

PIP-37 Prepared by **R.G. Bellinger**, Extension Pesticide Coordinator
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Store Pesticides Safely

These safe pesticide storage guidelines apply to most storage situations. Regardless of the size of your storage, consider each point and understand the intent of the guidance. If the guidance doesn't fit your situation because your storage facility is smaller or larger, what would be an appropriate action or strategy that would work for you?

Several questions should come immediately to mind when considering how to store pesticides safely: How much storage space do I need? Where should storage be located? How should the storage unit or area be constructed? What precautions need to be taken to protect pesticides? What about security? What about protecting ground and surface waters? What about worker safety?

*Many aspects of pesticide storage are product specific. You **must** be familiar with the label and MSDS storage requirements of all the different pesticides you expect to store during this season or year.*

Storage space

► Keep the amount of storage space to a minimum to discourage storing unneeded pesticides, but large enough to handle what you might reasonably store. This should include not only newly purchased chemicals, but also opened containers, empty, clean containers and waste pesticides you may hold for proper disposal.

Storage site

► Locate your storage site in a safe location: a place that will not be

flooded by over-flowing rivers, streams, ditches, runoff or tides.

► Position your storage above the immediate ground level by at least 12 inches. Moisture is a problem with pesticide storage.

Free water and moisture:

- 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
- cause pesticide to spread from the storage area to other areas of the structure, or away from the structure.

► Use a portable storage building for best storage. These buildings can be repositioned easily in case of flood hazard or change in area use patterns, especially in the vicinity of the storage area.

► Use tiedowns on portable storage buildings to prevent tipping, rolling, or moving off site because of water or wind.

► Select a site with as little runoff as possible to prevent contamination of surface waters in case of a leak or spill.

► Locate your pesticide storage 100 feet or farther, depending on terrain, and down slope from surface waters and wells, animal feeding stations or shelters, food or feed storage and dwellings. Farther is better!

► Determine the direction of the prevailing winds, and consider what is downwind from your storage site. This may be a factor in the event of spills or fires.

► Locate your storage site so that it is easily accessible by vehicles for delivery and pickup of pesticides and for emergency vehicles.

► Determine and comply with any applicable local zoning, building and fire codes.

► Consider using barriers, such as posts, to prevent damage to the storage unit by vehicles delivering or picking up pesticide for applications.

Physical construction of the storage unit

► Use nonflammable materials to reduce fire hazard.

► The best storage is a detached structure positioned far enough away from other structures that could threaten the storage if they should burn.

► Use sealed floors -- metal, sealed concrete, epoxy-coated metal, wood or concrete, no-wax sheet flooring or other easily cleaned, non-absorbent material. Dirt or unsealed wood flooring is unacceptable!

► Use non-absorbing materials throughout. Best shelving is metal with a lip. Consider leak-proof plastic trays on shelves.

► Have a built-in sump, or drain to a sump. Locate any external sump

beside the building, instead of under it, for easy access if you need to remove spilled materials. Protect sumps from filling with water from rain or runoff.

▶ Have a continuous internal lip or curb, 2-4 inches high, to prevent spills from overflowing and going outside the building.

▶ If possible, provide electrical power to the storage. This allows interior lighting, exhaust fan and heater. It also allows exterior security lighting and alarm. Explosion-proof wiring and switch is best. Light/fan switch should be on the outside of the storage unit and weatherproof.

▶ Have good lighting. Explosion-proof is best.

Good lighting lets you:

- read labeling,
- note leaks, damaged containers,
- clean up spills,
- record inventory changes.

Storage environment

▶ Keep the storage unit dry. Keep outside doors and windows closed and locked, unless windows are needed for ventilation.

▶ Keep the unit well ventilated by passive ventilation, mechanical ventilation or both.

- Locate a louvered vent or exhaust fan high at one end (back) of the unit and louvered air intake vent low at the other end, e.g. in the lower part of the door. This allows vapors to flow away from anyone entering or inside the storage unit.
- One recommendation for mechanical ventilation is an exhaust fan capable of exchanging air in the storage at least once every six minutes; increasing to every three minutes when pesticide handlers are in the unit. For best operation: wire fan to the light switch, so that fan is always on or increases speed whenever pesticide handlers are in the unit. Alternatively, wire fan to a thermostat set between 75° and 85°F.

▶ Keep pesticides from freezing and extreme high temperatures --

most pesticides should be stored at between 40° and 90°F. *Read the label*

▶ Freezing can cause containers to burst or develop intermittent leaks. Freezing may cause formulations to separate.

▶ Many pesticide labels say "Store in a cool, dry place." Most should be stored at temperatures below 90°F.

▶ High temperatures can cause plastic to melt or become brittle, or glass to burst. Pressure caused by high temperatures may cause intermittent leaks, swelling or a spill when the product is opened. High temperatures can breakdown some chemicals or cause some chemicals to volatilize. Excessive heat can also cause explosion or fire.

- Insulate the unit to prevent freezing or overheating.
- Install a heater. Explosion-proof is best.

▶ Keep containers out of direct sunlight. Don't put containers, especially glass or aerosol containers, in windows, even temporarily.

Storage security

▶ Store pesticides in a separate location, preferably in a locked storage building just for them.

▶ Always lock pesticide storage cabinets, closets, rooms and buildings.

▶ Besides locking a storage building, it's a good idea to fence it in and lock the gate.

▶ Limit access to your pesticide storage-allow access only to essential persons. Take necessary steps to keep out any unauthorized persons: children, workers who do not use pesticides, visitors, etc.

▶ Consider installing security lighting. You may also want an alarm system.

▶ If you must have storage within a larger structure, have storage access through a separate, outside door.

▶ Post signs on the door, building or fence that indicate pesticide storage and that tell people to stay out: "**Danger Pesticides - Unauthorized Persons KEEP OUT**". Consider the need for this information in a second language, such as Spanish.

▶ Signs should have at least two emergency phone numbers. You should not be the sole contact-in an accident, *you* could be the victim of an accidental exposure! At least one phone number should be for emergency response (fire, rescue, etc.). Poison Control Center phone numbers are a good additional choice.

▶ Indicate location of nearest *accessible* telephone.

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

Safe storage practices

▶ Good storage practices are in part good pesticide handling behaviors. While a good storage unit remains essential, these practices are the real key to safe pesticide storage. Neither can substitute for the other.

▶ Read the label and comply with all product storage requirements.

▶ Store pesticides in their original containers. While this is familiar advice, storing pesticides in other than the original container is one of the, if not the, most frequent pesticide storage violations.

▶ Be sure all opened (used) containers are kept securely closed/sealed. If a container is not emptied with a given use, mark the opening date on container before storing.

▶ Be sure all pesticide labels are intact. Obtain necessary replacement labels from your dealer or chemical sales representative. A product name penciled on masking tape is not a label!

▶ A substitute label, if needed, should have at least the product name, the active ingredient name,

the EPA registration number for that product, the manufacturer's name, and any emergency phone numbers listed on the original label.

▶ You must:

- store pesticides separately from food and feed.
- follow any specific storage separation requirements on the label. Example is the required separate storage for phenoxy herbicides, e.g. 2,4-D. Vapors can cross-contaminate other stored chemicals.
- keep any food, drinks, veterinary supplies or medications, first aid supplies, clothing or protective equipment especially respiratory, protection-out of the storage area. These can easily be contaminated by dusts, vapors or spills.

▶ *As much as you can* (You MUST if the label says so):

- store all pesticides separately from other chemicals, such as fertilizers;
- store pesticides separately . from gasoline, other fuels;
- separate insecticides, fungicides, etc. from herbicides;
- store volatiles separately;
- store liquid formulations below dry formulations;
- store any glass containers on the lowest level;
- store containers off the floor;
- store empty, clean containers separately from full and used containers.

▶ Keep spill control supplies *in* the storage unit. Cleanup materials: cat litter, vermiculite, spill pillows etc.; broom, dust pan; activated charcoal, lime, bleach for decontamination; plastic bags; gloves, eye protection; plastic sealable container(s).

▶ Collect spilled pesticides for possible reuse. Remember that cleanup materials become hazardous waste.

▶ Update your pesticide inventory. You will need an up to-date inventory for determining future purchases, and in case of spills, fire, weather-related damage or theft. Keep copies at the storage site and filed in the office and with your local emergency response agency.

▶ File copies of your storage location map, storage unit floor plan and current or seasonal inventory in a secure place away from the storage unit, also with your fire department or other first responders, additionally with your Local Emergency Planning Committee (LEPC), if required.

▶ Have a plan! Develop a contingency plan for your establishment with your fire department/rescue unit. Include especially your pesticide storage.

▶ In case of a fire in a chemical storage facility the preferred course of action is to let it burn. Remember, fire fighters are trained to put out fires! Work with these agencies before you need them.

▶ Fire control-have an ABC fire extinguisher and fire/rescue telephone numbers outside the storage building.

▶ Keep MSD Sheets in an accessible location.

Additional safe storage practices

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

▶ Have a nearby source of clean water to decontaminate skin, eyes, etc.

- Eye wash stations are desirable and may be required by pesticide labeling or chemical safety regulations, depending on how your storage unit is sited. Mount eye wash station outside smaller storage unit to prevent contamination.

- In a larger facility, you may want or need emergency deluge-type showers in addition to eye wash fountains.

▶ Have a basic first aid kit containing information on practical treatment for pesticide poisonings and emergency medical information, including telephone numbers for poison control centers.

▶ Locate a telephone in or near storage area for reporting emergencies.

▶ Know what your insurance policy covers. Check limitations on coverage. You may need riders for complete coverage.

▶ Keep your policy in a safe place!

▶ If you consider modifying your present storage unit and practices or purchasing new storage you will undoubtedly consider the costs of these measures.

▶ When you balance costs and benefits you should consider:

- the dollar value of your stored pesticides (are they insured?);
- the difficulty and cost of spill cleanup in sub-standard storage;
- your liability in the event of a spill or fire where there is an environmental impact;
- your liability if any person or animal is injured or is killed;
- the potential cost of EPA/state fines for improperly storing your pesticides, or OSHA fines for, improper chemical storage or related violations;
- your cost and time-frame for changes needed to correct violations.

▶ If you work for someone else and are responsible for pesticide storage, what is:

- your job worth to you?
- your "cost" if you expose your employer to liability for environmental damage, personal injury or death, or regulatory fines?

Reduce your need to store pesticides, and your need to dispose of containers:

- buy only what you need a particular application, or season;
- buy pesticides in mini bulk, other returnable container systems, or bulk containers.
- buy pesticides formulated and packaged to reduce or eliminate containers.

The final advice must be the original advice: Follow label, instructions - *The label is the law!*

How safe is your pesticide storage?

Do you store your pesticides in a detached structure?

Does your storage building have a sound roof?

Does your storage building have sound, liquid-proof flooring?

Are the pesticides you store in their original containers?

Do the pesticides you store have intact, readable labels?

Are your pesticides stored separately from gasoline, fuels and solvents?

