

Pesticide Safety

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Introduction

- Using pesticides safely and correctly
- A discussion of the Do's and Don'ts of handling pesticides
- Refer to your book:
“Applying Pesticides Correctly”

Topics

- Pesticide labeling
- Pesticides in the Environment
- Harmful effects and Emergency Response
- Personal Protective Equipment
- Personal Safety Considerations
- Mixing, Loading, and Application
- Applying the Correct Amount
- Transportation, Storage, Disposal and Spill Cleanup

Pesticide Application Is a Big Responsibility

- Providing Public Health through conscientious mosquito control
- Sensitivity to Environment
- Personal Safety



Pesticide Labeling

- The “Label” is the LAW
- The label is the main method of communication between the manufacturer and the product users
- No pesticide may be sold in the US without EPA approval
 - Ensures the product will not present an unreasonable risk to humans or the environment
 - All labels approved by EPA

Classification of Pesticide Uses

- EPA categorizes every use of every pesticide as either:
 1. **Unclassified**
 2. **Restricted use**
- Only a certified pesticide applicator may use or supervise the use of restricted use pesticides

Parts of Pesticide Labeling

- Information is grouped under headings to make it easier to find quickly
- Some information is required by law to appear on a certain part of the label or under certain headings
- Other information may be placed wherever the manufacturer chooses
 - See example provided

Identifying Information

- Brand Name: An individual name for the product
“FYFANON ULV”
- Ingredient Statement: The active ingredients and the amount of each

Malathion..... 96.8%

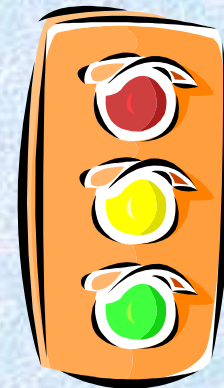
Inert ingredients... 3.2%

- Chemical name: Complex name that identifies the chemical components

O,O-dimethyl phosphorodithioate of diethyl mercaptosuccinate

Pesticide Labeling

- Type of Pesticide
 - Usually listed on the front panel of the label
 - Short statement indicating what the product will control
- Restricted use designation
- Signal words
 - **DANGER**
 - **WARNING**
 - **CAUTION**



Signal Words

- **Danger**

- This word signals you that the chemical is **HIGHLY TOXIC**
- Very likely to cause acute illness from oral, dermal, or inhalation exposure, or to cause severe eye or skin irritation
- All highly toxic pesticides will carry the word **POISON** in red and have the skull and cross bones symbol

DANGER

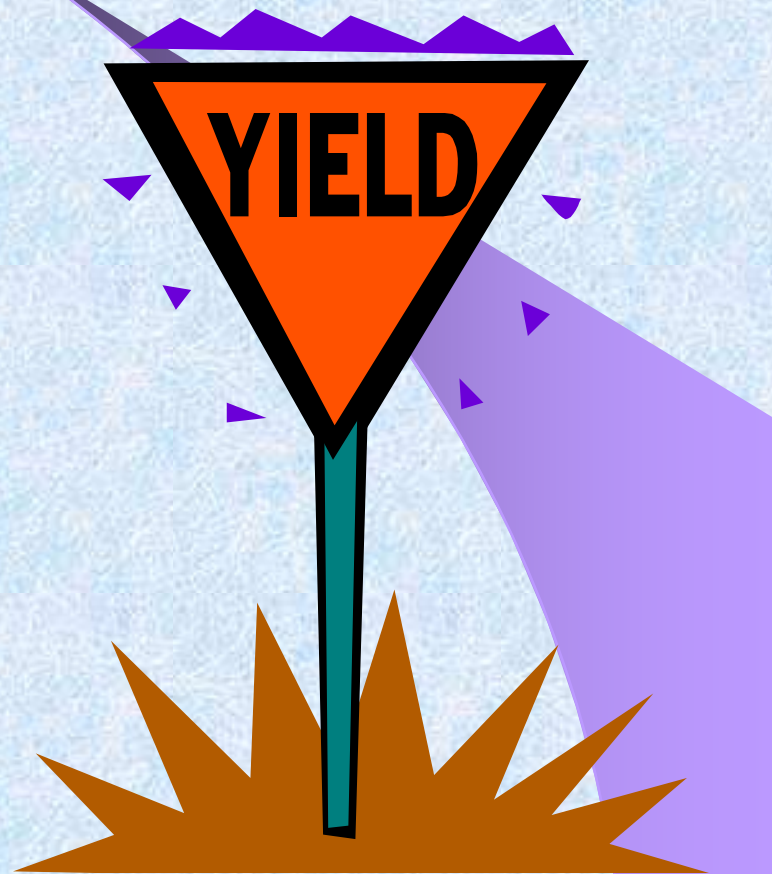


POISON

Signal Words

- **Warning**

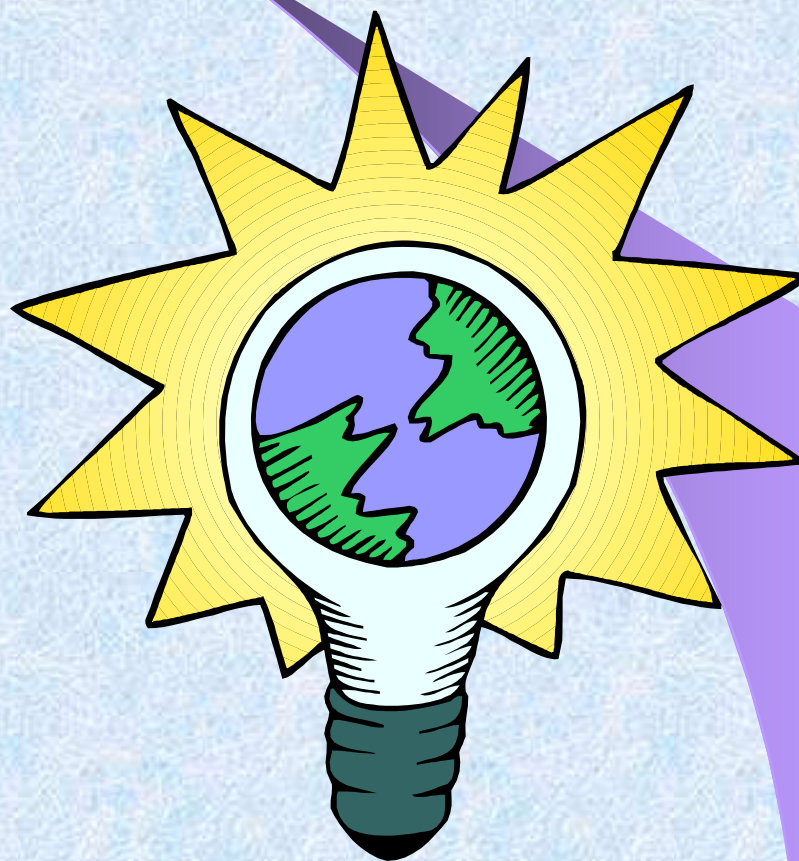
- This word signals you that the chemical is Moderately toxic
- Moderately likely to cause acute illness from oral, dermal, or inhalation exposure, or to cause moderate eye or skin irritation
- Always yield to best judgment



Signal Words

- **Caution**

- This word signals you that the chemical is slightly toxic or relatively nontoxic
- Only slightly likely to cause acute illness from oral, dermal, or inhalation exposure, or to cause slight eye or skin irritation
- Always use extreme caution

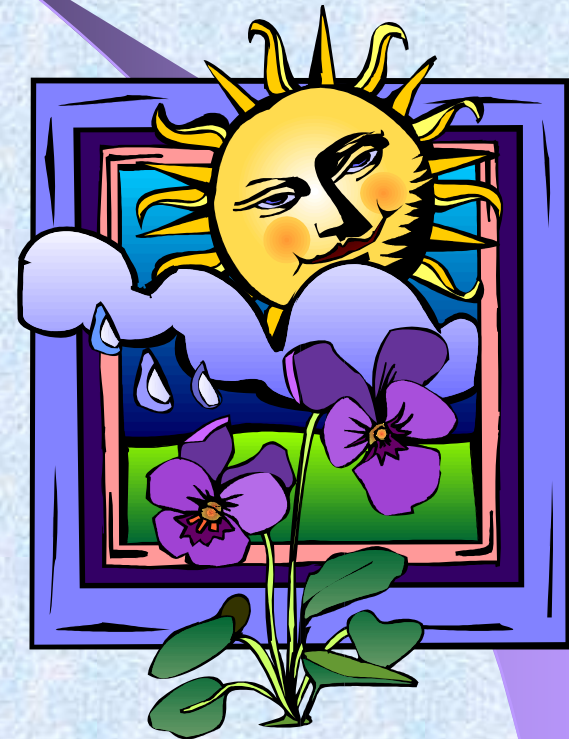


Pesticides in the Environment

- Responsible pesticide users know and follow good practices that achieve effective pest control with very little risk of environmental damage
- Labeling statements are intended to alert you to particular environmental concerns
- **Example:**
“This pesticide is highly toxic to aquatic invertebrates and wildlife. Birds in treated area may be killed.”

Pesticides in the Environment

- Sources of contamination
 - Point Source
 - Comes from a specific identifiable place
 - **Example:** A pesticide spill moves into a storm sewer
 - Non-Point source
 - Comes from a wide area
 - **Example:** Improper disposal of chemical containers at a landfill



Pesticide Use Restricted Because of Environmental Concerns

- Are there:
 - Sensitive areas in the treatment area that might be harmed by the pesticide
 - Sensitive areas near the treatment area that might be harmed by the pesticide
 - Conditions that might cause the pesticide to move off the treatment area
- Should you change your application method to reduce risk

Sensitive Areas

- Places or LIVING THINGS that are easily injured by a pesticide.
- **Examples:**
 - Near schools
 - Retirement homes
 - Honey bees
 - Food or feed processing or storage
- Sometimes these areas are necessarily treated by well trained personnel

Pesticide Movement

- Pesticide that move away from the treatment area may cause environmental contamination
- Pesticides move in several ways
 - On the wind
 - In/On water
 - On objects (INCLUDING YOURSELF)



Harmful Effects and Emergency Response

- Types of exposure
- Exposure routes
- Harmful effects to humans
- Avoiding harmful effects
- Signs and symptoms
- First Aid



Human Exposure

Exposure = pesticide contact with a surface or an organism

- Types of exposure

- ORAL
- INHALATION
- OCULAR
- DERMAL

- Harmful Effects

- Acute
- Delayed
- Chronic

Causes of Human Exposure

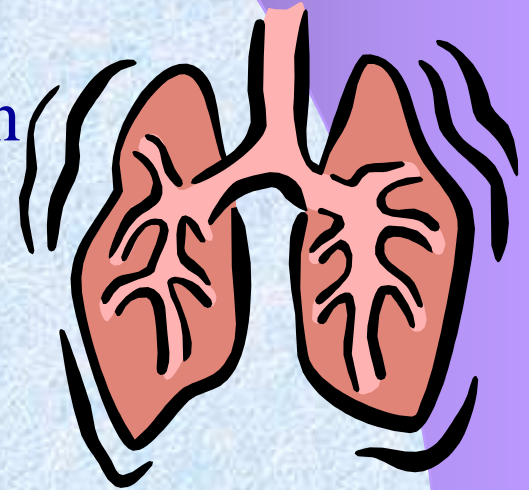
- Oral
 - Not washing Hands
 - Mistaking for food or drink
 - Applying to food or drink
 - Careless splashing into mouth
 - **Poor safety management**



Causes of Human Exposure

- Inhalation

- Prolonged contact in poorly ventilated area
- Breathing vapors during chemical handling
- Breathing vapors during application
- Breathing vapors following application
- **Poor safety management**



Causes of Human Exposure

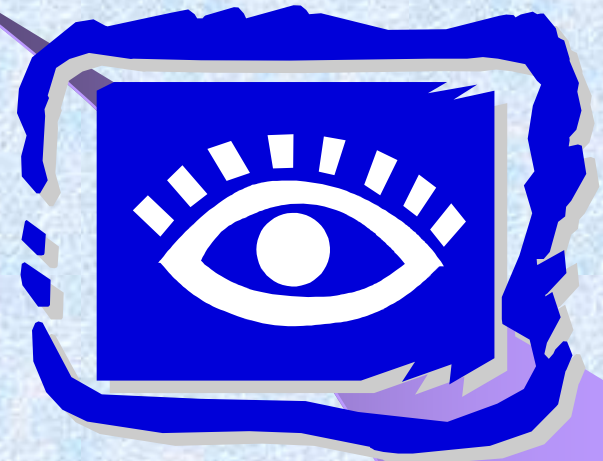
- Dermal

- Not washing hands
- Careless splashing or spraying
- Wearing contaminated clothing
- Applications in wind
- Touching treated surfaces
- **Poor safety management**



Causes of Human Exposure

- Ocular = Eyes
 - Careless splashing and spraying
 - Applications in wind
 - Rubbing eyes
 - Pouring dust or granular formulations
 - **Poor safety management**



Acute Effects

Oral	Inhalation	Dermal	Eyes
Digestive system severely burned	Lungs severely burned	Skin will itch, blister, crack or change color	Blindness
Pesticide carried quickly through whole body 12/7/2009	Pesticide carried quickly through whole body	Pesticide carried quickly through whole body	Pesticide carried quickly through whole body 24

Delayed Effects

- Do not appear immediately
 - Days, weeks, years
- Manifested as:
 - Developmental and reproductive troubles
 - Systemic effects
- Caused by:
 - Repeated exposures to a pesticide
 - A single exposure
 - **Poor safety management**



Chronic Effects

- Illness or injury that appear after a long time
 - Usually several years
- Manifested as:
 - Production of Tumors
 - Malignant cancer
 - Changes in genes or chromosomes
- Caused by:
 - Repeated exposures to a pesticide
 - A single exposure
 - **Poor safety management**



Signs and Symptoms of Exposure

- External injury

- Redness
- Blisters
- Rash
- Burns
- Swelling
- Stinging

- Pesticide Poisoning

- Nausea
- Diarrhea
- Cramps
- Headache
- Dizziness
- Confusion
- Sweating
- Chest pain
- Breathing problems

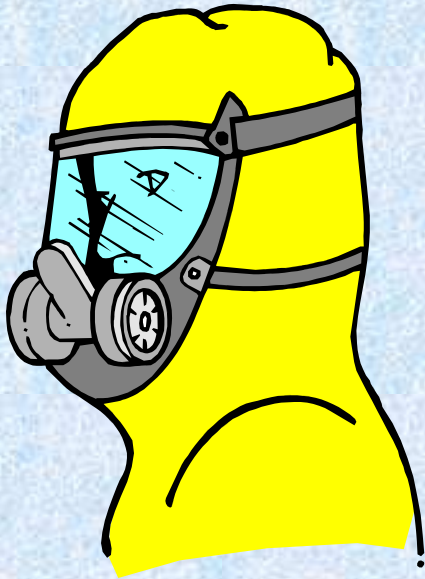
Be Informed

- What type of pesticide is involved
- What are effects of that product
 - See the appendix in “Applying Pesticides Correctly”
- What are the Emergency Numbers
- What are the first aid procedures

Know the Law

- OSHA requires protection to workers
 - Under normal conditions
 - Foreseeable emergencies
- Give list of Chemicals to Emergency response
- Ensure all Pesticides are labeled
- Have MSDS for each
- Train all staff about each product
- Keep separate file including MSDS of products

Personal Protective Equipment (PPE)



- You are **legally** required to follow all PPE instructions on the label
- The degree of protection is dependant on the product used
 - The label will indicate the **minimum** personal protection needed
- Better to be too safe

Common Sense Protection

- Protective eye wear
- Chemical resistant apron
- Hand and foot protection
 - Rubber gloves
 - Rubber boots
- Avoid contaminating inside of gloves/boots
- Pour product through a funnel

Other Safety EQ. Worth Having

- Ear protection
- Respirator
- Radio
- Telephone
- Guide book
- Change of clothes
- Emergency wash station @ loading site
- Portable eye wash in trucks



Personal Safety Considerations

- Make safety one of your first concerns every time you handle pesticides.
- Ask yourself these basic safety questions:
 - Have I read the labeling
 - Always read the applicable sections before you open a pesticide
 - Has this label changed
 - Labels change and memories fail
- How can I avoid exposure to pesticides
- What PPE's are needed
- Am I avoiding the accidental spread of pesticides
- Am I prepared for an emergency

Safe Mixing and Loading Practices

- Mixers and loaders are at the greatest risk of exposure
- Select an Appropriate area
 - Out of doors or well ventilated
 - Away from people, animals, food, other non-related chemicals and other contamination potentials
- Protect your water source
 - Keep hose above mixture
 - Prevents back-siphoning
 - Have in-line check valve or back flow preventer
- Consider “neat” products requiring no mixing

Safe Mixing and Loading Practices

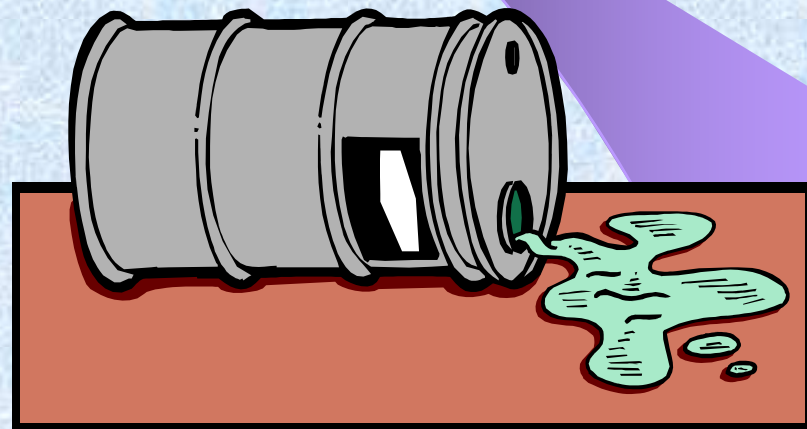
- Don't mix more than you need
- Don't carry more than you will use
- Pour pesticide from below face level
- Pour through a funnel
- If siphoning a product:
 - Use a mechanical device
 - Never use your mouth
- Close containers tightly after each use
- Triple rinse and dispose of empty containers according to the label

Applying the Correct Amount

- ULV
- If the labeling lists a range or possible amounts
 - Use the least amount that that achieves good results
 - Check back to treated areas for efficacy
- You can only kill ‘em once
 - But you can apply a sub-lethal dose
 - Under dosing is expensive
- Flow rate is constant, driving speed is not
 - Drive too fast...apply too little
 - Drive too slow...apply more than is needed

Transportation of Pesticides

- Expect the worst
 - “That’s why they are called accidents”
- Do all you can to prevent the accident/spill
 - Transport in the back of a truck
 - Not in the cab
 - No-one in the back
 - Anchor the product to prevent spills



Storage of Pesticides

- **Best case:** Have an isolated pesticide storage building
- It can be an **isolated** area within an existing building but must still:
 - Protect people and animals from accidental exposure
 - Protect the environment from accidental contamination
 - Prevent temperature extremes
 - Protect the chemicals from
 - Theft
 - vandalism
 - unauthorized use
- Lock the storage area
 - Even if it is only a cabinet
- Post pesticide warning signs
- Post fire hazard signs
- Provide adequate lighting
- Original packages only
 - With label intact

Storage of Pesticides

- Keep containers closed
 - Prevent
 - spills
 - cross contamination
 - Evaporation
 - Spoiling
 - Dust and dirt accumulation
- Know the inventory
 - Check in-coming product
 - Do the same as product is signed out
- Store volatile products separately
- Be aware of shelf life
 - Mark each container with receipt date
- Don't store more than you can use
- Don't run short
 - Reserve system

Disposal of Pesticides

- Read the Label for hints
- Try to avoid disposal of containers
 - Use refillable/returnable
 - Triple rinse recyclables
- Triple rinsed containers can go to the landfill unless prohibited by the label



Spill Management



- A spill is **any** accidental release of a pesticide
- Know how to respond correctly when a spill occurs
- Protect yourself
- Protect others
- Protect the environment

Correct Spill Response

- **Do not leave the spill site**
- If you can't manage the spill...get help
- Report the incident in a timely fashion
- Even a minor spill can endanger you, others around you and the environment
- Response speed is critical
 1. PPE'S
 2. Self contained spill kit
- Stop the source
 - Tape
 - Bags
 - Trash can

Correct Spill Response

- Contain/confine the spill
 - Containment snakes
 - Absorptive material
 - shovel
- Protect water sources
 - Block or redirect it
 - Keep from water pathways
- Clean up thoroughly
 - **USE NO WATER**
 - Sweep and dig
- Decontaminate yourself

Spill Kit

- Keep spill kit immediately available
- The kit should contain:
 1. Emergency phone numbers
 2. Cell phone or monitored radio (CB, VHF)
 3. Gloves, boots, apron, goggles
 4. Containment snakes
 5. Absorbent material
 - Kitty litter
 - Sawdust
 - Clay
 6. Shovel, broom, dust pan
 7. Heavy duty trash bags
 8. Change of clothes

Summary

- Read the Label
- The label is the LAW
- Know the product
- Storing, transporting, loading, applying and disposing of pesticides safely is paramount for:
 - Yourself
 - Those around you
 - The environment
- Expect the worst
- Refer to your manual often

More Information

- NC Public Health and Pest Management
(919) 715.3285
- Chemical Transportation Emergency Ctr.
(1-800-424-9300)
- Applying Pesticides Correctly

Send \$5.00 check made out to (NC STATE UNIV)
Pesticide Education Specialist
Box 7609, Dept. Horticulture
NC State University
Raleigh, NC 27695-7609