

Unit 7

Maintaining Health and Safety Standards at the Workplace



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INTRODUCTION

Occupational health relates to controlling health hazards that may arise while doing an agricultural work in a farm or laboratory. It deals with recognising, anticipating, evaluating and controlling such environmental factors at workplace, which may lead to health issues. Despite taking all precautions, accidents occur often while handling chemicals. Therefore, it is essential for students to know about the first aid measures that they need to take immediately, in case a chemical or mechanical accident occurs in a farm or lab. Besides, they need to learn about the safety measures that they may be required to follow in order to prevent such hazards.

SESSION 1: PREVENTING HAZARDOUS CONDITIONS AT THE WORKPLACE

Hazard

It is a condition that has the potential to cause injury or sickness to human beings and animals, and adversely affect the environment. A hazardous substance can cause adverse health problems and physical damage at workplace. Fig. 7.1 shows the different types of hazard that may occur at the workplace.

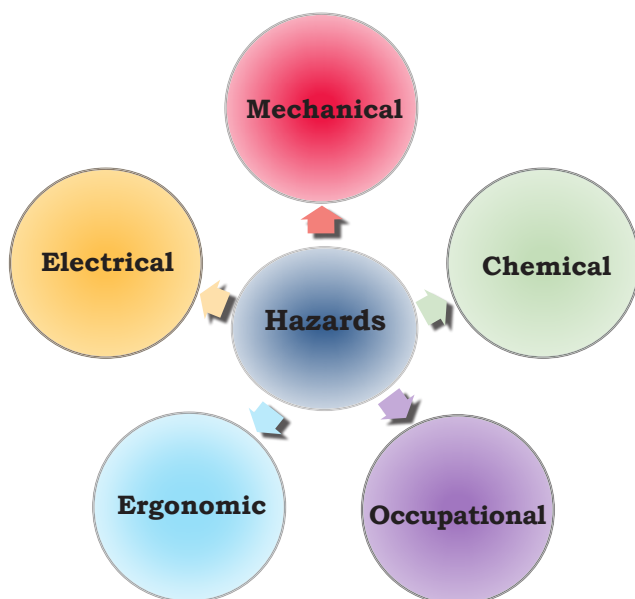


Fig. 7.1: Types of hazard

Mechanical hazards

These are related to poorly designed and ill-maintained agricultural machinery and equipment.

Chemical hazards

These comprise pesticide solutions meant for destroying, mitigating and controlling insects-pests. Accidental death from pesticides is a rarity but skin allergies or infections, and other health ailments may occur, if appropriate and timely precautions are not taken (Fig. 7.2). Careless handling or use of pesticides can cause harmful effects to the environment, handler and other living beings. Precautions must be taken while selecting a pesticide, its transportation, loading, mixing, application, storage and container disposal (Fig. 7.2, 7.3 and 7.4).



Fig. 7.2: Always wear personal protective equipment while preparing pesticide spray solutions



Fig. 7.3: Caution signage



Fig. 7.4: Signage indicating pesticide application in a field

Precautions

Toxicity labels marked on the pesticide package, as shown in Table 7.1 and Fig. 7.5, must be taken into account while using pesticides. Some of the points that must be taken care of prior to pesticide application are as follows.

- Chemicals must not be sprayed in foggy and windy weather conditions.
- A person spraying chemicals must not have an open injury or wound on the body.

Table 7.1: Toxicity label of pesticides

Name of the label	Level of toxicity	Listed chemicals
Red	Extremely toxic	Monocrotophos, Zinc phosphide, Ethyl mercury acetate, etc.
Yellow	Highly toxic	<i>Endosulfan, carbaryl, quinalphos, etc.</i>
Blue	Moderately toxic	<i>Malathion, thiram, glyphosate, etc.</i>
Green	Slightly toxic	<i>Mancozeb, oxyfluorfen, mosquito repellent oils and liquids, and other household insecticides</i>



Fig. 7.5: Colour labels showing the toxicity of pesticides

Occupational hazards

Farmers and workers, while working in an agricultural farm, may suffer from a number of occupational hazards. These hazards may include those related to farm machinery, biological and chemical substances, and stress. These may cause injuries, health disorders or diseases.

Hazards related to animals

Injuries inflicted by animals include bites, kicks, crushing and transmission of infectious diseases. If a farmer or person, working in a field, is injured by a farm

animal, immediate first aid must be administered to the person and timely medical treatment be provided. Injuries from cattle relate to a number of factors, including lack of trained workers, unsafe work practices, weight of the animal, stress, and sometimes, behaviour of the animal.

Ergonomic hazards

These are caused by inappropriate and cumbersome postures, leading to damage or pain in the muscles and tendons. These are mainly caused while working on or with inappropriate or faulty tools.

Electrical hazards

An electrical hazard arises due to faulty switches and machines, poor quality cords, overhead power lines, etc. Faulty electrical installations and use of cheap quality equipment can even cause fires (Fig. 7.6). When an equipment or machinery gets close to a high-tension line, it can lead to electric shocks, causing injury to the driver or the person handling it. In severe cases, it may even lead to electrocution, causing permanent disability or death of the person.



Fig. 7.6: Electricity hazard sign

Risk

This may be defined as the danger of loss from unforeseen situations. It is associated with a potential danger as regards to an activity. Understanding the kind of harm a machinery may cause to a farm worker or assessing the risk helps one design and implement strategic and operational plans for the mitigation of hazards. For example, the main hazard of a power-driven machine is of its getting trapped or entangled in power cables, ropes, etc. The following measures can help avert an accident in a farm.

- Identification of dangers in every aspect of a work
- Identification of people who may get exposed to some particular risks
- The reliability and adequacy of existing precautionary or preventive measures
- Decision on new measures that need to be introduced to eliminate or reduce risks

Practical Exercise

Activity

Make a flow chart on types of hazard, usually, witnessed at a workplace.

Material required: chart paper and writing material

Procedure

- Take a chart paper and draw a flow chart, depicting the different types of hazard, usually, witnessed at a workplace.
- Make a presentation in your class.
- Discuss the hazards that you have identified with your classmates and allow feedback on the topic.

Check Your Progress

A. Fill in the Blanks

1. A condition that has the potential to cause an injury to human beings and animals, and adversely affect the environment is known as a _____.
2. Substances intended for preventing and mitigating insects-pests are called _____.
3. If a farmer working in a field gets injured by a farm animal, then immediate _____ must be administered.
4. Risk is defined as the danger of loss from _____ situations.

B. Multiple Choice Questions

1. Ergonomic hazards are caused by _____.
 (a) inappropriate or faulty tools
 (b) machinery
 (c) chemicals
 (d) electricity
2. The use of dangerous substances comes under _____.
 (a) ergonomic hazards
 (b) extreme weather hazards
 (c) chemical hazards
 (d) natural hazards
3. Hazards caused due to agricultural machinery are called _____.
 (a) electrical
 (b) mechanical
 (c) chemical
 (d) None of the above
4. Electrical hazards arise due to _____.
 (a) faulty switches
 (b) spray chemicals
 (c) farm animals
 (d) All of the above

C. Subjective Questions

1. Define hazards.
2. List the various types of hazard related to agriculture and discuss them in brief.

D. Match the Columns

A	B
1. Green label	(a) Extremely toxic
2. Red label	(b) Highly toxic
3. Yellow label	(c) Moderately toxic
4. Blue label	(d) Slightly toxic

SESSION 2: FIRST AID, TREATMENT AND SAFETY EQUIPMENT

Despite all precautions and care, accidents often take place while handling and applying chemicals. Therefore, it is important for students to know about the immediate medical aid that needs to be administered, in case of a chemical accident and learn about the safety and precautionary measures that need to be adopted in order to prevent them. Besides, they must learn about the Personal Protective Equipment (PPE) that they need to wear at all times while handling chemicals in order to be safe.

Chemical poisoning and first aid measures

Chemical poisoning may result from continuous contact with a chemical, absorption of a chemical through the skin, inhalation of toxic vapour or swallowing a chemical directly during handling or application. The common symptoms of pesticide poisoning are headache, vomiting, nausea, tremors, convulsion, difficulty in breathing, etc. A first aid kit with necessary antidotes must be made available at a workplace in order to treat all types of poisoning.



Fig. 7.7: First aid box

NOTES

Personal Protective Equipment

Always wear Personal Protective Equipment (PPE) in order to prevent hazards due to pesticide poisoning. The various kinds of pesticide poisoning and their first aid treatment have already been discussed. PPE mainly consist of gas mask, gloves, shoes, eye shields, headgear, protective clothing, respiratory devices, etc. (Fig. 7.8 and 7.9).

Gas mask

It is used to protect the handler's eyes and respiratory tract from toxic gases and aerosols. It filters the air by removing contamination and impurities, and makes it fit for breathing or inhalation (Fig. 7.8).



Fig. 7.8: Hand gloves and gas mask

Gloves

Never use gloves made of leather, cotton or other fluid absorbant material while handling chemicals. Always use rubber gloves (Fig. 7.8).

Shoes

Shoes made of rubber or any other synthetic material must be used instead of leather or canvas ones.

Eye shields

These must be worn to prevent irritation and infection in the eyes due to gases and pesticides.

Protective clothing

An apron must be worn while working with treated crops or chemicals. The skin must be protected entirely. The clothing needs to be washed before re-use (Fig. 7.9).



Fig. 7.9: Protective clothing

General health and safety measures

- Identify what is unsafe or unhealthy.
- Take required action to solve unsafe or unhygienic issues at the workplace.
- Ensure that the problems are resolved and do not recur.
- Train workers on how to work safely.
- Design safe work procedures and supervise the workers.
- Provide a first aid kit and have personnel, who can administer first aid at the workplace.
- Arrange appropriate safety gear (for example, hats, gloves, reflective vests, etc.) for the workers.

Amenities and environment

- Ensure that the workers have access to civic utilities like toilets.
- They must have access to potable and clean drinking water.
- The worksite must have a first aid kit and workers, who can administer first aid in case of an accident or emergency.
- Ensure that the surrounding or building is safe. Look out for the presence of dangerous creatures (for example, snakes, spiders, scorpions, etc.) and reduce fire fuel loads.
- Provide a hand wash and face wash to the workers.

NOTES

Emergency response

- The workers must be aware about the procedures that need to be followed in case of an emergency situation.
- Install emergency response equipment at the workplace.
- In case of an emergency, trained workers must be involved in administering first aid to patients.

Manual tasks

- Maintain appropriate restraint, wherever needed.
- Avoid crush injuries on hands.
- Pay attention to the risk of slips, trips and falls in yards.

Chemical and hazardous substances

- Safety Data Sheets (SDS) must be made available for all hazardous substances.
- Read the label and SDS carefully, and follow the instructions.
- Store the chemicals at a safe place and keep them away from ignition sources.
- Minimise exposure to the workers by adopting appropriate and recommended preventive measures and train them in safe handling techniques as regards to chemicals.
- Never store toxic chemicals in food and water containers. Always keep the chemicals in their original containers and make sure that they are labeled correctly with necessary instructions.

Electricity

- Keep all electrical equipment, appliances and naked power cables away from water and fire.
- Protect all electrical equipment with a residual current device (safety switch).
- Ensure that extension leads are not defective or damaged and are uncoiled when plugged into the main socket.
- It must be ensured that all electrical equipment and appliances are maintained and functional.

- All electrical equipment must be tested and tagged before use.
- Areas having overhead power cables must be identified with ground markers.
- Apply and mark appropriate exclusion zones while working near power lines.

Precautions to be taken in a farm

- While preparing a solution, one's face must never be just above the container, in which it is being prepared.
- While working with a chemical, one must always wear rubber gloves and face mask or shield to avoid direct physical contact with the chemical and check inhalation of chemical fumes.
- Clean the sprayer with a detergent immediately after spraying is completed.
- Follow the instructions mentioned on the pesticide bottle before using it.
- Take a bath and wash your clothes after spraying.
- Do not smell, taste or touch a chemical.
- Keep pesticides and other chemicals away from children's reach.

Practical Exercise

Activity

Demonstrate the use of Personal Protective Equipment while handling chemicals. Prepare a chart, depicting how you can use first aid to handle an emergency situation at the workplace.

Material required: chart paper, pictures of PPEs and first aid items, and writing material

Procedure

- Take a chart paper and paste the pictures of PPEs that one needs to wear while handling chemicals at the workplace.
- Label the PPEs and discuss the usage of each PPE item with your classmates.
- On another chart paper, paste the pictures of first aid items that you will use at the workplace.
- Label the first aid items and discuss the importance of each item with your classmates.
- Invite feedback from your classmates and ask if they can suggest some more precautionary measures while handling chemicals at the workplace.

Check Your Progress

A. Fill in the Blanks

1. During pesticide spraying, _____ must be worn to prevent eye infections and irritation.
2. A gas mask is used to protect the eyes and respiratory tract from _____.
3. Gloves made of _____ must be used while handling chemicals.
4. While working with treated crops, _____ must be worn to protect the skin.

B. Multiple Choice Questions

1. Common symptoms of pesticide poisoning are _____.
 (a) headache
 (b) vomiting and nausea
 (c) difficulty in breathing
 (d) All of the above
2. To prevent hazards at workplace, the following material need to be put in place _____.
 (a) SDS
 (b) first aid kit
 (c) protective clothing
 (d) All of the above
3. Protective and safety equipment comprise _____.
 (a) gas mask
 (b) gloves
 (c) Both (a) and (b)
 (d) None of the above
4. Potentially dangerous creatures around house and office buildings include _____.
 (a) chameleon
 (b) snakes and scorpions
 (c) honey bees
 (d) All of the above

C. Subjective Questions

1. What are the first aid treatment measures that need to be adopted in case of chemical poisoning?
2. List the Personal Protective Equipment that one needs to wear while working in an agriculture field.