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# Fire Hazards of Stored Pesticides

AGRICULTURAL CHEMICALS NO. 1—Revised 1975  
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Minnesota farmers must use a variety of insecticides, herbicides, fungicides, and other pesticides plus fertilizers and explosives. Although farmers generally are aware of the application hazards of these agricultural chemicals, fire prevention and cautions in case of fire in areas where such chemicals are stored are not well understood.

When fire strikes a building in which these agricultural chemicals are stored, special hazards arise. These hazards are associated with:

1. The flammable or explosive nature of the chemicals or their solvents.
2. The toxic fumes, vapors, dusts, and liquids of certain chemicals.
3. The possible after-effects of spilling or dispersing chemicals onto vegetation, crops, pastures, and farmyards or into wells, ponds, and other water supplies.

### FLAMMABLE OR EXPLOSIVE CHEMICALS

A few chemicals, such as sodium chlorate, are highly flammable and can present a serious hazard. Sodium chlorate is highly flammable when applied to organic materials such as clothing, wood, leather, or plants and then allowed to dry. It has been known to ignite from the heat of the sun, clothing friction, vehicle exhausts, or from shoes scraping a rock. The fire cannot be smothered since the chemical provides oxygen. However, moist sodium chlorate will not burn, so water will extinguish the flame. The material is still a serious fire hazard after it has dried however. Some other commonly used herbicides are combustible in the marketed form; they are so designated on the label.

Most pesticides are not highly flammable in the pure state. But the solvents or diluents of liquid emulsion concentrates or oil solutions—xylene, kerosene, or other organic solvents—present a great hazard. A fire in a building where such chemicals are stored should be handled as though it was a flammable liquid or oil fire.

Many liquid chemicals are stored in gallon jugs or large metal drums. The possibility that these containers will explode is another hazard of fires involving chemicals. The same applies to aerosol containers when exposed to excessive heat.

Dusts or powders, especially fine dusts such as sulfur, may ignite about as easily as gases or vapors and burn so rapidly as to seem explosive.

Untampered ammonium nitrate fertilizer is no fire hazard when properly stored and handled. However, when contaminated by fats, oils, acids, finely divided metals, or sulfur, it becomes highly sensitized, flammable, and explosive. Large amounts of oxygen are given off when this fertilizer burns, thus increasing fire intensity. Ammonium nitrate fertilizer

should not be stored with pesticides but firemen should anticipate their presence. The same applies to explosives.

The smoke and vapor produced by some burning pesticides are highly toxic. Every fire in every chemical storage area should be regarded as a toxic-producing fire. No one should try to extinguish such a fire without adequate respiratory protection: a supplied air device or gas mask equipped with canisters approved for these vapors or a self-contained breathing apparatus should be used to insure maximum protection against harmful vapors.

All persons in the area of a fire should be kept clear of the storage area and restrained upwind from the building. If any inhabited buildings are immediately downwind from the fire, they should be evacuated. Fumes and smoke also may damage or kill plants some distance away.

### CHEMICAL STORAGE

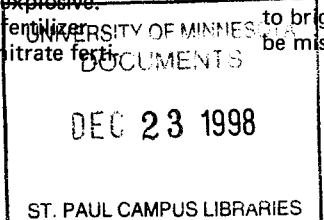
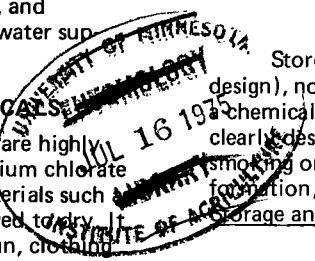
Store chemicals in a separate, locked building (of approved design), not in the granary, machine shed, garage, or barn. Mark chemical storage building with a distinctive, easily read sign clearly designating it as a chemical storage area. Never permit smoking or fires within the building. For additional detailed information, see Agricultural Chemicals Fact Sheet 4, Pesticide Storage and Formulation Shed.

### IN CASE OF FIRE

One of your first objectives should be to notify a qualified physician nearby so that he can be prepared to treat anyone if needed.

Firemen should be advised to:

1. Cover their entire bodies with protective clothing, including rubber boots, gloves, hats, and coats to avoid contact with toxic fumes or smoke. Self-contained breathing equipment (air packs) is essential for those exposed to fumes or smoke.
2. Be relieved from duty immediately and checked for possible poisoning if exposed to fumes or smoke without adequate protection.
3. Wash thoroughly and immediately with large amounts of soap and water if in contact with poisons such as emulsions or powder from ruptured bags, and be checked for poisoning. Any person heavily exposed to phosphates should have treatment begun without waiting for symptoms to occur. Cholinesterase tests should be run after exposure to phosphates.
4. Be checked for symptoms of poisoning during the fire. Among these symptoms are headache, giddiness, blurred vision, coughing, tightness of chest, salivation, twitching, and lack of further eye pupil contraction when exposed to bright light. Symptoms of phosphate poisoning may be mistaken for heat exhaustion or smoke inhalation.



5. Avoid smoking, drinking, or eating while firefighting so as not to ingest toxic substances.

### FIGHT THE FIRE PROPERLY

1. Attack fire from the upwind side or at right angles. Do not work downwind. Do not enter buildings or get in smoke unless wearing complete self-contained breathing apparatus.
2. Avoid raising a flammable, explosive, or toxic dust.
  - Use soft streams such as fog so as not to tear open paper containers or break jars.
  - Use foam when large volumes of flammable solvents are released from ruptured metal or glass containers.
  - Cool drums containing flammable solvents with water spray.
  - Keep a safe distance in case of explosion.
3. Avoid using large volumes of water so that toxic runoff will be kept to a minimum. If necessary, dike to prevent runoff contamination and to contain any overflow of burning liquid.
4. Let the building burn, under supervision, if it is separate and contains highly toxic materials. This sometimes is the safest procedure. Ventilation will aid more complete combustion and reduce dangerous toxic smoke.
5. Rope off the contaminated area and keep it under continuous supervision until cleanup is completed.

### PROCEDURE AFTER THE FIRE

#### Personal Precautions

1. Wash and shower using large amounts of soap and water to remove any traces of toxic chemicals.
2. Put on clean clothes.
3. Wear rubber boots. Leather soled shoes may absorb pesticides and have to be discarded.
4. Wash all personal clothing, protective clothing, and respirators. Do not contaminate the inside of a respirator from chemicals deposited on the outside. Wear clean protective clothing each day for the clean-up and install new cartridges in the respirators each day.
5. Be on the lookout for any symptoms of pesticide poisoning. They may show up immediately or not for several hours.

#### General Rules

1. Notify local public health officials.
2. Post warning signs and rope off the area to prevent unauthorized entry to a burned out area or water runoff area.
3. Be aware of aid available to you. The National Agricultural Chemicals Association has a network of safety teams to assist you in case of major pesticide spillage as may result from a fire. All you need to do is telephone Cincinnati, Ohio (513-961-4300) and ask for help.

The Chemical Transportation Emergency Center (CHEMTREC) provides emergency personnel with information on safety measures in handling hazardous chemicals involved in accidents on the nation's highways, railroads, and waterways. CHEMTREC is a voluntary program operated by 165 U.S. member companies. Assistance is available 24 hours, seven days/week. Their nationwide emergency telephone number is 800-424-9300.

4. Allow no smoking, eating, or drinking in the area.
5. Be careful not to track pesticides out of the area.

### CLEANUP AND DISPOSAL

1. Neutralize and absorb toxic chemicals.
  - a. Cover toxic chemicals with double their volume of lime, attaclay, or soda ash, and dampen slightly. Spray standing walls, joists, and other surfaces with spray lime mixed at the rate of 50 pounds per 100 gallons of water. Close off the area overnight.
  - b. Neutralize runoff water by adding large quantities of soda ash. Pump standing water immediately into tankers for disposal in an approved dumping area.
2. Use safe removal procedures.
  - a. Be sure all personnel involved understand the toxic nature of debris and are properly clothed and masked.
  - b. Use mechanized loaders, dump trucks, etc. to minimize human contact with contaminated material.
  - c. Avoid raising a dust.
  - d. See that excess liquid is absorbed on lime, sawdust, or clay. Do not wash any material into a waterway or sewer system without the official authorization of public health officials.
  - e. Carry debris to an approved dumping area in tight, metal-bodied dump trucks or tight containers. Moisten or cover the load with a disposable cover if dust is a problem. Avoid overloading so that no spills will occur enroute.
  - f. Scrape grounds or ditch banks contaminated with runoff water to a depth of 6 inches. Dispose of the contaminated soil with the rest of the debris, and replace it with uncontaminated soil.
  - g. Treat spills from leaking containers found during clean-up with additional lime.
  - h. Decontaminate tools, vehicles, concrete slabs, etc. with a solution consisting of 1 quart sodium hypochlorite plus 1 cup of detergent in 2 gallons of water; or 5 percent sodium carbonate (soda ash) solution plus detergent; or 5 percent trisodium phosphate solution plus detergent. Scrub thoroughly and follow with a clean water rinse.
  - i. Inspect the surrounding area for possible contamination and leave the entire area safe for the public and in usable condition.
3. Use safe disposal procedures to prevent environmental contamination. Use every means to avoid or minimize improper dispersal of chemicals during and following a fire.

At the present time, we recommend burial in a sanitary landfill for which a permit has been granted by the Minnesota Pollution Control Agency. See Extension Folder 281, Surplus Pesticide and Container Disposal for details. If burial approval cannot be obtained, the only alternative in Minnesota is to store the contaminated materials in tightly sealed metal drums under lock and key until a disposal procedure is approved.

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