



CHAPTER 8

Transportation, Storage, and Security

Chapter 8

National Pesticide Applicator Certification Core Manual

Transportation, Storage and Security

This module will help you:

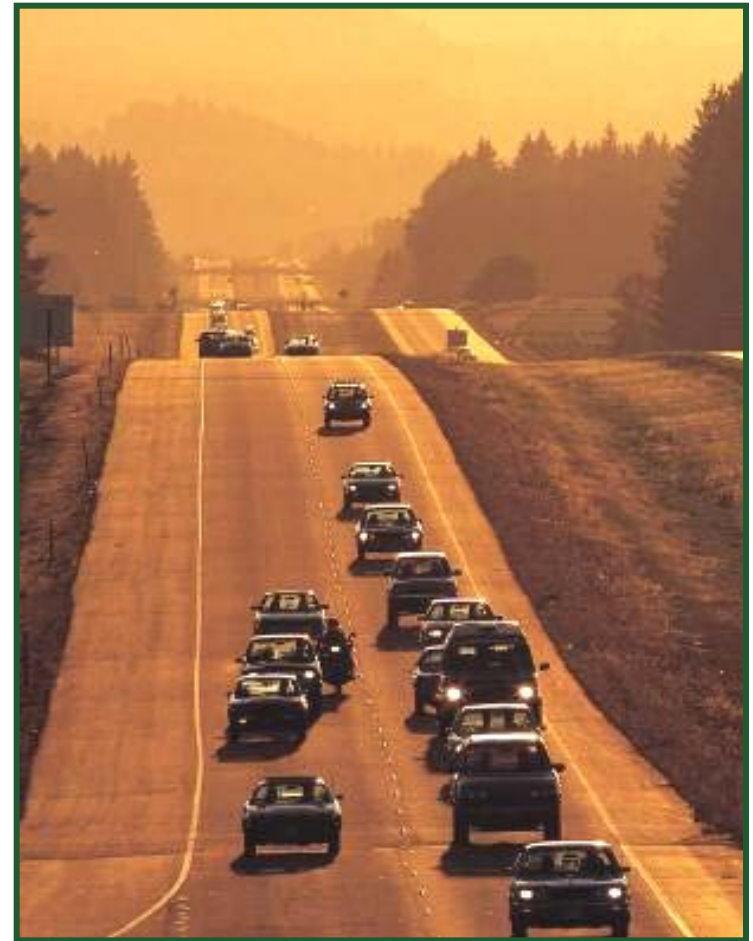
- ❖ Understand how to properly store pesticides and restrict access
- ❖ Understand inventory and maintenance methods
- ❖ Understand how to prepare for potential spills
- ❖ Understand how to dispose of pesticide wastes

Safety and Security

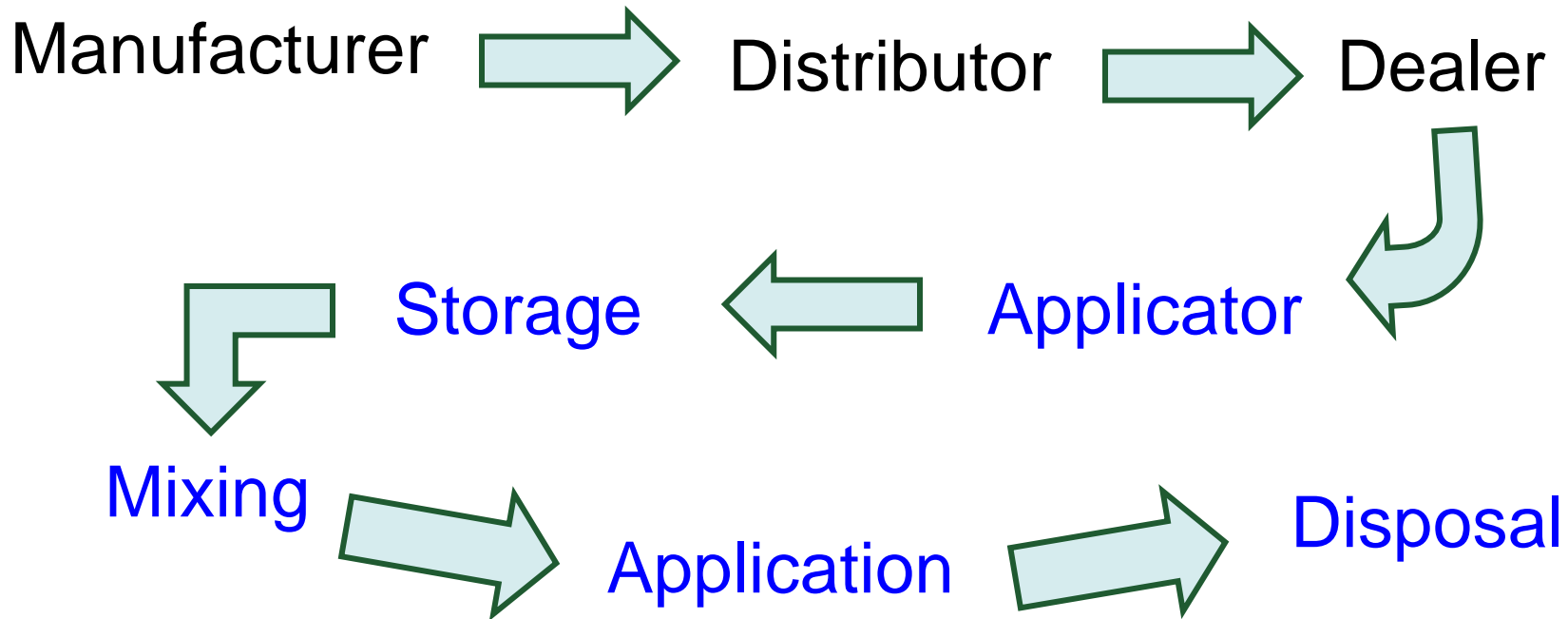
- ❖ Unauthorized access to pesticides poses several concerns
- ❖ Pesticides that are not secured pose threats
 - ❖ Consider transportation, application, lunch time, storage
- ❖ Pesticides being transported or stored in an unsafe manner pose threats to human health, animals, and the environment

Transportation of Pesticides

- ❖ Accidents involving pesticides are most likely to occur during transport
- ❖ Some pesticides are highly flammable
- ❖ Spills can result in human exposures, pollution, financial loss, legal action
- ❖ Vehicles can scatter spilled pesticides



How often are pesticides transported?



Accidents
happen!



Maintain Vehicles!

- ❖ Use side rails on trucks
- ❖ Check brakes, tires, and steering often
- ❖ Inspect tanks, fittings, gauges, hoses, booms, nozzles
- ❖ Look out for defects, cracks, and punctures
- ❖ Carry tools for repair!



Containing Cargo



- ❖ Protect from tears, punctures, impacts
- ❖ Enclosed boxes are best, but not always practical

- ❖ Keep children, careless adults, vandals out



Containing Cargo

❖ Truck beds are convenient, but be cautious!

❖ Never stack higher than side of vehicle

❖ Secure containers and tanks

❖ Nails, stones, sharp edges

❖ Steel beds are better than wood (easier to clean)

❖ But, how accessible is the load to others?



Vehicle owners and operators are held responsible for spills!...



... and **MUST** be trained in emergency response procedures for spills and notification

Vehicle Operators

- ❖ Special training or certification may be required

- ❖ May need to be a certified pesticide applicator



- ❖ Check state/local regulation

- ❖ U.S. Department of Transportation (DOT) requires special driver training for transporting hazardous materials

Other Vehicle Precautions

- ❖ Check with the dealer and the MSDS to see if a **vehicle manifest** is required
- ❖ For emergency preparedness, always carry in the vehicle
 - ❖ **manifest, if required**
 - ❖ **the label and MSDS**
 - ❖ **a spill kit, including absorbent material, broom and shovel, and PPE**
 - ❖ **a phone and list of emergency phone numbers**



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**

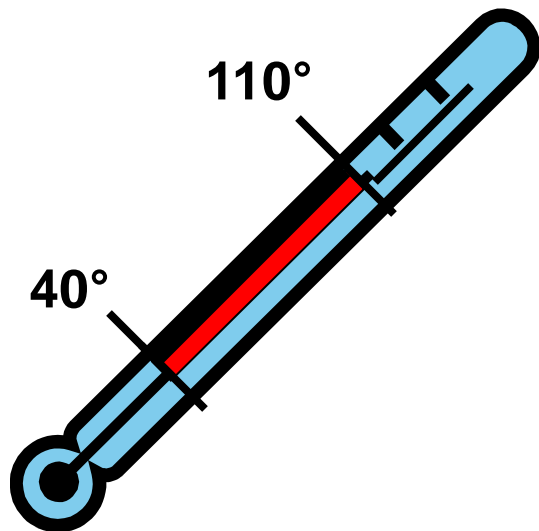


Other Vehicle Precautions

- ❖ DOT poison label—vehicles must be placarded with if:
 - ❖ More than 119 gallons or
 - ❖ 1,000 pounds are being transported
- ❖ A transportation security plan is also required.

Protect from the Elements during Transport

- ❖ **Temperature:** keep between 40° F and 110° F
- ❖ **Moisture** can destroy paper containers



Use a waterproof cover

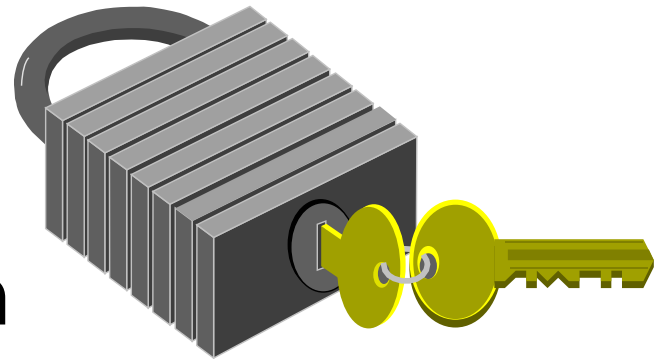
Keep Them Separated!

- ❖ Keep people and animals away
- ❖ Food, feed, seed, and plants could become contaminated or poisoned
- ❖ Keep herbicides separate from other insecticides and fertilizers



Transport Security

- ❖ **Never leave unattended**
 - ❖ Shipment, products in service vehicle
 - ❖ If possible lock pesticides away
 - ❖ Use a footlocker
 - ❖ Do not allow access to children
 - ❖ Protect yourself from theft



Transportation Security

- ❖ A few pesticides require placards:
 - ❖ Ask your dealer which pesticides
- ❖ Also other items require placards
 - ❖ Some fertilizers: **anhydrous ammonia, ammonium nitrate**
 - ❖ Fuels: **gasoline, diesel, propane**
 - ❖ Explosives



Transportation Security Plan

- ❖ Required for farmers and others 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

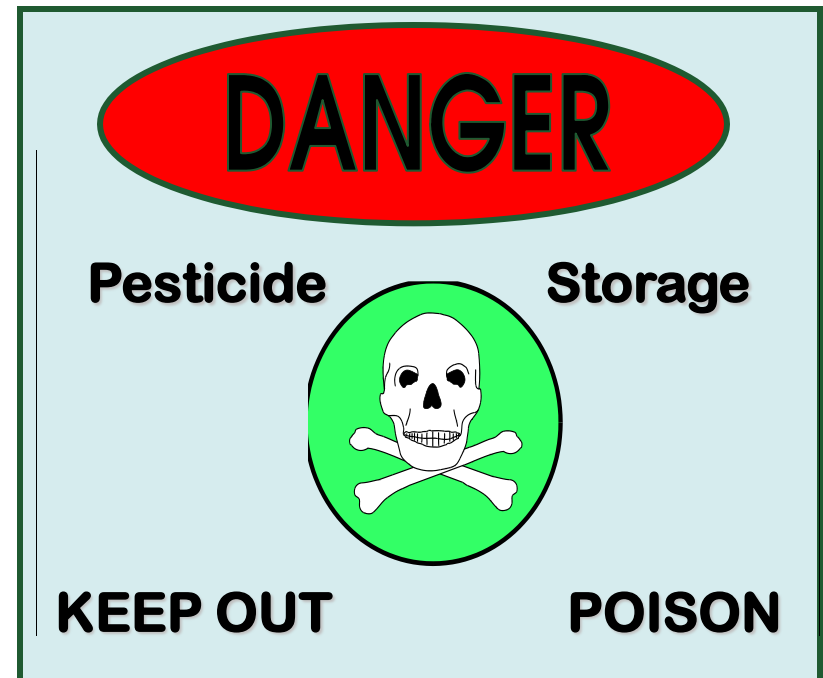
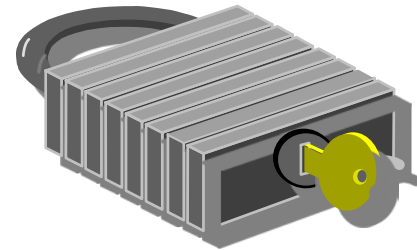
An Ideal Pesticide Storage Site Protects Against:

- ❖ Exposure to people and animals
- ❖ Environmental contamination
- ❖ Temperature extremes and excess moisture
- ❖ Theft, vandalism, and carelessness
- ❖ Liability



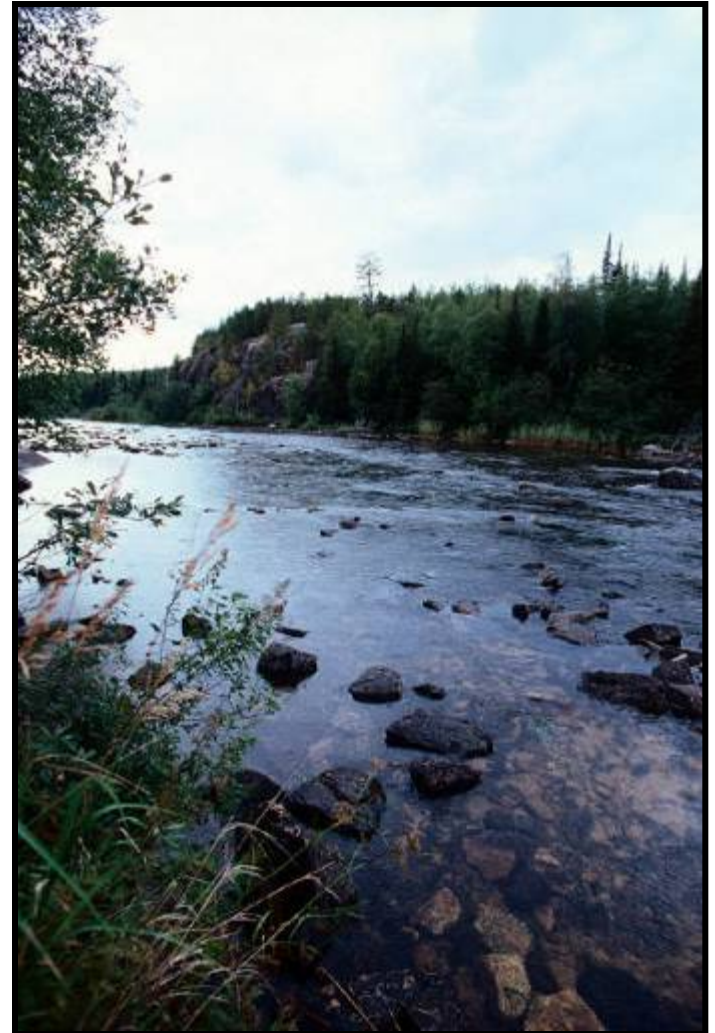
Secure the Site!

- ❖ Use a dependable lock
- ❖ Post highly-visible warning signs on doors, windows
- ❖ Post “No Smoking” warnings, since many pesticides are highly flammable!

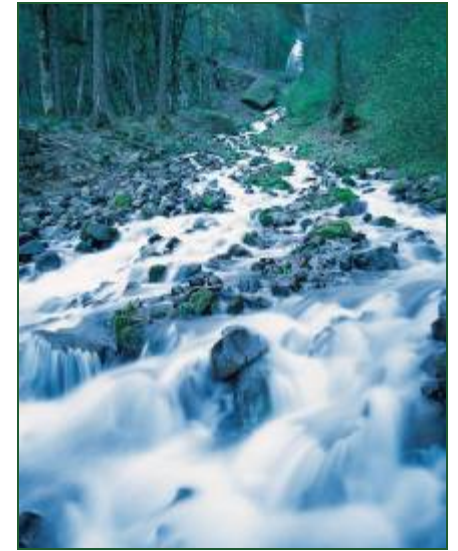
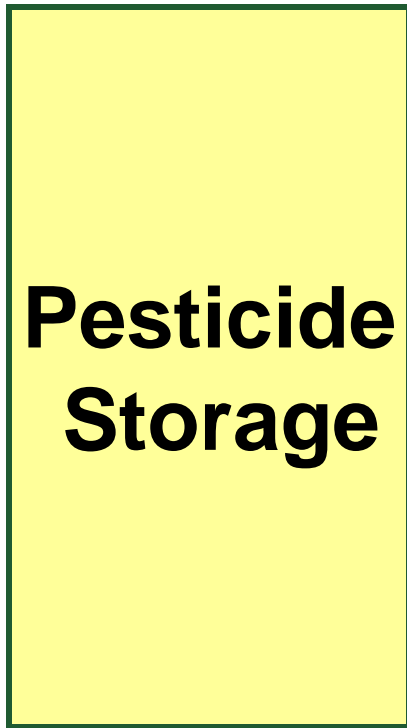


Prevent Water Damage

- ❖ Carefully plan storage facility location
 - ❖ Avoid areas with wells
 - ❖ Avoid areas near streams and slopes
 - ❖ Avoid areas where runoff or leaching is likely to occur



Pesticide Storage



Surface water



Private well

Control the Conditions

- ❖ Keep storage area cool well-ventilated, and dry
- ❖ Pesticide labels may specify storage temperature
- ❖ Excessive freezing or heat may cause loss of product effectiveness. Containers may break, melt, explode, and some pesticides to volatilize, drift, degrade
- ❖ Use exhaust fans to reduce temperature, remove dust and vapor to the outside



Provide Adequate Lighting

- ❖ For reading labeling, spotting leaks, and cleaning up spills
- ❖ Some pesticides may volatilize. Use spark-proof fixtures and switches!



Use Non-porous Materials

- ❖ Carpet, wood, soil are difficult to decontaminate—may become hazardous waste if there is a spill
- ❖ Sealed cement, glazed ceramic tile, no-wax sheet flooring -- free of cracks, easy to clean
- ❖ Slope the floor into a containment system
- ❖ Use plastic or metal for shelving and pallets



Storage Site

- ❖ Store in original containers
- ❖ **Do not store** food, drinks, tobacco, feed, medication, vet supplies, seed, clothing, PPE



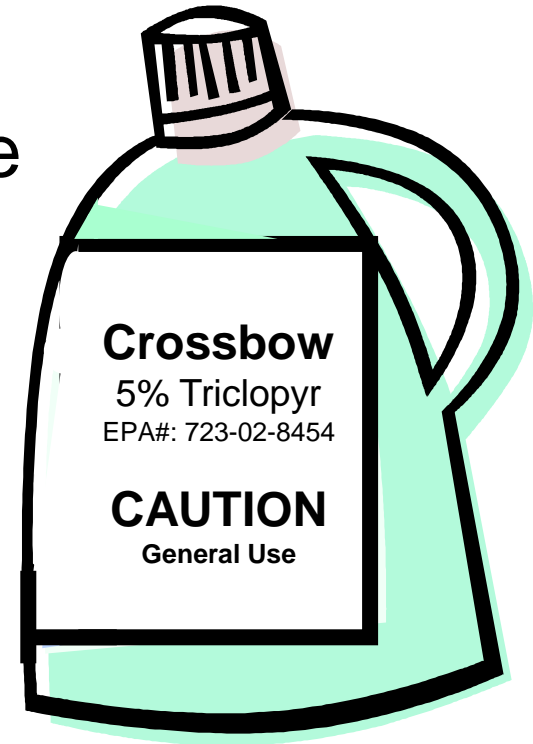
- ❖ Have clean water available for decontamination



**Store
Pesticides Separately!**

Keep Labels Legible

- ❖ If a product label is destroyed or damaged, immediately mark the container with:
 - ❖ Trade name and common name
 - ❖ EPA registration number
 - ❖ % of each active ingredient
 - ❖ Signal word
 - ❖ Use classification
- ❖ Request a replacement label from the dealer or distributor



Store Pesticides Safely!

- ❖ Store pesticides only in **original** containers
- ❖ Never lend or borrow pesticides in unmarked or unlabelled containers
- ❖ Securely close containers when not in use
- ❖ Put opened bags of wettable and soluble powders in clear plastic bags



Store Pesticides Safely!

- ❖ Store on sturdy metal shelving
- ❖ Place heaviest containers and liquids on low shelves
- ❖ Place large drums and bags on **plastic pallets**
- ❖ Seal dry materials in plastic bags



Store Pesticides Safely!

- ❖ Store volatile pesticides separately
- ❖ Place bulk tanks on a concrete containment collection pad
- ❖ Dike to keep spilled/leaked pesticide in a confined area



Store Pesticides Safely!

- ❖ Containment area inside dike should contain the tank's volume + additional volume
 - ❖ Additional volume requirements vary by state
- ❖ All containment area drains should be connected to a holding tank
- ❖ Fence off/lock the area to prevent tampering



Look for Damaged Containers

- ❖ Inspect regularly for tears, splits, breaks, leaks, rust, and corrosion
- ❖ If found, put on PPE, clean up spills, and use immediately according to label instructions!
- ❖ Transfer to an appropriate container and label it



Shelf Life of Pesticides

- ❖ Keep inventory - mark each container with its purchase date
- ❖ Be aware of each product's shelf life
- ❖ Watch for excessive clumping, poor suspension, layering, abnormal coloration
- ❖ Poor pest control or plant damage may indicate the pesticide has deteriorated
- ❖ Avoid storing large quantities for long periods – inventory control – use older product first – buy only what you need

Safety Tips

- ❖ Have duplicate copies of labels and MSDS
- ❖ Wear the appropriate PPE
- ❖ Have absorbent materials ready in case of spills or leaks
- ❖ Label all items used in handling pesticides



Safety Tips

- ❖ Have a plan
- ❖ Have absorbent materials ready for spills and leaks
 - ❖ Clay, pet litter, vermiculite
- ❖ Have a shovel, broom, heavy-duty plastic bags available



Safety Tips

- ❖ Seed colorant may be attractive to children
- ❖ Handle/store treated seed as if it were a pesticide
- ❖ Never use treated seed for feed!
- ❖ Never mix treated seed with untreated seed!



Emergency Equipment



Don't Generate Hazardous Waste!

- ❖ Leftovers = **hazardous waste**
- ❖ Dirty, empty containers
- ❖ Outdated products may lose effectiveness
- ❖ Cancelled products may not be legal
- ❖ Use it up before the expiration date!



Pesticide Storage Summary

- ❖ Secure the site
- ❖ Prevent water damage
- ❖ Control the temperature
- ❖ Provide adequate lighting
- ❖ Use non-porous flooring materials
- ❖ Keep labels legible
- ❖ Store pesticide containers safely
- ❖ Note shelf life of products
- ❖ Do not accumulate waste products (subject to SARA Title III and RCRA)

Follow the Label!

Storage and Disposal

Pesticide Storage and Disposal

Store in a dry place. Do not contaminate water, food or feed by storage, disposal, or cleaning of equipment. Wastes resulting from the use of this product may be disposed of on-site or at an approved waste disposal facility.

Container Disposal

Completely empty bag into application equipment. Dispose of empty bag in a sanitary landfill or by incineration, or by open burning, if allowed by state and local authorities. If burned, keep out of smoke.

For minor spills, leaks, etc., follow all precautions indicated on this label and clean up immediately. Take special care to avoid contamination of equipment and facilities during cleanup procedures and disposal of wastes. In the event of a major spill, fire or other emergency, call (919) 292-7100 day or night.

Precautionary Statements

Hazards to Humans and Domestic Animals

CAUTION

Harmful if swallowed, inhaled, or absorbed through skin. Do not breathe dust or spray mist. Avoid contact with eyes, skin or clothing.

Statement of P.

dote for atrazine. If this product is ingested, induce emesis or lavage stomach. The use of an aqueous slurry of activated charcoal may be considered.

Environmental Hazards

Atrazine can travel (seep or leach) through

Disposal & Recycling



- ❖ Triple-rinse or pressure-rinse all containers
- ❖ Add container rinsewater to spray batch!
- ❖ Store clean containers in a special section
- ❖ Take clean containers for recycling

Disposal & Recycling

- ❖ **Recycle** containers through your state program or one supported by the Ag. Container Recycling Council (ACRC)
- ❖ **Tank rinsates** may be stored and added to tank mixes for labeled sites



Pesticide Site Security



Develop a Security Plan

- ❖ Reduces adverse effects
- ❖ Safeguards employees, community, environment
- ❖ Reduces legal risks, insurance costs
- ❖ Reduces risk of vandalism, theft
- ❖ Protects confidential information
- ❖ Improves relationships with the community

Acme Security Plan		
FACILITY NAME _____		
LOCATION _____		
PHONE NUMBER _____		
EMERGENCY TELEPHONE NUMBERS:		
	DAY	NIGHT
MANAGER'S NAME _____		
ASST. MANAGER'S NAME _____		
ALTERNATE _____		
ALTERNATE _____		
PHYSICIAN'S NAME _____		
CHEMTREC (Chemical Transportation Emergency Center) (800) 424-9300 (TOLL FREE)		
<small>(For calls originating outside the continental U.S., call (202) 462-7868 unless noted.)</small>		
<small>Many chemical manufacturers are equipped to provide emergency INFORMATION ON THEIR PRODUCTS. Manufacturers may be contacted through CHEMTREC.</small>		
<small>This is an agricultural chemical facility and can be dangerous—the possibility of poisoning must be considered in addition to the usual fire hazards. The general guidelines will help reduce the hazards. However, a specific plan should be developed for each facility as outlined in the instructions. Local fire department should be invited to your facility of their locality. They should be thoroughly familiar with the contents of your Fire/Spill Plan. Special consideration should be given to providing them with relevant information IN ADVANCE as to anticipated quantities, locations and types of hazardous materials. The use of Material Safety Data Sheets (MSDSs) which are available from manufacturers, is encouraged.</small>		
FIRE/SPILL PLAN UPDATE (Review annually and after any important changes)		
FACILITY MANAGER	_____ (signature)	_____ (date)
FIRE DEPT OFFICIAL	_____ (signature)	_____ (date)
NAME OF FIRE DEPT _____		
NEXT SCHEDULED REVIEW OR UPDATE _____ (date)		

Risk Assessment: What are your assets?

- ❖ **People:** employees, visitors, customers, contractors, transporters
- ❖ **Information**
- ❖ **Property:** pesticide storage facilities, vehicles, application equipment, storage tanks, mixing and loading sites, waste collection facilities, utilities

Employees are the Eyes and Ears of the Company

- ❖ Can provide early warning if something suspicious occurs
- ❖ Proper training enables them to become “watchdogs”



Minimum training for employees should cover:

- ❖ pesticide inventory control
- ❖ security of facilities and equipment
- ❖ emergency preparedness and response



Evaluating the Security Plan

- ❖ Are there effective barriers to block intruders?
- ❖ Is there adequate protection against power losses or unauthorized access?
- ❖ Are hiring and labor policies, background checks, and inventories effective?
- ❖ Do employees understand how to respond in an emergency, including a bomb or terrorist threat?

Prevention

- ❖ Keep storage areas locked
- ❖ Keep an updated and accurate inventory
- ❖ Communicate with local police & fire units
- ❖ Routinely review, update, and practice emergency response procedures
- ❖ Keep an updated emergency telephone number list



Prevention

- ❖ Require photo ID from purchasers
- ❖ Be vigilant of unknown individuals who want to buy bulk pesticides with cash
- ❖ Ask employees to report incidents of unusual behavior from strangers
- ❖ Restrict access of non-employees to pesticide storage, mixing, and equipment facilities



Summary

- ❖ Maintain vehicles, train drivers, and carry labels to prevent and respond to pesticide accidents
- ❖ Keep pesticides in a cool, dry, well-ventilated room with adequate lighting
- ❖ Lock the area and post warning signs
- ❖ Keep pesticides in original containers with legible labels

Summary

- ❖ Keep an inventory of all chemicals in storage
- ❖ Follow label instructions for proper disposal
- ❖ Develop security and emergency management plans
- ❖ Train employees and work with local authorities

CHAPTER 8

Q1. Which of the following statements are true regarding pesticide storage?

1. The floor of a storage facility should be made of wood for easy clean-up
2. Treated seed should be stored in a pesticide storage facility
3. Keeping pesticide storage facilities well ventilated helps to reduce potential pesticide exposures
4. Pesticides never go bad

A. 2 and 4

C. 1 and 4

B. 1 and 3

D. 2 and 3

Q2. When transporting pesticides:

- A. Always drive with the window open to let the fumes escape from the backseat
- B. Drive a beat-up truck in case the pesticides spill. You don't want to get your new truck dirty
- C. Secure pesticides and protect against extreme weather conditions
- D. Carry your commercial driver's license, which is required for anyone transporting professionally-applied pesticides

CHAPTER 8

Q3. Which of the following should be stored separately from the pesticide storage facility?

- A. MSDS sheets
- B. PPE
- C. Spill kit
- D. Fire extinguisher