Pesticide Storage, Transportation and Spill Clean Up

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Maricopa County Cooperative Extension
Benefits and characteristics of a good pesticide storage area

Safe practices while transporting pesticides

Procedures for responding to pesticide-related emergencies, such as spills and fires
Let's start with a simple storage quiz.

You will need a pen/pencil and paper or the calculator on your cell phone.
It is best to store...

1. No more than 1 gal. or 10 lbs. of each pesticide.
2. More than 1 gal. or 10 lbs., but less than 55 gals or 50 lbs. of each pesticide.
3. More than 55 gals or 50 lbs. of several pesticides.

1. 2 points
2. 1 point
3. 0 points
The pesticide storage area should ...

1. Be a roofed building with a waterproof (sealed or coated) concrete floor and curb to contain leaks and spills.
2. Be a roofed building with a concrete floor without a curb.
3. Have a gravel or dirt floor or be out in the open.

1. 2 points
2. 1 point
3. -1 point
The pesticide storage area should have ...

1. Holes or vents to provide cross ventilation (a passive ventilation system).
2. An electrical (active) ventilation system.
3. No ventilation.

1. 1 point
2. 2 points
3. -1 point
The pesticide storage area should be...

1. Within 100 ft. of a public water supply or surface waters or within 50 ft. of a well.
2. In your well house or in a facility containing an unsealed well.
3. More than 100 ft. (horizontally) from a public water supply or surface waters and more than 50 feet from a private water supply well.

1. 1 point
2. 0 points
3. 2 points
The pesticide storage area should be...

1. Unsecured and open to theft, vandalism, and children or unauthorized persons. 
2. Locked or secured and separated from other activities. 
3. Secured, but it’s o.k. if it is sometimes open to activities that could damage containers or spill pesticides.

1. -1 point  
2. 2 points  
3. 1 point
The pesticide storage area should be used...

1. For pesticides only.
2. To store seed, fertilizer or other nonfood/nonfeed products.
3. To store human food or animal feed products.

1. 2 points
2. 1 point
3. -1 point
Unusable or canceled pesticides should be...

1. Kept with other pesticides in clearly marked containers.
2. Kept separately in the pesticide storage area until safe disposal through a state, county or tribal community disposal assistance program.

1. 1 point
2. 2 points
3. -1 point
Pesticides should be stored in...

1. Metal containers with holes or weak seams that may leak or are stored in containers that have previously been used for food, feed or beverages.
2. Some metal containers that are deteriorating.
3. Plastic or metal containers. Containers in poor condition should be placed inside another liquid-proof container.

1. -1 point
2. 1 point
3. 2 points
Pesticides should be...

1. Stored in clearly-labeled original containers.
2. Transferred to another container with the following labeling information: common chemical name, percentage of each active ingredient, EPA registration number, signal word (Caution, Warning, Danger), and use classification (restricted or general use).

1. 2 points
2. 1 point
Pesticides should be stored...

1. Without sorting for liquids or type of pesticide.
2. With liquids below dry pesticides.
3. With liquids on lower shelves below dry products and herbicides separated from insecticides and fungicides.

1. 0 points
2. 1 point
3. 2 points
The pesticide storage area should have...

1. Warning signs posted on all entrances to the storage area, which read “Danger – Pesticides – Keep Out – No Smoking.”
2. Warning signs posted, even if they have become weathered and are difficult to read.
3. No warning signs.

1. 2 points
2. 1 point
3. 0 points
The local fire authorities...

1. Should be aware of your pesticide storage facility.
2. Should have a copy of your pre-fire plan for handling agricultural chemical fires at your storage area.
3. Do not need to know about your pesticide storage facility and don’t need to visit your site.

1. 1 point
2. 2 points
3. 0 points
The inventory of pesticides in storage ...

1. Can be out-of-date or nonexistent.
2. Can be slightly out-of-date (pesticides placed in storage in the last 6 months to a year don’t need to be recorded).
3. Must be up-to-date, have Safety Data Sheets for each product, and kept at a central location.

1. 0 points
2. 1 point
3. 2 points
How is your knowledge about pesticide storage areas?

1. 21 – 26 points = Fabulous!
2. 15 – 20 points = Not bad. You could use a few pointers
3. 2 – 15 points = Take lots of notes today
4. < 6 points – 1 = Please get another cup of coffee
What are the benefits of a good storage area?

• Prevent damage to pesticides from extreme temperatures and weather
• Safeguard against theft, vandalism, and unauthorized use
• Protect people, animals and the environment
• Reduce likelihood of liability
RECAP - WHAT MAKES A GOOD STORAGE AREA?

- Organized and orderly
- Dry products stored above liquids
- Bins to catch pesticide leaks
- Heavy boxes and containers stored low
- Sufficient lighting and ventilation
- Secured and locked area
- Berm to contain spills inside storage area
- Impervious floor
Storing pesticides

- Keep pesticide storage areas free of combustible materials or anything that could create a fire such as petroleum products and welding items.

Aha – but what is wrong with this picture?
Pesticide Inventory

- Maintain an inventory list
- Store the inventory list in an office or area outside of the pesticide storage area
- Buy only the amount you need
- Check the expiration dates and use up your older products first
HOW CAN SEVERE WEATHER CONDITIONS IMPACT STORED PESTICIDES AND THEIR CONTAINERS?
Extreme Cold

Containers can crack and leak.

Pesticide ingredients can separate.

Pesticides can crystalize or coagulate.
Extreme Heat

Pesticides can expand and cause buildup of pressure in the container leading to leaks.

Plastic containers may melt or become brittle.

May cause explosion or fire.
Flooding and Humidity

Metal containers can rust.

Paper and cardboard can split or crumble.

Labels may peel, smear, or become unreadable.

Dry pesticides can clump, degrade, or dissolve.
Severe Wind

Damage roof or sides of building.

May cause pesticides to fall, tip over and spill.

Damage also makes pesticides susceptible to heat, dust and water damage.
Sometimes things happen

Floods and Fires

Today’s Special: Root Beer Floats
What should you do if your storage area is flooded?

Before entering the storage area, put on gloves, boots, a chemical-resistant apron, eye protection, and respiratory protection.

- Assume standing water is hazardous and don’t allow standing water to contact your skin
- Be cautious as water may contain a mixture of different pesticides
- If damage is minor, clean up spills and place damaged packages in secondary containers (drums or heavy plastic bags)
- If severe flooding situation, call hazmat team to respond
- Report the damage to the appropriate agencies
For the next activity, we are going to use the Merit® 75 WSP Safety Data Sheet.

You might have received a copy as a handout. If not, you can access a pdf of the SDS by opening the above link.
Safety Data Sheet Information Search

- Find the hazard information on a Safety Data Sheet

- Two-minute search for the following:
  - Precautionary statements about storing near certain items or other types of pesticides, fertilizers, etc.
  - Storage temperature ranges or weather conditions
  - Special instructions for first responders or firemen

http://www.cdms.net/ldat/mp6LK004.pdf
### SECTION 5: FIREFIGHTING MEASURES

<table>
<thead>
<tr>
<th>Extinguishing media</th>
<th>Water, Carbon dioxide (CO2), Foam, Dry chemical</th>
</tr>
</thead>
<tbody>
<tr>
<td>Suitable</td>
<td>Suitable</td>
</tr>
<tr>
<td>Unsuitable</td>
<td>Unsuitable</td>
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<td>Advice for firefighters</td>
<td>Advice for firefighters</td>
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<td>Special protective equipment for firefighters</td>
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<td>Further information</td>
<td>Further information</td>
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<td>Flash point</td>
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<td>Auto-ignition temperature</td>
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<tr>
<td>Lower explosion limit</td>
<td>Lower explosion limit</td>
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<tr>
<td>Upper explosion limit</td>
<td>Upper explosion limit</td>
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<tr>
<td>Explosivity</td>
<td>Explosivity</td>
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</tbody>
</table>

### SECTION 7: HANDLING AND STORAGE

**Precautions for safe handling**

- Handle and open container in a manner as to prevent spillage. Use only in area provided with appropriate exhaust ventilation.

**Advice on safe handling**

- Keep away from heat and sources of ignition.

**Advice on protection against fire and explosion**

- Wash hands thoroughly with soap and water after handling and before eating, drinking, chewing gum, using tobacco, using the toilet or applying cosmetics.
- Remove Personal Protective Equipment (PPE) immediately after handling this product. Before removing gloves clean them with soap and water. Remove soiled clothing immediately and clean thoroughly before using again. Wash thoroughly and put on clean clothing.
- Contaminated work clothing should not be allowed out of the workplace.

**Hygiene measures**

- Remove contaminated clothing immediately and dispose of safely.

**Conditions for safe storage, including any incompatibilities**

- Store in original container. Store in a place accessible by authorized persons only. Keep containers tightly closed in a dry, cool and well-ventilated place. Keep away from direct sunlight. Protect from freezing.
Handout – Pre-Fire Plan for Pesticide Storage

Note: This is a template. You can use this or make your own, based on similar information.

Pre-Fire Plan for Agricultural Chemicals

Facility Name
Location
Phone Number
Fax Number
E-mail Address

EMERGENCY PHONE NUMBERS: Day Home Pager Cell
Manager’s Name
Asst Mgr’s Name
Alternate 1
Alternate 2
Hospital

CHEMTREC (Chemical Transportation Emergency Center) (800) 424-9300 (Toll free)

Most chemical manufacturers are equipped to provide emergency information on their products. Manufacturers may be contacted through CHEMTREC or directly (see list on page 5).

Fires in agricultural chemical facilities can be dangerous. In addition to the usual fire hazard, the possibility of poisoning must be considered. A specific plan should be developed for each facility as outlined in the instructions here. Local fire departments should be invited to your facility at least once a year. Fire fighters should be thoroughly familiar with the contents of your Emergency Pre-Plan. It is a good idea to give them advance information about anticipated quantities, locations, and types of hazardous materials stored. Have the manufacturers’ Material Safety Data Sheets (MSDS) for each product available for their reference.

EMERGENCY PRE PLAN UPDATE (Revise annually and after any important change):
Facility Manager
signature
Fire Dept. Official
signature
Name of Fire Dept.
Date of next scheduled review or update:

Note: This is a template. You can use this or make your own, based on similar information.
Sketch of Facility and Immediate Surroundings

Draw map showing the property site and surroundings. Select a suitable scale. Show outline of buildings, type of construction, permanent interior walls, building openings, and major fixed equipment. Provide elevation views if more than one story. Locate all fixed outside equipment. Show perimeter fences, gates, rail spurs, floor drains, etc. Show access routes and approximate distances to important buildings. Identify areas of the facility committed to pesticides, flammables, oxidizers, etc. Including bulk storage tanks.

Site Runoff Control

Draw map showing the surrounding area for about one mile in all directions. Extend the map in the direction of the site drainage so that drainage can be traced until it reaches the nearest large body of water. If runoff can be impounded on or off site, show location and approximate number of gallons that can be contained. Mark places where runoff may be blocked by dikes, dams, shuttering off lift pumps, etc. Show surrounding land use (residential, crops, etc.). Show places of public assembly such as schools, churches. Use symbols below. Show north arrow.
1. Agency notification: (List the names and telephone numbers of agencies that need to be notified should a spill or fire involving pesticides or fertilizers occur. Include railroads if rails may be blocked.)

- Fire, Police, etc – 911 unless another telephone number is to be used
- National Response Center (800) 424-8802
- Local Emergency Preparedness Center
- Manufacturers Emergency Response Program
- List of major nearby sites to be called and alerted

2. Surrounding occupancies and land use: Describe surrounding land use in all four directions for one mile radius. For example, north, grazing land to .2 mile, commercial district 2.5 to 5 mile, residential zone .5 to 1 mile, hospital located at ________ or location. Show as much as possible in sketch on page 3.

North

South

East

West

3. Location of emergency equipment and supplies (Available 24 hours a day. Include phone numbers):

- Local contact HAZMAT team
- Self-contained breathing apparatus
- Spare compressed breathing air tanks
- Earth-moving equipment
- Portable water pumps
- Street barriers
- Sand bags
- Other
- Remediation contractor

4. Location and types of water supplies: (Hydrants, ponds, irrigation canals, fresh or salt water, etc. Verify hydrant thread compatibility and water pressure and flow rates.)

5. List of in-house emergency equipment

page 4

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Emergency Contact List

<table>
<thead>
<tr>
<th>Company</th>
<th>Telephone Number</th>
</tr>
</thead>
<tbody>
<tr>
<td>BASF</td>
<td>800-633-4357</td>
</tr>
<tr>
<td>Bayer Corporation</td>
<td>800-414-0244</td>
</tr>
<tr>
<td>Chemtura Corp.</td>
<td>800-292-5698</td>
</tr>
<tr>
<td>Dow Agrociencesia</td>
<td>800-992-5664</td>
</tr>
<tr>
<td>Drexel</td>
<td>Use CHEMTREC 800-424-9300</td>
</tr>
<tr>
<td>DuPont</td>
<td>800-441-3637</td>
</tr>
<tr>
<td>Cerexaqli</td>
<td>Use CHEMTREC 800-424-9300</td>
</tr>
<tr>
<td>FMC Corporatio</td>
<td>800-331-3146</td>
</tr>
<tr>
<td>Great Lakes Chemical</td>
<td>800-949-5187</td>
</tr>
<tr>
<td>Helena Chemical</td>
<td>Use CHEMTREC 800-424-9300</td>
</tr>
<tr>
<td>Micro-Flo Company</td>
<td>Use CHEMTREC 800-424-9300</td>
</tr>
<tr>
<td>Monsanto Company</td>
<td>Listed as Dow Agrociencesia 800-992-5664</td>
</tr>
<tr>
<td>Platts Chemical</td>
<td>Use CHEMTREC 800-424-9300</td>
</tr>
<tr>
<td>Syngenta Crop Protection</td>
<td>1-800-334-9481</td>
</tr>
</tbody>
</table>
Fire Fighting Tactics

For Fire Departments fighting fires involving pesticides and fertilizers.

1. Contact facility operator. Determine type, quantity and hazards of products. Determine if fire should be fought at all. Weigh fire fighting and positive hazards vs. possible salvage.

2. Notify hospital to stand by. Hospital may obtain poison control information by contacting the manufacturer.

3. Contact chemical manufacturer. Maintain liaison for specialized information, particularly during a large fire.

4. Evacuate downwind and isolate area. Patrol area to keep spectators out.

5. Wear personal protective equipment. Wear rubber or neoprene gloves, boots, turnouts and hat. If contact cannot be avoided (such as entering an unventilated building for rescue) also wear self-contained breathing apparatus (Air Pack).

6. Attack fire from upwind and from a safe distance. Bottles, drums, metal and aerosol cans are not vented and may explode.

7. Contain fire and protect surroundings. Prevent spread of fire by cooling nearby containers to prevent rupture (more vehicles and rail cars if possible). Burning chemicals cannot be salvaged.

8. Use as little water as possible and contain runoff. Contaminated runoff can be the most serious problem. Water spreads contamination over a wide area. Construct dikes to prevent flow to lakes, streams, sewers, etc. Cooling effect of water retards high-temperature decomposition of the chemicals to less toxic compounds.

9. Use water fog spray, not straight stream. Fog spray is more effective for control. Avoid breaking bottles and bags which add fuel and contamination. Straight streams spread fire and contamination.

10. Poisoning. Avoid product, smoke, mist and runoff. In case of contact or suspected poisoning, leave site immediately. Follow first aid instructions on page 7. Any feeling of discomfort or chills may be a sign of poisoning. Symptoms may be delayed up to 12 hours. Chemicals may poison by ingestion, absorption through skin, or inhalation. Wash face and hands before eating, smoking, or using toilet. Do not put fingers to mouth or rub eyes.

Post-Fire Cleanup

Fire-fighting personnel and equipment
- Remove protective clothing upon leaving site and impound with contaminated fire-fighting equipment.
- Upon return to fire stations, shower and shampoo thoroughly with soap and water, change into clean clothing and wash inner clothing with detergent.
- Watch for signs and symptoms of pesticide poisoning.
- Put on coveralls and rubber or neoprene gloves and decontaminate protective clothing and equipment using a strong detergent solution. Decontaminate in an isolated area.
- Contaminated cotton-jacketed hose may have to be destroyed; moist are weakened by strong detergents.

Fire site
- Isolate and secure scene to keep people away. Water and runoff may be toxic.
- Contact federal, state, or local health authorities for disposal instructions and approval.
- Handle waste and runoff in the same way as a product spill. Use of personal protective equipment is required.
- If the amount of water and/or runoff is significant or if you have any doubts, contact the manufacturer.

First Aid – in case of accidental contact

Eyes: Flush with water for 15 minutes. Get medical attention immediately. Refer to MSDS or product label for further instructions.

Hands: Wash thoroughly with soap and water. Refer to MSDS or product label for further instructions. If in doubt about nature of material, get medical attention immediately.

Clothing: Remove contaminated clothing and wash skin thoroughly with soap and water. Refer to MSDS or product label for further instructions. If in doubt about nature of material, get medical attention immediately. Dispose of contaminated clothing or wash clothing separately in strong detergent before reusing.

Note: Take labeled container when seeking medical assistance.

Important Note

Should this facility become involved in a fire, the Commanding Officer at the scene should decide whether to let the facility burn if it appears that water applications:

1. will result in extensive contaminated water run-off, or
2. could result in incomplete combustion of chemicals, resulting in a release of toxic compounds into the air.

The Commanding Officer should have advance written authority from the facility manager to make this decision and this eventuality should be discussed with the insurers of the establishment.

This information is based on a pre-fire plan developed by Chevron Chemical Company and is reprinted by CropLife America with permission.

1156 15th St. N.W., Suite 400
Washington, D.C. 20005
Tel: 202-296-1555
Fax: 202-463-0474
Keep emergency numbers handy near your storage area and your mixing/loading area

- National Poison Center Number: 1-800-222-1222

Arizona Department of Agriculture’s Pesticide Hotlines:
800-423-8876 (Agricultural Inspectors - ESD)
602-542-0026 (Structural Inspectors - PMD)

Note: If you apply pesticides on tribal land, please substitute the above with the tribe’s pesticide or environmental program office numbers.
Transporting Pesticides Safely
How often are pesticides transported?
Carelessness can cause harm

Some pesticides are highly flammable

Spills can result in human exposures, contamination, other accidents, legal action, financial loss, etc.

Vehicles can scatter spilled pesticides
Maintain Vehicles and Application Equipment

- Inspect your vehicle
  - Check brakes, tires, and steering
- Inspect your application equipment
  - Inspect tanks, fittings, gauges, hoses, booms, nozzles
  - Look for defects, cracks, and punctures
  - Carry tools
Transportation Security

A few pesticides require placards:
Ask your dealer to help identify
the pesticides

Other items require placards
Some fertilizers: anhydrous
ammonia, ammonium nitrate
Fuels: gasoline, diesel, propane
Explosives
Transportation Security Plan

Required for people who transport materials that require placards

Plan must include:
  - Protection against unauthorized access
  - Security check of employees
  - Security plan for intended travel routes

Hazardous Materials Information Center:
1-800-HMR-4922
Transporting Pesticides

• Never carry pesticides in the passenger compartment of any vehicle – place them in the cargo area.

• Secure all pesticide containers in the cargo area and protect them from rain and other potential damage.

• Never transport food, animal feed, or clothing in the same compartment.

• Do not leave pesticides - unattended.
Containing Cargo

• Enclosed boxes are best, but not always practical
• Truck beds are convenient but be cautious!
  • Never stack higher than side of vehicle
  • Secure containers and tanks
  • Check for nails, stones, sharp edges
  • Steel beds are better than wood (easier to clean)
• Always ask, “How accessible is the load to others?”
Other Vehicle Precautions

• Inspect containers before loading: legible labels? tight seals? clean surfaces?
• Use tubs and liners for extra containment and easier cleanup
• Less handling of containers equals reduced likelihood of damage
• Secure load with tarps, ropes, and tie downs, even when transporting equipment
How far was the person going with this load?

How stable are the containers in the back?

What would you do differently?
Vehicle owners and operators are held responsible for spills

- They MUST be trained in emergency response procedures for spills and notification
For emergency preparedness, always carry in the vehicle

- The label
- Safety Data Sheet
- A spill cleanup kit
- A list of emergency phone numbers
CLEANING UP SPILLS:

1. **Control** the spill and protect yourself.

2. **Contain** the spill to prevent it from spreading.

3. **Clean up** the pesticide.
Handout of Spill Cleanup Procedures

- Liquid pesticide spill on concrete
- Liquid pesticide spill on soil
- Dry pesticide spill on concrete
- Pesticide spills on public roadways
Be Prepared for Spills – Spill Kit Items

- Chemical-resistant gloves
- Boots
- Chemical-resistant apron
- Protective eyewear
- Respirator (if listed on label)
- Absorbent material (soil, sand, cat litter)
- Cones and/or caution tape
- Shovel
- Broom
- Dustpan
- Heavy-duty detergent
- Small squirt bottle to moisten dry products

- Plastic container with a lid for collecting contaminated material
- Other spill cleanup materials listed on the label of the spilled pesticide
- Phone numbers for local pesticide regulatory agencies, hazmat teams, and emergency response departments
I’m “Zoomed” in and will be happy to answer your question.

My contact information is:

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