



Pesticide Storage Practices

Considerations and recommendations to minimize risk of exposure

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Welcome!

We will be interactive!

- Write your name on the top of your answer sheet.
- Answer the questions as we move along.
- Turn your answer sheet in at the end of the presentation for a chance to win a doorprize!

We will cover

- Pesticide Characteristics
- SDS and Pesticide Information
- Ideal Practices



Photo: UF IFAS Extension, Pesticide Emergencies <https://edis.ifas.ufl.edu/pdf%5CPI%5CPI25800.pdf>

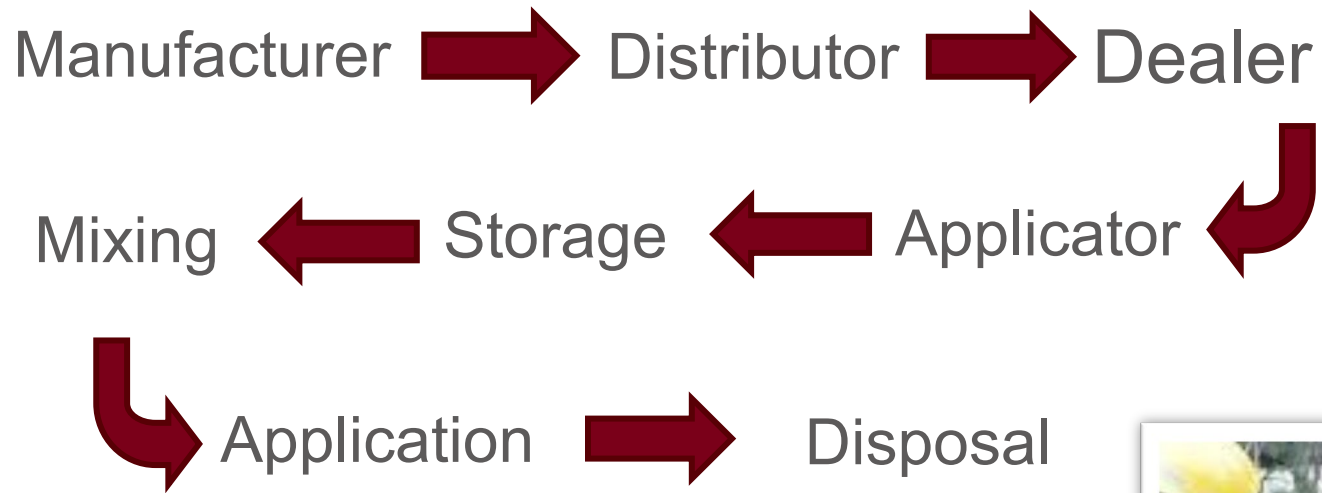
Question 1:

When is it possible to spill a pesticide?

Be short but specific

- Short Answer

Where is the potential for pesticide incidents?



Accidents happen!

Question 2:

Where will you find information about proper pesticide storage and disposal?

- A. The pesticide label
- B. The Safety Data Sheet
- C. Both the pesticide label and the Safety Data Sheet
- D. None of these

Note Label Requirements
for both storage and disposal of
containers, product and rinsate.

SDS

Pesticide
Label

STORAGE AND DISPOSAL

Do not contaminate water, food or feed by storage or disposal.

PESTICIDE STORAGE: Store product in original container only, away from other pesticides, fertilizer, food or feed.

PRODUCT DISPOSAL: Wastes resulting from the use of this product may be disposed of on site or at an approved waste disposal facility.

CONTAINER DISPOSAL: Nonrefillable container. Do not reuse this container to hold materials other than pesticides or dilute pesticides (rinsate). After emptying and cleaning, it may be allowable to temporarily hold rinsate or other pesticide-related materials in the container. Contact your state regulatory agency to determine allowable practices in your state. Once cleaned, some agricultural plastic pesticide containers can be taken to a container collection site or picked up for recycling. To find the nearest site, contact your chemical dealer or manufacturer, or contact The Agricultural Container Recycling Council (ACRC) at www.acrecycle.org. If not recycled, then puncture and dispose of in a sanitary landfill, or incineration, or if allowed by state and local authorities, by burning. If burned, stay out of smoke.

SECTION 7. HANDLING AND STORAGE

Handling (Personnel)	: Wash hands thoroughly with soap and water after handling and before eating, drinking, chewing gum, using tobacco, or using the toilet. Remove clothing/PPE immediately if material gets inside. Wash thoroughly and put on clean clothing. Remove personal protective equipment immediately after handling this product. Wash the outside of gloves before removing. As soon as possible, wash thoroughly and change into clean clothing.
Handling (Physical Aspects)	: No applicable data available.
Dust explosion class	: No applicable data available.
Storage	: Do not contaminate water, other pesticides, fertilizer, food or feed in storage. Store in original container. Keep containers tightly closed in a dry, cool and well-ventilated place. Do not re-use empty containers. Keep out of the reach of children.
Storage period	: No applicable data available.
Storage temperature	: No applicable data available.

Triple rinse or pressure rinse container (or equivalent) promptly after emptying.

For packages up to 5 gallons: Triple rinse as follows: Empty the remaining contents into application equipment or a mix tank and drain for 10 seconds after the flow begins to drip. Fill the container ¼ full with water and recap. Shake for 10 seconds. Pour rinsate into application equipment or a mix tank or store rinsate for later use or disposal. Drain for 10 seconds after the flow begins to drip. Repeat this procedure two more times. **Pressure rinse as follows:** Empty the remaining contents into application equipment or a mix tank and continue to drain for 10 seconds after the flow begins to drip. Hold container upside down over application equipment or mix tank or collect rinsate for later use or disposal. Insert pressure rinsing nozzle in the side of the container, and rinse at about 40 PSI for at least 30 seconds. Drain for 10 seconds after the flow begins to drip.

Pesticide Characteristics

- Toxicity
- Flammability (Flash Point)
- Oxidation potential
- Incompatibilities
- Storage temperature
- Reactivity



Photo Credit: <https://ythoreccio.blogspot.com/2019/12/explosive-symbols-are-used-to-label.html>

Question 3:

What information on a pesticide label indicates the relative toxicity of that product?

A. The Directions for Use

B. The Signal Word

C. The First Aid Information

D. The Personal Protective Equipment required

Toxicity (Health Hazard)

- SDS provides LD50
- May list specific routes of entry
- Provide first aid information
- Will indicate other potentials such as toxic gas during fire, fish kill if released into water, hazardous byproducts when mixed, burned, etc.



Inhalation 4 h LC50	:	> 3.8 mg/l , Rat
Dermal LD50	:	> 2,020 mg/kg , Rabbit
Oral LD50	:	2,149 mg/kg , Rat

Hazardous decomposition products : In case of fire hazardous decomposition products may be produced such as:, Carbon dioxide (CO₂), Carbon monoxide, Hydrogen chloride, Sulphur dioxide

Contaminated work clothing should not be allowed out of the workplace.
Wear protective gloves.

Flammability



- SDS provides flammability
- SDS lists acceptable fire extinguishing methods
- Will indicate other potentials such as toxic gas or hazardous byproducts when burned

Hazardous decomposition products : In case of fire hazardous decomposition products may be produced such as:, Carbon dioxide (CO₂), Carbon monoxide, Hydrogen chloride, Sulphur dioxide

Suitable extinguishing media : Water spray, Dry chemical, Foam, Carbon dioxide (CO₂)

Unsuitable extinguishing media : High volume water jet, (contamination risk)

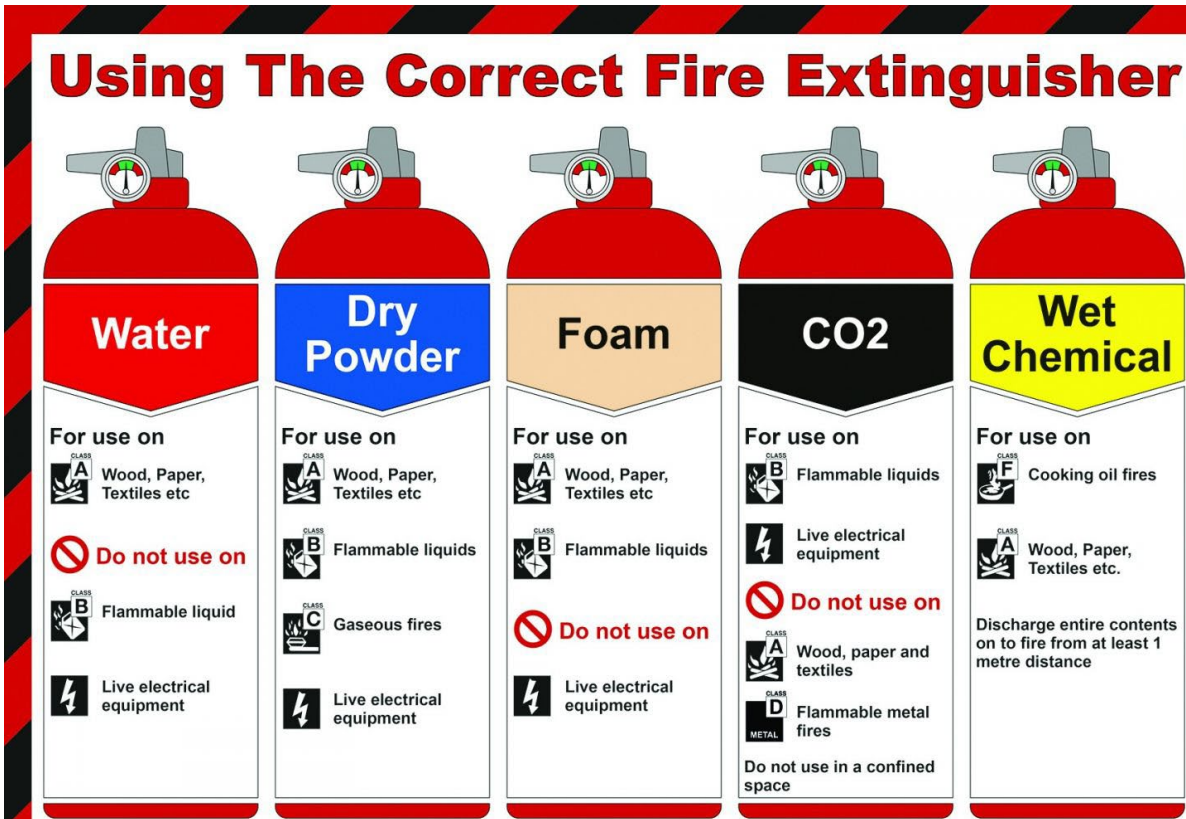
Unusual Fire and Explosion Hazards: Container may rupture from gas generation in a fire situation. Violent steam generation or eruption may occur upon application of direct water stream to hot liquids. Pneumatic conveying and other mechanical handling operations can generate combustible dust. To reduce the potential for dust explosions, do not permit dust to accumulate. Dense smoke is produced when product burns.

Question 4:

Which materials is a fire extinguisher rated *A-B-C* to be used on?

- A. Paper, flammable liquids and flammable gases
- B. Paper, cooking oil, and wood
- C. Flammable metals and electrical
- D. Anything flammable

Do you have the correct one?



Class A: Fires are those involving free burning materials, such as paper wood, fabrics and other textiles, and also plastics

Class B: Fires involve flammable liquids and solids, such as diesel, petrol and oils (but not cooking oils), plus solid fuels such as wax

Class C: Fires involve flammable gases, such as propane, butane and methane

Class D: Fires involve flammable metals such as sodium, potassium and magnesium

Class E: Electrical equipment fires involve electrical equipment such as switchgear or computers.

Class F: Fires are specific to cooking oils and fats

Oxidation Potential



- SDS will list potential
- Includes sodium hypochlorite (active ingredient in bleach products), peroxides, and other solvents

SECTION 2: Hazards identification

Although OSHA has not adopted the environmental portion of the GHS regulations, this document may include information on environmental effects.

2.1 Classification of the substance or mixture

HCS 2012 (29 CFR 1910.1200)

Flammable liquids, Category 4

Oxidizing liquids, Category 2

Acute toxicity, Category 4

Acute toxicity, Category 4

Skin corrosion, Category 1A

Serious eye damage, Category 1

Specific target organ systemic toxicity - single exposure

Category 3

H227: Combustible liquid.

H272: May intensify fire; oxidizer.

H302: Harmful if swallowed.

H312: Harmful in contact with skin.

H314: Causes severe skin burns and eye damage.

H318: Causes serious eye damage.

H335: May cause respiratory irritation. (Respiratory system)



Incompatibilities, Storage Temperature, Reactivity

– SDS will list potentials



10. STABILITY AND REACTIVITY

Reactivity: No dangerous reaction known under conditions of normal use.

Chemical stability: Unstable at elevated temperatures.

Possibility of hazardous reactions: Polymerization will not occur.

Conditions to avoid: Avoid temperatures above 70 °C

Exposure to elevated temperatures can cause product to decompose. Generation of gas during decomposition can cause pressure in closed systems.

Incompatible materials: Avoid contact with oxidizing materials. Avoid contact with: Bases.

Hazardous decomposition products: Decomposition products depend upon temperature, air supply and the presence of other materials. Decomposition products can include and are not limited to: Hydrogen chloride. Organic sulfides. Sulfur dioxide.

Conditions to avoid : Protect from frost. Heat Direct sunlight.

Conditions to avoid

Avoid all sources of ignition: heat, sparks, open flame. Avoid prolonged storage. Avoid electro-static discharge. Avoid contamination. Avoid prolonged exposure to extreme heat. Avoid extreme temperatures.

Conditions to avoid: Avoid elevated temperatures. Material will degrade when storage conditions are not followed.

10.5 Incompatible materials

- Acids
- Bases
- Metals
- Heavy metal salts
- Powdered metal salts
- Reducing agents
- Organic materials
- Flammable materials

Pesticide Storage- the Good, Bad and Ugly

- Site Location
- Materials
- Security/Accessibility
- Training

Question 5:

What factor(s) should you consider when choosing a storage site for your pesticides?

- A. Location away from unprotected people
- B. Location away from water bodies and wells
- C. Security and accessibility
- D. Environmental conditions (heat, cold, water, etc.)

PESTICIDE STORAGE SITE

Sites should be thoughtful, which may not necessarily be most convenient

- Away from common areas, unprotected people
- Away from sensitive areas (water, wells, etc.)
- Weather protected
- Secured
- Documented/labeled



PESTICIDE STORAGE SITE

Design characteristics

- Can hold all of your product
 - If your space is too small stuff tends to be placed elsewhere improperly
- Can be organized
 - If things are too hard to find, placement becomes “convenient”
- Protects chemicals from exposures
 - Flammables, corrosives, temperatures
- Protects environment/people from exposure
 - Prevents leaks, fumes, dust from moving to offsite areas
- Can be easily cleaned
 - Shelves can be reached, floors can be swept, minimal movement of product to take inventory, etc.
- Can be secured
 - Accessible only to authorized individuals
- Ventilated
 - To proper areas, not within buildings or near intake vents



Question 6:

What type of shelving do you have in your storage area?

- A. Metal
- B. Wood
- C. Plastic
- D. A mix of these
- E. Something else

MATERIALS

Read the SDS and pesticide label for specific requirements!

- Flooring
 - Non-porous
 - Easy to clean
 - No trip hazards
- Shelving
 - Non-porous
 - Easy to clean
 - Non-reactive
 - Consider double containment
- Lighting
 - Non-reactive (sparks can ignite materials)
 - Easy to reach switches
 - Enough light to read labels



Pesticide Storage

Let's take a look!

QUESTION 7: What's wrong with this storage site? Write at least one thing.



Photo Credits: Montana Department of Agriculture

1- improper, lack of lighting



What's wrong with this storage site?



2- porous and sagging shelving

What's wrong with this storage site?



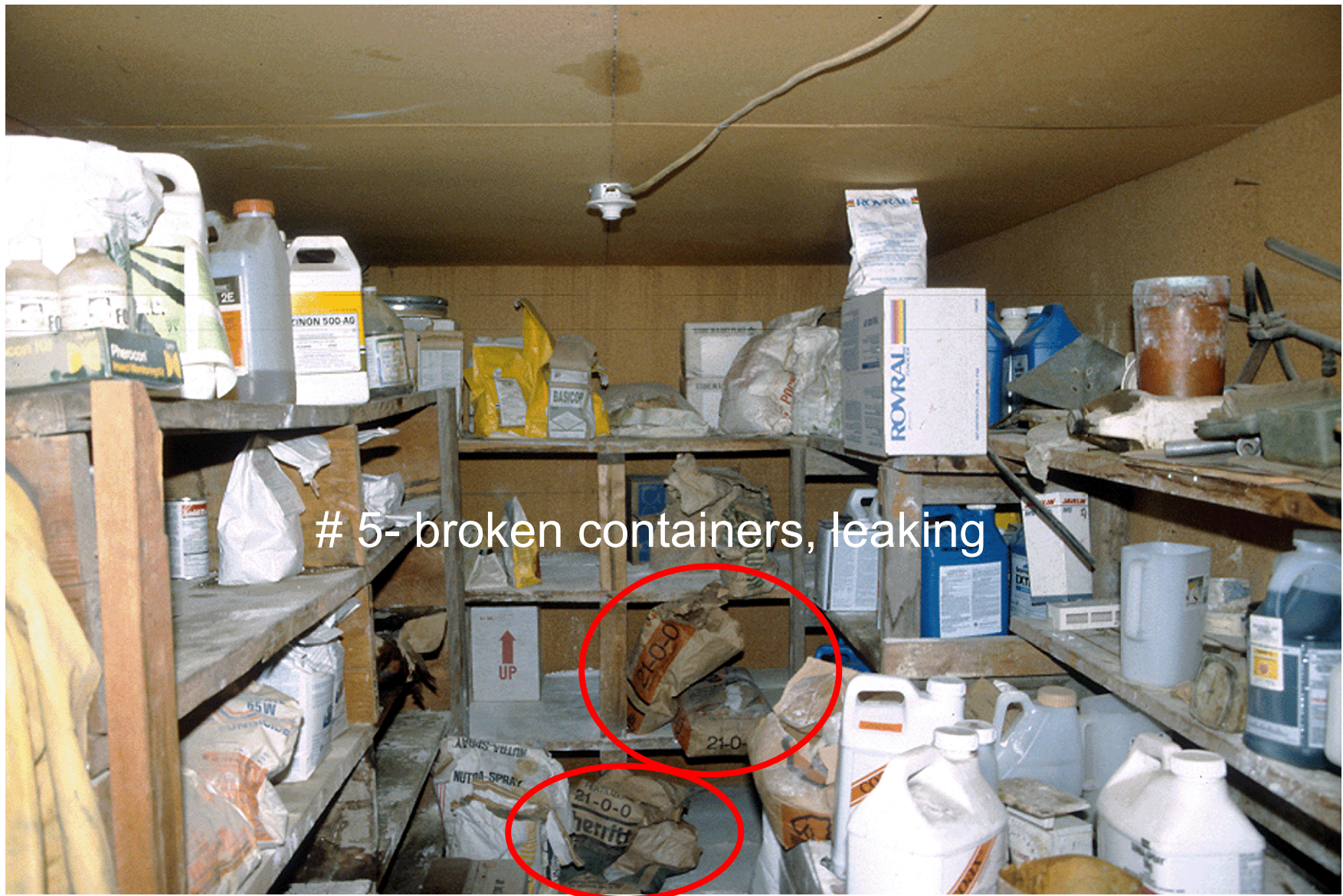
#3- leaking, improperly placed

What's wrong with this storage site?



4- product spills

What's wrong with this storage site?



5- broken containers, leaking

What's wrong with this storage site?



6- household containers

What's wrong with this storage site?





Photo Credits: Jolene Hendrix, UMN

OTHER STORAGE REMINDERS

Never use other containers to store pesticides

Paraquat safety training- many incidents were due to accidental ingestion from unmarked containers

The Solution is YOU

ONE SIP CAN KILL!

To prevent the severe injury and/or death from paraquat ingestion, a paraquat product must:

- Be used only by a certified applicator or under the direct supervision of a certified applicator. Per new EPA-approved labels (which should begin appearing on products in 2019), paraquat may be used only by a certified applicator.
- Never be transferred to a food, drink or any other container.
- Always be kept secured to prevent access by children and/or other unauthorized persons.
- Never be stored in or around residential dwellings.
- Never be used around home gardens, schools, recreational parks, golf courses or playgrounds.

Source: <https://www.epa.gov/pesticide-worker-safety/paraquat-dichloride-one-sip-can-kill>



Question 8:

Do you have a spill kit in your storage area and your vehicle?

A. Yes

B. No

C. Not sure

SPILL MATERIALS

❑ Spill Kits

❑ PPE

- Appropriate materials for your products
- Fire extinguishers when necessary
- Accessible to anyone
- Accompanied by SDS and pesticide labels
- Locations
 - Vehicles
 - Storage
 - Mixing/loading stations
 - Main office



Photo Credits: Jolene Hendrix, UMN

WASTE MATERIALS

- ❑ Proper storage and disposal according to label
 - ❑ Product vs. rinsate
- ❑ Recycle containers as allowed by label and local regulation
- ❑ Keep them secure, unusuable
 - ❑ Triple rinse or power rinse
 - ❑ Punch holes in bottom or cut
 - ❑ Don't put in household/general recycling



Photo Credits: Jolene Hendrix, UMN

TRANSPORT VEHICLES

Vehicle maintenance

- Secure
- Inspect
- Perform Maintenance

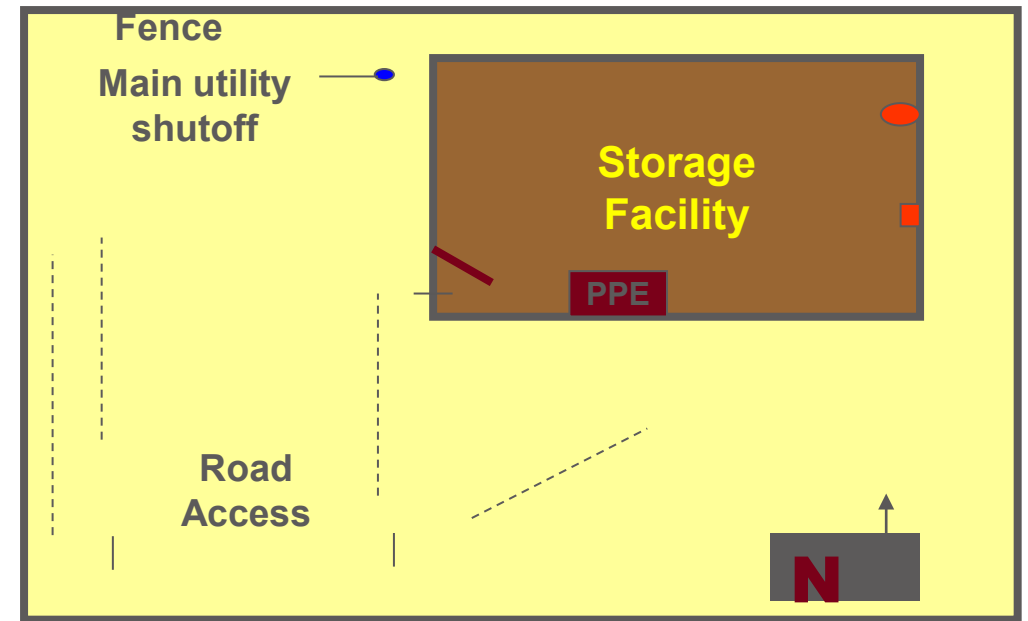
Passenger Vehicles

- Never transport in cargo area with people, pets, food
- Use well ventilated vehicle
- Secure your load!
- Protect from tears, punctures, and impacts
- Keep in original shipping container
- Have SDS, pesticide labels, fire extinguisher, PPE, spill kit in all vehicles



INCIDENT RESPONSE PLANS

- ❑ Keep up to date inventory lists
- ❑ Order minimal product to reduce risk of theft, damage (weather, breakdown, etc.)
- ❑ Train all employees on who to call in case of emergency
- ❑ Offer plan to first responders in the area
- ❑ Include a map of the premises with storage location(s)



PESTICIDE EMERGENCY INFORMATION
 For any type of an emergency involving a pesticide, immediately contact the following emergency information centers for assistance.
 Current as of March 2001

Human Pesticide Poisoning

POISON CONTROL
 From anywhere in the United States, call
1 - 8 0 0 - 2 2 2 - 1 2 2 2

Special Pesticide Emergencies

Animal Poisoning	Pesticide Fire	Traffic Accident	Environmental Pollution	Pesticide Disposal Information
Your veterinarian:	Local fire department:	Local police department or sheriff's department:	District Michigan Department of Environmental Quality (MDEQ) Office Phone No.:	Michigan Clean Sweep, Michigan Department of Agriculture, Environmental Stewardship Division. Monday - Friday: 8 a.m. - 5 p.m. (517) 335-6529
Phone No. _____ or Animal Health Diagnostic Laboratory (Toxicology) Michigan State University: (517) 355-0281	Phone No. _____ and Fire Marshal Division, Michigan State Police M-F: 8-12, 1-5 (517) 322-1924 * Telephone Number Operated 24 Hours	Phone No. _____ and Operations Division, Michigan State Police: *(517) 336-6605	Phone No. _____ and MDEQ Pollution Emergency Alerting System (PEAS): *1-800-292-4706 also *1-800-405-0101 Michigan Department of Agriculture Spill Response	National Pesticide Telecommunications Network Provides advice on recognizing and avoiding pesticide poisoning, toxicology, general pesticide information and emergency response assistance. Funded by EPA, based at Oregon State University. 7 days a week, excluding holidays 6:30 a.m. - 4:30 p.m. Pacific Time Zone 1-800-858-7378 FAX: 1-541-737-0761

Revised by Carolyn J. Randall, Pesticide Education Program, Michigan State University Extension

RESOURCES

- ❑ National Pesticide Information Center (NPIC)

<http://npic.orst.edu/>

- ❑ Minnesota Incident Response Plan

<https://www.mda.state.mn.us/sites/default/files/2018-06/ag03327responseplanx.pdf>

- ❑ Paraquat Training Requirements

<https://www.epa.gov/pesticide-worker-safety/paraquat-dichloride-training-certified-applicators>

- ❑ CDMS (to find SDS) <http://www.cdms.net/labelssds/home/>



Thank you!

Don't forget to turn in your answer sheets for a chance to win a doorprize

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