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Handle with care : agricultural chemicals : storage
and handling



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national agricultural chemicals association

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HANDLED
WITH
CARE

AGRICULTURAL CHEMICALS: STORAGE AND HANDLING

This publication is for persons who normally handle agricultural chemicals in warehouses and shipping facilities. Its purpose is to provide a common sense approach to the safe handling of agricultural chemicals. All persons are cautioned to READ THE LABEL. The label is specific in giving instructions and precautions for the material in its container.

Below are some examples of DOT labels required in the transport of agricultural chemicals:



HANDLE WITH CARE

**AGRICULTURAL CHEMICAL STORAGE
AND
HANDLING**



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INTRODUCTION

All agricultural chemicals should be handled and stored with care.

This publication suggests the proper and safe handling of agricultural chemicals in warehousing and in transportation.

Extreme care is required when handling many types of agricultural chemicals. Some are highly toxic. Not all agricultural chemicals have the same degree of hazard. Some products, if inhaled or allowed to remain on the skin for a short period of time, can cause serious illness or possible death. Contaminated food, clothing or any other material likely to come into intimate contact with humans, or contaminated animal feed could cause damage to either humans or animals who are far removed from the place of contamination. *ALL AGRICULTURAL CHEMICALS SHOULD BE TREATED WITH CAUTION.*

The need for careful handling and inspection of all empty and full agricultural chemical containers cannot be overemphasized. Damaged or leaking containers can create a serious hazard if not properly handled. The main cause of ruptured containers is poor handling or abuse. When handling containers always be alert to detect possible leakers so you can protect yourself and others, and avoid the contamination of other goods.

Manufacturers of agricultural chemicals have technical staffs skilled in dealing with emergencies. Expert advice and on-site assistance is available by calling CHEMTREC, 800-424-9300. Many manufacturers include an emergency number on their bill of lading and on shipping container labels. *CALL THE SHIPPER'S NUMBER FIRST.*

Agricultural chemical workers have three main responsibilities:

1. Prevent emergencies by careful handling of agricultural chemicals.
2. Check for spillage—*immediately* bring it to the supervisor's attention.
3. Know the proper first aid and emergency steps to take until expert assistance is obtained.

PERSONNEL PRECAUTIONS

1. Do not store food, feedstuffs, beverages, tobacco, eating utensils, or smoking equipment in the work area, or where agricultural chemicals are stored.
2. Do not drink, eat, smoke, or use tobacco in the work area or where agricultural chemicals are stored.
3. Wear rubber or neoprene gloves or other gloves directed by the product label while handling any agricultural chemical, even if the container seems tightly closed.
4. Do not put your fingers to your ears, mouth, or other parts of body, or rub your eyes while working with or around agricultural chemicals.
5. After handling agricultural chemicals, always wash your hands and face before eating, drinking, smoking, or using the toilet.
6. When cleaning up spills, wear appropriate eye and respiratory protection and impervious footwear (rubber or other footwear as directed by label). Depending upon the magnitude of the spill, follow label directions for other protective equipment, such as coveralls, rainsuits, etc. Leather footwear or leather outer clothing should *not* be worn as they do not provide adequate protection and cannot be decontaminated. Ensure capabilities and limitations of respiratory protection are known prior to cleanup.
7. Avoid breathing vapors from leaking containers, and exercise caution to avoid fire in the area.
8. Never place agricultural chemicals in an unmarked container, particularly a new container that originally contained a beverage or food.

CONTAINERS

Many types and varieties of containers are used for the packaging and shipment of agricultural chemicals. Containers are designed to safely and effectively contain the products. Containers cannot always withstand abusive treatment, such as protruding nails, top loading or sharp objects, and puncture by forklift or other mechanical equipment. **HANDLE WITH CARE.**

HEALTH HAZARDS

Routes of Exposure

Even a small amount of certain agricultural chemicals taken into the body can cause serious illness—or death. Harmful amounts can enter the body by (1) absorption through the skin, (2) inhalation, or (3) ingestion. So, after handling an agricultural chemical, make it a standard practice to thoroughly wash hands and face with soap and water. Always shower at end of shift. If accidentally contaminated, remove any contaminated clothing and shower immediately.



This product can kill you if touched by hands or spilled or splashed on skin, in eyes or on clothing (liquid goes through clothes).



This product can kill you if vapors, spray mist or dust are breathed.



This product can kill you if swallowed even in small amounts; spray mist or dust may be fatal if swallowed.

First Aid in Case of Contact or Exposure

The product labels on all agricultural chemical products classified as Poison B contain first aid statements which clearly outline the procedure to be followed in case of contact or exposure. Statements on the labels are specific for the products in that container. **READ THE LABEL.** Medical doctors should call emergency numbers for additional information.

Even slightly contaminated clothing should be laundered separately, twice with great care *before being reused*. Use a very strong detergent and liquid chlorine bleach; rinse twice and dry completely. Clothing and shoes which have been badly contaminated should be destroyed by burning or buried by qualified personnel. Rubber footwear is preferable, since leather absorbs organic materials readily and cannot be decontaminated.

LABELS

The entire product label should always be read and totally understood before handling the product. Follow all precautions! By law, agricultural chemical containers are required to bear the label registered with the U.S. Environmental Protection Agency. Outer shipping containers for products meeting the criteria of the U.S. Department of Transportation (DOT) for a Poison B, in either a liquid or solid form, must display the DOT poison label (Appendix I). Outer shipping containers for other hazardous materials must also be labeled according to their respective classification; for example, flammable liquids should carry a DOT flammable liquid label (Appendix I). Certain agricultural chemicals may require more than one DOT label.


A look at the product label will show that extreme care has been taken to correctly describe the product, the hazards involved, methods to be used in handling the product, and what to do in case of poisoning. The product labels of highly toxic products carry the word "POISON" and the "skull and crossbones" symbol. Generally, there will be a list of warning statements headed by the word "DANGER." These statements describe the primary hazards, i.e. highly toxic or irritating or corrosive to eyes, skin, nose, and throat, and what should be done to avoid them. In addition, there is often information for the physician to assist him in treating a case of poisoning, should one occur. The labels on all POISON and other toxic category products are informative, and should contain all the basic information needed to handle the product safely. The chemical name and an ingredient statement are always shown on the label.

Signal Words for Labeling

The EPA toxicity rating system for agricultural chemical labeling requires the following signal words to appear on labels:

Signal Words	Toxicity of Material	Signal Words/Symbol
Danger	Highly Toxic	Danger-Poison Skull & Crossbones
Warning	Moderately Toxic	Warning
Caution	Slightly Toxic	Caution

ALWAYS READ THE LABEL

<p>PRECAUTIONARY STATEMENTS</p> <p>HAZARDS TO HUMANS (& DOMESTIC ANIMALS)</p> <p>DANGER _____</p> <hr/> <p>ENVIRONMENTAL HAZARDS _____</p> <hr/> <p>PHYSICAL OR CHEMICAL HAZARDS _____</p> <hr/>	<div style="float: right; width: 20%;">CROP: _____</div> <div style="clear: both;"></div> <div style="float: right; width: 20%;">CROP: _____</div> <div style="clear: both;"></div> <div style="float: right; width: 20%;">CROP: _____</div> <div style="clear: both;"></div> <div style="float: right; width: 20%;">CROP: _____</div> <div style="clear: both;"></div> <div style="float: right; width: 20%;">CROP: _____</div> <div style="clear: both;"></div> <div style="float: right; width: 20%;">WARRANTY STATEMENT _____</div> <div style="clear: both;"></div>
<p>RESTRICTED USE AGRICULTURAL CHEMICALS</p> <p>FOR RETAIL SALE TO AND APPLICATION ONLY BY CERTIFIED APPLICATORS OR PERSONS UNDER THEIR DIRECT SUPERVISION</p>	<p>PRODUCT NAME</p> <p>ACTIVE INGREDIENT: _____ %</p> <p>INERT INGREDIENTS: _____ %</p> <p>TOTAL: <u>100.00%</u></p> <p>THIS PRODUCT CONTAINS LBS OF PER GALLON</p>
<p>PRECAUTIONARY STATEMENTS</p> <p>HAZARDS TO HUMANS (& DOMESTIC ANIMALS)</p> <p>DANGER _____</p> <hr/> <p>ENVIRONMENTAL HAZARDS _____</p> <hr/> <p>PHYSICAL OR CHEMICAL HAZARDS _____</p> <hr/>	<p>KEEP OUT OF REACH OF CHILDREN</p> <p>DANGER — POISON</p>  <p>STATEMENT OF PRACTICAL TREATMENT</p> <p>IF SWALLOWED _____</p> <p>IF INHALED _____</p> <p>IF ON SKIN _____</p> <p>IF IN EYES _____</p> <p>SEE SIDE PANEL FOR ADDITIONAL PRECAUTIONARY STATEMENTS</p>
<p>DIRECTIONS FOR USE</p> <p>It is a violation of Federal law to use this product in a manner inconsistent with its labeling.</p> <p>RE-ENTRY STATEMENT (If Applicable) _____</p> <hr/> <p>CATEGORY OF APPLICATOR _____</p> <hr/>	<p>MFG BY _____</p> <p>TOWN, STATE _____</p> <p>ESTABLISHMENT NO. _____</p> <p>EPA REGISTRATION NO. _____</p> <p>NET CONTENTS _____</p>
<p>STORAGE AND DISPOSAL</p> <p>AGRICULTURAL CHEMICALS _____</p> <p>CONTAINERS _____</p>	<p>CROP: _____</p>

HANDLING SHIPMENTS

Agricultural Chemicals Classified by DOT as Hazardous Materials

Department of Transportation's Hazardous Materials Regulations require that those agricultural chemicals which are defined by DOT as hazardous materials, when offered for transportation, be identified on shipping papers by their proper hazardous materials shipping name, hazard class, appropriate four-digit identification number preceded by the designation 'UN' or 'NA', as applicable, and the total quantity. Additional information may also be required to be included on shipping papers. DOT regulations describe the exact manner in which the shipping papers are to be completed. The Federal regulations also prescribe container marking requirements and specific specifications for the containers in which hazardous products must be packaged and shipped. Materials labeled as Poison B must never be carried in the same vehicle with foodstuffs, food ingredients, feeds or any other edible material intended for consumption by humans or animals. In general, when tendering packaged hazardous materials in amounts of or greater than 1,000 pounds gross weight per vehicle to a motor carrier, the shipper must provide appropriate placards. Placarding of vehicles carrying less than 1,000 pounds gross weight is permissible, but is not required. For specific information, consult the DOT Hazardous Materials Regulations.

During transportation of agricultural chemicals, stick to the following rules:

1. **STOP ALL WORK IF A LEAK OR SPILL IS FOUND IN A SHIPMENT.**
2. **CLOSE AND LOCK THE VEHICLE TO ISOLATE THE SHIPMENT.**
3. **NOTIFY THE SHIPPER, OWNER, OR CONSIGNOR.**
4. **POST THE IMMEDIATE AREA AND GUARD SO THAT NO UNAUTHORIZED PERSON CAN COME IN CONTACT WITH THE SHIPMENT.**

A suspected contaminated vehicle should not be used for any purpose until it has been released by the shipper.

If leaking containers are discovered after receipt, read the label (avoid contact with the material), and always consult shipper for necessary procedures before cleaning up a spill as follows:

1. Care should be taken to avoid direct contact with the material.
2. Damaged containers should be removed from the vehicle and segregated from the undamaged containers.
3. Damaged containers should be placed in suitable overpack containers, and placed in a secure location.
4. Residue material must be thoroughly cleaned from the vehicle, using the approved clean-up method.
5. Shipper or consignee should be notified of leakage.

Occasionally, a portion of the containers in a shipment of agricultural chemicals may be damaged during transit. **IN SUCH CASES, PLACE THE MATERIAL IN AN ISOLATED AREA, AND INFORM THE SHIPPER OR OWNER OF THE DAMAGE.**



HELPFUL OPERATING HINTS

Agricultural chemical containers should be stored with the label plainly visible from operating aisles. If containers are not in good condition when received, they should be placed in a suitable overpack container and properly relabeled after consulting the shipper. If granular agricultural chemicals are received in bags that are damaged, the bag and the contents should be placed in suitable containers and properly labeled. (Fibre-packs or transparent heavy duty plastic bags are ideal.) Metal or rigid plastic containers should be inspected carefully to make sure that the lids and bungs are tight.

Classification and Separation

Each agricultural chemical formulation should be stored separately. Rigid containers should be stored in an upright position. All containers should be stored off the ground in an orderly way, so as to permit ready access and inspection. They should be placed in rows or stacking position with labels visible, and with lanes to provide easy access. A complete inventory should be maintained, indicating the number and identity of containers in each storage position row.

Container Inspection and Maintenance

Containers should be checked regularly for corrosion and leaks. Leaking containers should be isolated, the leak controlled if possible (by inverting container or placing in suitable overpack) and identified. The manufacturer should be consulted for further instructions. Materials such as adsorptive clay, hydrated lime, and sodium hypochlorite (household bleach) should be kept on hand for treatment of spills or leaks. Soda ash and liquid detergent are useful in neutralizing organic phosphate liquids.

STORAGE

Agricultural chemicals should be stored in a dry, well-ventilated, separate room, building or covered area dedicated exclusively to agricultural chemical storage, and where fire protection is provided. The following precautions should be taken:

1. When possible, the entire storage facility should be secured by climb-proof fences. Doors and gates should be kept locked to prevent unauthorized entry.
2. Identification signs may be placed on rooms, buildings, and fences to advise of the contents and warn of their hazardous nature.
3. All items of movable equipment used for handling agricultural chemicals at the storage site should be dedicated for this purpose. If it becomes necessary that they be used for other purposes, they should be thoroughly cleaned and decontaminated before they leave the site.
4. Pallets used for agricultural chemicals should not be used for other products.
5. Where possible, agricultural chemicals should not be stored on the upper floors of buildings. Neither should they be stored in basements, unless proper fire protection is provided. Ground floor storage is preferable.
6. A separate, secure storage area should be designated for leaking or damaged containers.

DISPOSAL

Before disposing of any agricultural chemical wastes, consult the requirements of the Resource Conservation and Recovery Act (RCRA), as published by the U.S. Environmental Protection Agency, to determine if the waste is defined as a "hazardous" waste. If so, its disposal is subject to stringent requirements under this law (RCRA).

NACA—Pesticide Safety Team Network.

The Pesticide Safety Team Network (PSTN) of the National Agricultural Chemicals Association (NACA) represents a joint effort of technically qualified manufacturers to respond to emergency situations where the involuntary release of agricultural chemicals has occurred. The PSTN can be reached by telephone 24 hours a day through CHEMTREC at 800-424-9300.

Suggestions for Fire Hazard Abatement

Where applicable, plainly label the outside of each storage area with "DANGER-POISON" "PESTICIDE STORAGE". Consult with the local fire department regarding the use of the current hazard signal system of the National Fire Protection Association.

In case of fire, make certain that all persons are evacuated immediately to an upwind location. Avoid exposure to smoke and possible toxic fumes. Provide the fire department with as accurate a list as possible of the types and amounts of stored agricultural chemicals. This will provide guidance to determine the best method of attack, and alert firemen to the specific hazards which the stored material(s) may present.

Suggestions for fire fighting procedures and precautions:

1. Wear air-supplied breathing apparatus and rubber clothing.
2. Avoid breathing or otherwise contacting toxic smoke and fumes.
3. Remove clothing and bathe completely as soon as possible after encountering smoke and fumes. Clothing should be properly laundered or destroyed.
4. Contain the water used in fire fighting by a diking system, if possible, to catch all drainage from the area.
5. Evacuate persons who may come in contact with smoke or fumes or contaminated surfaces.

Safety Precautions

Rules for personal safety and accident prevention similar to those listed below should be posted in areas where workers congregate. Examples are:

1. Inspect all containers of agricultural chemicals for leaks before handling them. Always wear impervious gloves. Wear personal protective equipment when handling leakers.
2. Handle containers carefully to prevent emergencies.
3. Permit only authorized persons in the storage area.
4. Store agricultural chemicals separately from materials used or consumed by humans or animals.
5. Clean up residue before and after loading or unloading.
6. Inspect all vehicles for placarding and road worthiness.
7. Never ship damaged containers.

Fire Control

Where large amounts of agricultural chemicals are stored or where conditions may otherwise warrant, the owner of stored agricultural chemicals should inform the local fire department, in writing, of the hazards that such agricultural chemicals may present in the event of a fire. A floor plan of the storage area, indicating where different agricultural chemical classifications are regularly stored, should be provided. The fire chief should be furnished with the home telephone numbers of those who are responsible for the agricultural chemical storage facility. Annual or semi-annual inspections by the fire department should be encouraged. Pre-fire plans should be formulated and reviewed annually, at least. A listing of agricultural chemicals inventory should be maintained in an area separate from the area of storage, which could be involved in a fire, and easily accessible for emergency purposes.

ALWAYS READ THE LABEL