AGRICULTURAL PESTICIDES

HOSTA Task Sheet 3.5 Core

NATIONAL SAFE TRACTOR AND MACHINERY OPERATION PROGRAM

Introduction

Modern farming relies on many chemicals to produce and preserve an abundance of high-quality food. Fertilizers, pesticides, cleaners and sanitizers, crop preservatives, fuels and solvents are chemicals. Each of these chemicals poses a hazard. Youth younger than age 16 are prohibited from using many agricultural pesticides.

This task sheet discusses agricultural chemicals from a youth information standpoint. Older workers can be called upon to handle and apply most chemicals. *If asked to work with restricted use (Category I and II) agricultural chemicals, tell your employer that you are under age 16 and are prohibited by law from doing so. See Task Sheet 1.2.2.*

Pesticide Use Restrictions

At age 15, you have been hired to work at the neighboring farm. You have passed the safe tractor and machinery certification program. On your first day of work, the farmer has assigned you to rinse pesticide containers for return to the dealer and to burn pesticide bags. This may sound like a safe job for you to do, but is the job actually safe?

Hazardous Occupations Order in Agriculture regulations cover more than just tractor and machinery operation activities.

The agricultural chemical portion of the regulation clearly states, "Youth workers under the age of 16 are prohibited from handling or applying (including cleaning or decontaminating equipment, disposal or return of empty containers, or serving as a flagman for aircraft) agricultural chemicals classified as Category I of toxicity (identified by the word "poison" and the "skull and crossbones" on the label) or Category II of toxicity (identified by the word "warning" on the label). Categories of chemical toxicity and their signal words will be explained on page 2 of this task sheet.

Ag chemical exposure can lead to a variety of symptoms– including paralysis and/or death.

Effects of Pesticides on People

Agricultural pesticides may come in dust form, granular particles, liquid concentrates, or solutions. They appear innocent and safe, but they are complex chemical compounds with very serious effects on humans.

Exposure to pesticides produces a variety of symptoms. Symptoms may include headache, nausea, stomach cramps, diarrhea, chills, fever, fainting, and possibly paralysis and/or death. Some persons mistake pesticide poisoning for what they call the "summer flu."

Learning Goals

- To understand that 14- and 15-year-old workers cannot use some agricultural chemicals
- To understand the warning signs and symbols used on agricultural pesticides

Related Task Sheets:

Hazardous Occupations Order in Agriculture	1.2.1
Worker Protection Standards	1.2.4
Personal Dress	2.7
Personal Protective Equipment	2.10
Lead Acid Batteries	4.6.2

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Figure 3.5.a. The most toxic of chemicals will display the signal words "danger-poison," along with the skull and crossbones. Peligro is Spanish for danger. Young farm workers are prohibited from working with or being exposed to these chemicals.

Learn the signal words used on pesticide containers.

TOXIC

Figure 3.5.b. The word toxic means deadly. Toxic materials can produce illness-like effects, or they may be deadly.

Signal Words and Categories

Every chemical label must display signal words. These industry standard words tell the user the toxicity of the product. Toxicity means how deadly the product is to people.

Signal words found on agricultural chemicals include:

- Danger-Poison (skull and crossbones included)
- Danger
- Warning
- Caution

These words and symbols indicate the product's potential risk to the user.

Danger-Poison

Category I chemicals show the "Danger-Poison" signal word. A skull and crossbones is included on the label. These chemicals may be corrosive (can burn) to the eyes and skin and lungs. Less than a teaspoon of the chemical can kill a 150-pound person. Most of these chemicals are "restricted use" materials due to increased risk to human health and/or the environment. They require certification to purchase and use.

Danger

These Category I chemicals can cause severe skin irritation and eye damage.

Warning

Category II chemicals use the signal word "Warning." Skin and eye irritations that could last longer than one week can result from exposure to these products. A tablespoon of some Category II chemicals can be fatal. These pesticides are considered as restricted-use pesticides.

Caution

Chemical labels using the signal word "Caution" are much less toxic products to use. Mild skin and eye irritation results from exposure to these chemicals. Nearly one pint of the material would have to be swallowed to be fatal to a 150-pound person. Pesticides sold over-the-counter to consumers use the signal word Caution.

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Ag Pesticide Exposure

Exposure to agricultural chemicals is not necessarily a harmful event, but exposure over time can be harmful. Exposure can be minimized by wearing personal protective equipment (PPE).

The handling and application of pesticides is prohibited for youth younger than age 16.

Chemical exposure can occur in four ways:

- Oral (mouth)
- Dermal (skin)
- Inhalation (lungs)
- Ocular (eye)

Let us examine these more closely.

Oral Ingestion (by the mouth)

Pesticides can contaminate the hands through the handling of the container. Small amounts of the chemical may end up on cigarettes, chewing tobacco, food, or drinks touched by contaminated hands. Ingestion of pesticides through food is a common means of ingestion. Hands could also be an oral source of exposure.

Dermal (Skin) Exposure

Pesticides may be taken in through the skin. Even the act of urinating with pesticide-covered hands causes pesticide exposure. Some persons mistakenly think that tough, calloused hands reduce the entry of the pesticides through the skin. Even by wiping the sweaty forehead or the back of the neck, dermal exposure occurs to those more sensitive tissues.

Touching treated surfaces or handling empty containers may cause dermal exposure. Walking through a recently treated field can lead to dermal exposure to pesticides.

Inhalation (Breathing) Exposure

Breathing pesticide or agricultural chemical fumes, vapors, or dusts exposes the lungs to the product. Exposure can occur while mixing granular and powder forms of pesticides and during the burning of empty containers. Inhalation exposure provides the fastest route of exposure into the bloodstream.

Ocular (Eye) Exposure

Splashing of liquid chemicals and dust from granular pesticides during handling, mixing or rinsing of containers is a source of risk to the eyes.

Pesticide labels provide specific requirements for the personal protective equipment (PPE) which will give maximum protection and reduce pesticide exposure. *PPE use does not make it legal for youth younger than age 16 to handle or apply pesticides.*

Improper handling of agricultural pesticides can result in the production of toxic fumes and vapors.

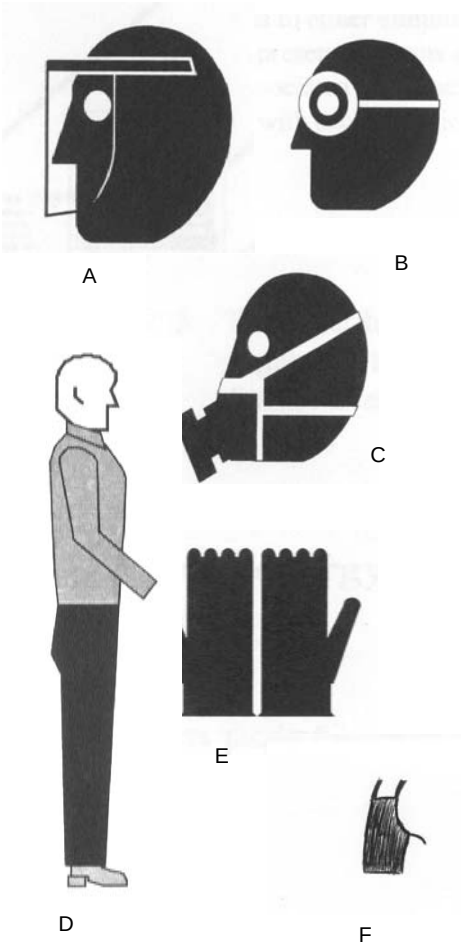

Figure 3.5.c. Face shields (A) and/or goggles (B), respirators (C), long sleeves and pants (D), chemical-resistant gloves (E) and aprons (F), should be used when handling pesticides, strong detergents, sanitizing chemicals, degreasers, and battery acid. Read the chemical label for the personal protective equipment (PPE) to use.

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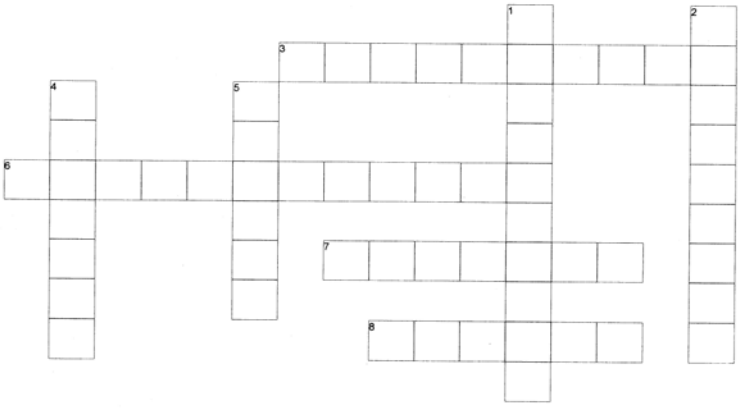
Safety Activities

1. Make an agricultural chemical inspection of a farm with the owner's permission. Make a list of all the chemicals that you find and the signal words that are included on the label. DO NOT HANDLE CONTAINERS WITH MATERIALS SPILLED OVER THE OUTSIDE OF THEM.

2. Solve this crossword puzzle.

Ag Chemicals



ACROSS

3. Breathing exposure hazard
6. protects the hands from chemicals
7. a signal word
8. exposure through the eyes

DOWN

1. protects face and eyes from chemicals
2. Oral intake of pesticides
4. Signal word for moderate toxicity
5. Pesticide exposure through skin

Use these words: Inhalation, face shield, ingestion, caution, warning, rubber gloves, dermal, ocular

References

1. Safety Management for Landscapers, Grounds-Care Businesses and Golf Courses, John Deere Publishing, 2001.
2. Pesticide Education Manual, 2001, 3rd Edition, The College of Agricultural Sciences, Penn State University, University Park, PA.

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Credits

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