



**P**esticide products should always be kept in a secured storage area that is accessible only to those who are trained to use these products, such as licensed applicators, dealers, and distributors. Homeowners also need to be aware of proper pesticide storage practices. An important issue of safe storage is the potential for human harm through exposure—accidental or otherwise—especially where children are concerned. Proper storage can also prevent accidents that could cause property or environmental damage.

## Pesticide Storage and Security

The secure storage of pesticides and application equipment is not only a good practice for safety reasons, it can help reduce the potential of vandalism or theft with possible misuse of products, and unfortunately, the potential for use by terrorists and saboteurs. This is particularly important for those pesticides that are highly toxic or corrosive. However, even products not considered acutely toxic could potentially cause panic if used to contaminate water sources or food commodities, sprayed over populated areas, or otherwise misused.

### How Much Storage Space Do I Need?

The amount of storage space should be kept to a minimum to discourage storing large quantities of unneeded pesticides. However, the storage space must be large enough to accommodate not only newly purchased chemicals and opened containers, but also unused/unwanted pesticides, and empty and triple-rinsed containers that need to be stored until properly disposed or recycled.

### Where Should the Storage Site Be Located?

The best storage area would be a portable or prefabricated storage building as it can be repositioned easily in case of a flood hazard. Locate a detached storage structure far enough away from other buildings or structures, so that if a fire erupted, the pesticide storage area would not be threatened.

The storage site should be located in an area that will not be flooded. The storage area should be 12 inches above the immediate ground level to prevent moisture from being absorbed into stored products. Water and moisture can cause the following problems: rust metal containers; disintegrate paper or cardboard packaging; make labels unreadable; cause labels to detach; cause dry formulations to clump or cake, breakdown, or dissolve and release pesticide; and cause pesticide to spread from the storage area to other areas of the structure, or away from the structure.

Select storage site to minimize the potential for runoff and prevent potential contamination of surface waters in case of a leak or spill. The storage site should be located at least 100 feet away from surface waters and downslope from wells, animal feeding stations or shelters, food or feed storage, and dwellings. Consideration should be given to the direction of prevailing winds and what is downwind from the storage site in case of spills or fires.

Locate the storage site for easy access for delivery and emergency vehicles. Be sure to comply with all local zoning, building, and fire codes.

### **How Should the Storage Unit Be Constructed?**

Use nonflammable materials to reduce fire hazard. Use nonabsorbant materials, such as metal or nonporous shelving with a lip or leak-proof plastic trays on the shelves.

Use sealed floors, such as sealed concrete, epoxy-coated metal or concrete, no-wax sheet flooring, or other easily cleaned, nonabsorbent material. Dirt or unsealed wood flooring is unacceptable. In addition, have a continuous internal lip or curb, 2- to 4-inches high to prevent spills from overflowing and going outside the building.

If possible, provide electrical power to the storage area. This allows for internal lighting, an exhaust fan, and a heater, in addition to exterior security lighting and alarm. When possible use explosion-proof wiring and switch.

### **What Should the Storage Environment Be Like?**

Keep the storage unit dry and well ventilated. Keep outside doors and windows closed and locked, unless windows are needed for ventilation. Windows should not be large enough for someone to enter through them.

Keep pesticides from freezing and from extremely high temperatures—most pesticides should be stored between 40° and 90°F. Read the label and the Material Safety Data Sheet (MSDS) to be sure. Keep containers out of direct sunlight. Do not put containers, especially glass or aerosol containers, in windows even temporarily.

### **What about Security?**

Safety and security of pesticides are the responsibility of the applicator from the moment the applicator takes possession of the chemicals until they are used or disposed. Leaving pesticides unsecured in a vehicle where a child, unauthorized person, vandal, or an animal can get into them and suffer or cause an exposure is negligent.

Keep the storage area locked!

Store pesticides in a separate location, preferably in a building specifically designed to safely store these products. Always lock pesticide storage cabinets, closets, rooms, and buildings.

**Figure 1. All storage areas should be locked.**



**Figure 2. Secure and disable tanks to prevent unauthorized access.**



If the storage area must be inside a larger structure, provide access through a separate outside door. Limit access to the pesticide storage area to only essential persons, and keep a list of all individuals with keys. Consider installing security lighting, an alarm system, or using a guard dog.

Secure pesticides and disable application equipment when kept off-site or left in the field. Small equipment should be locked in a shed or other appropriate area. Never leave ignition keys in application equipment.

Aircraft and/or pesticide application equipment should be stored in locked hangars with electronic security systems when not in use. If hangar space is not available and aircraft must be left outdoors, disable the aircraft and then use propeller chains, locking high-strength tie-down chains, or blocking equipment as practical alternatives.

Be aware of the potential for siphoning or otherwise stealing pesticides from filled tanks such as mini-bulk equipment. Tanks should be secured or disabled so that unauthorized persons cannot access the material inside the containers.

Encourage employees to maintain enhanced security awareness to unusual or suspicious actions, such as unauthorized persons during transport or pesticide applications. For example, all personnel entering large storage facilities must produce a valid identification, or will be denied entry. When quantities dictate, commercial drivers licenses should be checked and, if appropriate, copied and filed, before loading any vehicle.

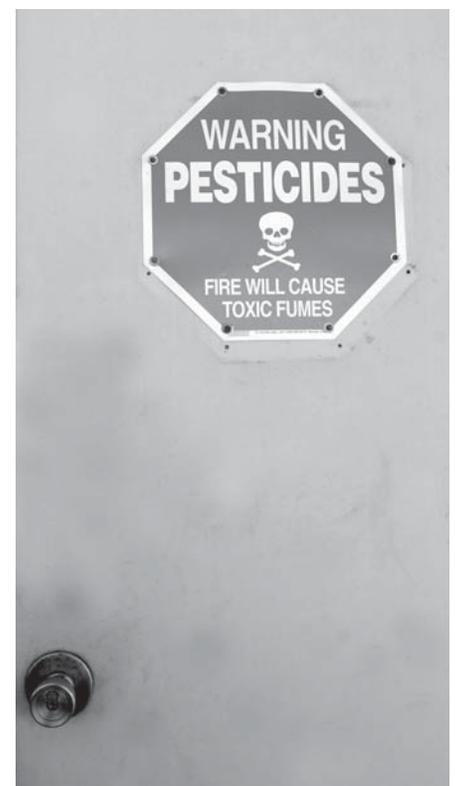
Post signs on the door, building, or fence that indicate pesticide storage, such as “Danger Pesticides—Unauthorized Persons Keep Out!” If

appropriate, this information should also be in a second language, such as Spanish. Also, post the name, address, and telephone number for two contact people, in addition to at least two emergency response phone numbers—local fire and police, Poison Center (1-800-222-1222), and so forth. Be sure to indicate the location of the nearest accessible telephone. Contact information should also be posted separately from the storage area—in case of a fire or other accident at the storage area.

Post NO SMOKING signs, and do not allow smoking in or near the storage area or facility.

Promptly report any thefts of pesticides or equipment and any suspicious activity to designated authorities: the local police, the Federal Bureau of Investigation (FBI) field office, and the Pennsylvania State Police (check your telephone book).

**Figure 3. Use appropriate signage for pesticide storage areas.**



## Safe Storage Practices to Follow

Read the label and MSDS and comply with all product storage requirements. Keep all pesticide labels intact (and firmly attached), and keep MSDS in an accessible location. When necessary, obtain replacement labels from your dealer or chemical sales representative. A substitute label, if needed, should have at least the product name, the active ingredient, formulation, the EPA registration number, the manufacturer's name, and any emergency phone numbers listed on the original label.

Be sure to store pesticides separately from food, feed, and seed. Follow the specific storage separation requirements on the label. Keep food, drinks, veterinary supplies or medications, first aid supplies, and clothing or protective equipment—especially respiratory protection—out of the storage area, as these items can be easily contaminated by dusts, vapors, or spills.

As much as possible—and you must if the label requires it—store all pesticides separately from other chemicals, such as fertilizers; store pesticides separately from gasoline and other fuels; separate insecticides, fungicides, and so on from herbicides; store volatiles separately; store liquid formulations below dry formulations; store glass containers on the lowest level; store containers off the floor; and store empty, clean containers separately from full and used containers.

Rotate materials so the oldest chemicals are used first, especially those that have a short shelf life. Mark the

purchase and opening date on the container, if not all used, before storing.

Store pesticides in their original containers. Be sure all opened (used) containers are kept securely closed and sealed.

If pesticide in a damaged container needs to be repackaged, do not use a container that resembles a food container, and firmly attach as much of the label from the original container as possible.

Keep spill-control supplies in the storage area. If a spill occurs, make sure the absorbent material is compatible with the spilled chemical. Spilled pesticides can be collected and disposed of according to the directions-for-use statement on the label. Otherwise the material becomes hazardous waste.

Keep an inventory of your pesticides—include the product name, date of purchase, quantity, and location within the storage area. This will help determine future needs, and serve as a reference to check against in case of spills, fire, weather-related damage, or theft. Keep a copy at different locations in case of an emergency. Also, inspect the storage area regularly, looking for leaks and missing inventory. Keep a log of these inspections.

Have copies of your storage location map, storage unit floor plan, and current or seasonal inventory in a secure place away from the storage, with the fire department or other first responders, and with the Local Emergency Planning Commission, if required.

**Figure 4. Metal shelving is used to store dry pesticides above liquid pesticides.**



**Figure 5. Take inventory of your storage area on a regular basis.**



Develop a contingency plan for your establishment with the local emergency response personnel. Firefighters are trained to put out fires; however, in case of a fire in a chemical storage facility, the preferred course of action in most cases is to let it burn. If water is used to control the fire, then any runoff would be contaminated and therefore would contaminate the surrounding environment. Work with fire and emergency response agencies to determine the best response before you need their assistance. Have an ABC fire extinguisher and fire/rescue telephone numbers outside the storage building. Keep MSDS in an accessible location.

Know what your insurance policy covers. Keep your policy in a safe place.

Reduce the need to store pesticides by purchasing only what is needed for a particular application or season. To minimize the need for container recycling, buy pesticides in mini-bulk, other returnable container systems, or bulk containers, and buy pesticides that are formulated or packaged to reduce or eliminate containers.

If you do have unused or unwanted pesticides, an excellent disposal option is available for Pennsylvanians—the Department of Agriculture’s CHEMSWEEP program. Growers, homeowners, and licensed pesticide businesses in selected counties are eligible to participate. Any pesticide or related agricultural product will be accepted for disposal in this program. The program is free for homeowners and private applicators. Contact your regional Department of Agriculture

office or your county’s Penn State Cooperative Extension office for more information.

Do not sell or give pesticides to anyone you do not know. Only licensed pesticide dealers may sell restricted-use pesticides (RUPs). Dealers need to make sure buyers of RUPs have a valid pesticide applicator’s license. Commercial/public applicators may only purchase RUPs that can be used for applications in the category for which they are certified.

Watch for unusual behavior by a purchaser or other individual who: seems unfamiliar with details of using an agrochemical; acts nervous, seems uneasy or vague, and avoids eye contact; demands immediate possession of purchased material instead of future delivery; asks for material in smaller, individual containers rather than in bulk; wants large quantities of highly toxic pesticides; insists on paying with cash instead of using credit or a check; and inquires about or wants to purchase equipment, especially Ultra Low Volume (ULV) application equipment, by those who have no apparent legitimate use for this equipment.

## Worker Safety Practices to Follow

Have a basic first aid kit containing information on pesticide poisonings and emergency medical information, including the national telephone number for poison centers (1-800-222-1222). Locate a telephone in or near the storage area for reporting emergencies.

Have a nearby source of clean water to decontaminate skin, eyes, and so forth.

Have personal protective equipment (PPE) to decrease the potential for exposure in and around the storage area.

Conduct regularly scheduled safety and maintenance inspections of the storage unit or facility and PPE.

Remember, proper storage, security, and disposal of pesticides is as important as using them safely in the field—no matter what field you may be in.

## Where to Find More Information

Natural Resource, Agriculture, and Engineering Service, “Designing Facilities for Pesticide and Fertilizer Containment,” [www.nraes.org/publications/mwps37.html](http://www.nraes.org/publications/mwps37.html)

Penn State Pesticide Education Program  
[www.pested.psu.edu/spsecurity.html](http://www.pested.psu.edu/spsecurity.html)

Your local emergency management services

## References

Bellinger, R. G., “Store Pesticides Safely,” Pesticide Information Program Information Sheet 37, Rev. September 2001.

Brown, Amy E., “Pesticide Storage and Security,” Pesticide Information Leaflet No. 39, October 2001.

Richards, Kerry M., “Pesticide Storage, Security, and Disposal,” PowerPoint Presentation, October 2001.

Pesticide Safety Fact Sheets are produced by the Pesticide Education Program in Penn State's College of Agricultural Sciences. Topics covered in the series include

- pesticide laws and regulations
- handling chemical spills
- personal protective gear
- pesticides in the environment
- equipment care and cleaning
- pesticide toxicity and health effects

For a complete list of fact sheets and electronic copies or for more information about the Pesticide Education Program, visit [www.pested.psu.edu](http://www.pested.psu.edu) on the Web.

Prepared by Kerry Richards, pesticide education coordinator; Sharon I. Gripp, database administrator/ Webmaster; and John E. Ayers, professor of plant pathology.

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