pesticides such as arsenic, mercury, endrin and toxaphene.

**Hazardous Waste Disposal Facilities**

If you wish to use specialized, permitted hazardous waste facilities, you will have to make the arrangements and meet all of the legal requirements. The facility operator will ask for a considerable amount of information on the hazardous waste, its toxic constituents and (if applicable) its flammability. In some cases, this may require a laboratory analysis. Once these arrangements are made, you will have to arrange for shipping the waste in sound, approved containers with the required labels and waste manifest papers. The disposal facility contacts will be very helpful in making all the necessary arrangements. You should be prepared to pay a significant fee to use these specialized facilities.

Contact the Solid Waste Management Bureau for advice and technical assistance if necessary. They can help with the required paper work.

**What About Spray Equipment Rinsing?**

For many reasons, the contaminated water produced from cleaning spray equipment is more difficult to deal with than water from container rinsing. It may have concentrations of grease and dirt, which could clog spray nozzles, and if such rinse waters are continuously collected, the mixture could contain several different pesticides. These factors make it difficult to incorporate the rinse liquid into subsequent spray tank formulations. However, if these problems can be overcome through careful management practices, all dilute pesticide solutions from container and equipment rinsing could be reused in subsequent pesticide spray batches.

If reuse is impossible or impractical, a farmer is left with the choices of treatment, on-farm disposal, or shipment to an approved, off-site disposal facility. The same requirements apply for on-site disposal as for any other pesticide wastes: disposal consistent with all applicable label instructions.

Treatment alternatives may include: appropriate chemical treatment to render the waste liquid nonhazardous or concentrating the waste through filtration or solar evaporation processes.
How To Reduce or Prevent Disposal Problems

Pesticide waste disposal can be time-consuming and expensive, and must conform to technical regulation. Because of possible adverse impacts on cropland water supplies and other environmental resources, disposal methods that reduce the amount of wastes generated are the most effective and cost-efficient. The best alternative for disposing of excess pesticides is recycling or reuse. Carefully control your pesticide inventory. Mix only what is necessary and use all of the diluted product you mix. Avoid spillage and breakage. If at all possible, reuse the dilute pesticide solutions from container and equipment rinsing. If you cannot use an excess pesticide, see if someone else can legally use it. Get help and advice if necessary.