



Basic Agricultural Production and Natural Resources Conservation Level-I

Based on Version-3 March 2018 OS.

Training Module –Learning Guide 01-04

**Unit of Competence: Follow workplace Safety
Policies and Procedures**

**Module Title: Following workplace Safety
Policies and Procedures**

TTLM Code: AGR BAN1 M01 TTLM 0919v1

October 2019



Module Title: Following workplace Safety Policies and Procedures

This module includes the following Learning Guides

LG 01: Recognize hazards

LG Code: AGR BAN1 M01 LO2-LG-01

LG 02: Follow procedures for hazard control

LG Code: AGR BAN1 M01 LO3-LG-02

LG 03: Follow emergency procedures

LG Code: AGR BAN1 M01 LO4 LG-03

LG 04: Report problem

LG Code: AGR BAN1 M01 LO5-LG-04

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| Instruction sheet | Learning Guide 01 |
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This guide will also assist you to attain the learning outcome stated in the cover page. Specifically, upon completion of this Learning Guide, you will be able to –

➤ **Recognize hazards**

- ❖ Identifying hazards in the workplace
- ❖ Checking work area routinely
- ❖ Describing causes of identified hazards

Learning Instructions:

1. Read the specific objectives of this Learning Guide.
2. Follow the instructions described
3. Read the information written in the information “Sheet
4. Accomplish each “Self-check respectively.
5. If you earned a satisfactory evaluation from the “Self-check” proceed to the next or “Operation Sheet
6. Do the “LAP test”



Information Sheet-1

Identifying hazards in the workplace

INTRODUCTION

Agriculture is one of the riskiest occupations for human health and safety. People are always exposed to health risks and injuries because agricultural practices involve tools and equipments that may cut and create wounds and injure body and harmful chemicals such as pesticides. There are also harmful organisms in the field such as insects, snakes, weeds etc that may bite, sting causing physical trauma, pain, illness or even death. Intensive agriculture is critically dependent on pesticides for pest control which may also pollute the environment. Therefore, applying health and safety systems in agriculture is essential to prevent or minimize injury, ill-health, and death to those at work and those affected by work activities and furthermore, to reduce environmental pollution. It also helps to avoid the potential costs of interruptions to work-outputs from ill-health or injury. People should work in safe and comfortable working environment.

- Occupational health and safety is a discipline with a broad scope involving many specialized fields. In its broadest sense, it should aim at:
 - the promotion and maintenance of the highest degree of physical, mental and social well-being of workers in all occupations;
 - The prevention among workers of adverse effects on health caused by their working conditions;
 - The protection of workers in their employment from risks resulting from factors adverse to health;
 - The placing and maintenance of workers in an occupational environment adapted to physical and mental needs;
 - The adaptation of work to humans.

In other words, occupational health and safety encompasses the **social, mental and physical well-being of workers** that is the “whole person”.

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Safety Hazards

A safety hazard is anything that could cause a physical injury, such as a cut or fracture. Safety hazards cause harm when workplace hazard controls are not adequate. Remember to check the adequacy of controls during your inspections.

The hazard identification process requires that:

1. past incidents/accidents be examined to see what happened and whether the incident/accident could happen again
2. Employees be consulted to find out what they consider are safety issues, e.g. how could an employee be exposed to this hazard?
3. work areas or work sites be examined to find out what is happening now
4. Information about equipment (e.g. plant, operating instructions) and Material Safety Data Sheets be reviewed to see what is said about safety precautions.
5. Some creative thinking about what could go wrong takes place, i.e. what hazardous event could take place here?

When listing hazards use:

- ★ common sense
- ★ information from past accidents, near accidents and other experiences
- ★ information from your family, employees, neighbors

- ★ product literature and information from suppliers

Identification of work plays are a central role in people's lives, since most workers spend at least eight hours a day in the workplace, whether it is on a plantation, in an office, factory, etc. Therefore, work environments should be safe and healthy. Yet this is not the case for many workers. Every day workers all over the world are faced with a multitude of health hazards, such as:

- dusts;
- gases;
- bad smell
- smoke
- noise;
- vibration;
- extreme temperatures.

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Costs of occupational injury/disease

Work-related accidents or diseases are very costly and can have many serious direct and indirect effects on the lives of workers and their families. **For workers** some of the **direct costs** of an injury or illness are:

- the pain and suffering of the injury or illness;
- the loss of income;
- the possible loss of a job;
- health-care costs.

It has been estimated that the **indirect costs** of an accident or illness can be four to ten times greater than the direct costs, or even more. An occupational illness or accident can have so many indirect costs to workers that it is often difficult to measure them. One of the most obvious indirect costs is the human suffering caused to workers' families, which cannot be compensated with money.

The costs to **employers** of occupational accidents or illnesses are also estimated to be enormous. For a small business, the cost of even one accident can be a financial disaster. For employers, some of the **direct costs** are:

- payment for work not performed;
- medical and compensation payments;
- repair or replacement of damaged machinery and equipment;
- reduction or a temporary halt in production;
- possible reduction in the quality of work;
- negative effect on morale in other workers.

Some of the **indirect costs** for employers are:

- the injured/ill worker has to be replaced;
- a new worker has to be trained and given time to adjust;
- increased training expenses and administration costs;
- it takes time before the new worker is producing at the rate of the original worker;
- time must be devoted to obligatory investigations, to the writing of reports and filling out of forms;
- accidents often arouse the concern of fellow workers and influence labour relations in a negative way;
- poor health and safety conditions in the workplace can also result in poor public relations.

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Overall, the costs of most work-related accidents or illnesses to workers and their families and to employers are very high.

On a national scale, the estimated costs of occupational accidents and illnesses can be as high as three to four per cent of a country's gross national product. In reality, no one really knows the total costs of work-related accidents or diseases because there are a multitude of indirect costs which are difficult to measure besides the more obvious direct costs.

Health and safety programs

For all of the reasons given above, it is crucial that employers, workers and unions are committed to health and safety and that:

- workplace hazards are controlled - **at the source** whenever possible;
- records of any exposure are maintained for many years;
- both workers and employers are informed about health and safety risks in the workplace;
- there is an active and effective health and safety committee that includes both workers and management;
- Worker health and safety efforts are ongoing.

Effective workplace health and safety programmes can help to save the lives of workers by reducing hazards and their consequences. Health and safety programmes also have positive effects on both worker morale and productivity, which are important benefits. At the same time, effective programmes can save employers a great deal of money.

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| | <h2>Points to remember</h2> |
| <ol style="list-style-type: none">1. Occupational health and safety encompasses the social, mental and physical well-being of workers in all occupations.2. Poor working conditions have the potential to affect a worker's health and safety.3. Unhealthy or unsafe working conditions can be found anywhere, whether the workplace is indoors or outdoors.4. Poor working conditions can affect the environment workers live in. This means that workers, their families, other people in the community, and the physical environment around the workplace, can all be at risk from exposure to workplace hazards.5. Employers have a moral and often legal responsibility to protect workers. | |



6. Work-related accidents and diseases are common in all parts of the world and often have many direct and indirect negative consequences for workers and their families. A single accident or illness can mean enormous financial loss to both workers and employers.
7. Effective workplace health and safety programmes can help to save the lives of workers by reducing hazards and their consequences. Effective programmes can also have positive effects on both worker morale and productivity, and can save employers a great deal of money.

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| Self-Check 1 | Written Test |
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Name: _____

Date: _____

Directions: Answer all the questions listed below.

1. List some direct and in direct cost of an accident or illness to employment? (5pts.)
2. List some the multitude of health hazards?(5 pts)

Note: Satisfactory rating - 25 points and above Unsatisfactory - below 25points

You can ask your teacher for the copy of the correct answers.

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| Information Sheet-2 | Checking work area routinely |
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Types of Hazards that may occur in the Work Place

There are an unlimited number of hazards that can be found in almost any workplace. There are obvious unsafe working conditions, such as unguarded machinery, slippery floors or inadequate fire precautions, but there are also a number of categories of insidious hazards (that is, those hazards that are dangerous but which may not be obvious) including:

- chemical hazards, arising from liquids, solids, dusts, fumes, vapors and gases;
- physical hazards, such as noise, vibration, unsatisfactory lighting, radiation and extreme temperatures;

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- biological hazards, such as bacteria, viruses, infectious waste and infestations;
- psychological hazards resulting from stress and strain;
- hazards associated with the non-application of ergonomic principles, for example badly designed machinery, mechanical devices and tools used by workers, improper seating and workstation design, or poorly designed work practices.

Occupational diseases

Some occupational diseases have been recognized for many years, and affect workers in different ways depending on the nature of the hazard, the route of exposure, the dose, etc. Some well known occupational diseases include:

- Noise-induced hearing loss (caused by noise, which is common in many workplaces, including airports, and workplaces where noisy machines, such as presses or drills, etc. are used).
- Sight problems

There are also a number of potentially crippling health problems that can be associated with poor working conditions, including:

- heart disease;
- musculoskeletal disorders such as permanent back injuries or muscle disorders;
- allergies;
- Stress-related disorders.
- Common cold
- Influenza
- Tuberculosis



Points to remember about the range of hazards

1. There are an unlimited number of hazards that can be found in almost every workplace. These include both obvious unsafe working conditions and insidious, less obvious hazards.
2. Hazards often are built into the workplace. Therefore, trade unions must ensure that hazards are removed, rather than trying to get workers to adapt to unsafe conditions.
3. The most effective accident and disease prevention begins when work processes are still in the design stage, when safe conditions can be built into



the work process.

Symptoms and Signs of Hazards

- **Bleeding:** a sign of cuts
- **Itching:** a sign of stings with insects, weeds, or a sign of chemical spills
- **Pain:** a sign of any injury or damage such as cut, sting, breakage, etc.
- **Coughing:** a sign of respiratory hazard due to inhalation of gases, dusts, vapors, etc.
- **Sneezing:**
- Unusual sound:

Pesticide sprayer:- When spraying crops the worker may be exposed to hazardous chemicals contained in the spray. Many pesticides and herbicides that have been banned in some countries because of their toxic effects are still used in many developing countries.

Types of pesticide poisoning

- Oral poisoning:** this is when pesticide enters through mouth. This may occur from splashing, from drift or dust, or when the applicator smokes or eats with pesticide on the hand, when a person cleans nozzles by blowing into them. Accidental poisoning often occurs when children drink pesticides from containers that are not kept out of their reach.
- Inhalation:** exposure through the lungs occurs from breathing dusts, spray mists or fumigant gases.
- Dermal poisoning:** dermal exposure occurs when pesticides touch the skin /pesticide spill. The skin can absorb pesticides, particularly the liquid formulations such as emulsifiable concentrates.



Pesticides cause environmental pollution and health problems

- Some pesticides are persistent in the soil and do not decompose. Such pesticides may pollute water bodies, drinking water etc. Pesticide residues in food also cause health problems. Some pesticides such, as DDT, are carcinogenic (cause cancer). When the chemicals get absorbed into the soil or leach into groundwater supplies, the adverse effects on the natural environment can be permanent .

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| Self-Check 2 | Written Test |
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Name: _____

Date: _____

Directions: Answer all the questions listed below.

1. List hazards do you know exist in you workplace? (5pts.)
2. List some sign and symptoms of work place hazards? (5pts)

Note: Satisfactory rating - 25 points and above Unsatisfactory - below 25points

You can ask your teacher for the copy of the correct answers.

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| Information Sheet-3 | Identifying causes of hazards |
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In some cases, the cause of an industrial injury is easy to identify. However, very often there is a hidden chain of events behind the accident which led up to the injury. For example, accidents are often indirectly caused by negligence on the part of the employer who may not have provided adequate worker training, or a supplier who gave the wrong information about a product, etc. The consistently high fatal accident rates in developing countries emphasize the need for occupational health and safety education programmes that focus on prevention. It is equally important to promote the development of occupational health services, including the training of doctors to recognize work-related diseases in the early stages.

Identifying the cause of occupational disease

The cause of work-related diseases is very often difficult to determine. One factor is the latency period (the fact that it may take years before the disease produces an **obvious** effect on the worker's health). By the time the disease is identified, it may be too late to do anything about it or to find out what hazards the worker was exposed to in the past. Other factors such as changing jobs, or personal behaviours (such as smoking tobacco or drinking alcohol) further increase the difficulty of linking workplace exposures to a disease outcome.

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Overall, efforts in occupational health and safety must aim to **prevent** industrial accidents and diseases, and at the same time recognize the connection between worker health and safety, the workplace, and the environment outside the workplace.

Extent of the problem worldwide

A. Accidents

In general, health and safety in the workplace has improved in most **industrialized** countries over the past 20 to 30 years. However, the situation in developing countries is relatively unclear largely because of inadequate accident and disease recognition, record-keeping and reporting mechanisms.

It is estimated that at least 250 million occupational accidents occur every year worldwide. 335,000 of these accidents are fatal (result in death). (Since many countries do not have accurate record-keeping and reporting mechanisms, it can be assumed that the real figures are much higher than this.) The number of fatal accidents is much higher in developing countries than in industrialized ones. This difference is primarily due to better health and safety programmes, improved first-aid and medical facilities in the industrialized countries, and to active participation of workers in the decision-making process on health and safety issues. Some of the industries with the highest risk of accidents worldwide are: mining, agriculture, including forestry and logging, and construction.

B. Diseases

Many developing countries report only a small number of workers affected by work-related diseases. These numbers look small for a variety of reasons that include:

- Inadequate or non-existent reporting mechanisms;
- A lack of occupational health facilities;
- A lack of health care practitioners who are trained to recognize work-related diseases

Because of these reasons and others, it is fair to assume that in reality, the numbers of workers afflicted with occupational diseases are much higher. In fact, **overall, the number of cases and types of occupational diseases are increasing, not decreasing, in both developing and industrialized countries.**

The importance of training

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Effective training is a key component of any health and safety programme.



Workers often experience work-related health problems and do not realize that the problems are related to their work, particularly when an occupational disease, for example, is in the early stages. Besides the other more obvious benefits of training, such as skills development, hazard recognition, etc., a comprehensive training programme in each workplace will help workers to:

- recognize early signs/symptoms of any potential occupational diseases before they become permanent conditions;
- assess their work environment;

- insist that management make changes before hazardous conditions can develop.

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| | Points to remember about the importance of training |
| | A comprehensive health and safety training programme in each workplace will, among other more obvious benefits, help workers to recognize any early signs/symptoms of potential occupational diseases before they become permanent conditions, to assess their work environment, and to insist that management make changes before hazardous conditions can develop. |



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| Self-Check 3 | Written Test |
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Name: _____

Date: _____

Directions: Answer all the questions listed below. Illustrations may be necessary to aid some explanations/answers.

1. List some of the industries with the highest risk of accidents worldwide? (5pts.)
2. What are the purposes of comprehensive training programs in each workplace? (5pts)

Note: Satisfactory rating - 30points

Unsatisfactory - below 30 points

List of reference

1. *The Almanac of Canning, Freezing, Preserving Industries*, Vol. 2, 71st ed., Edward Ejudge and Sons, Westminister, MD, 1993, p. 714.
2. Winn, J., *Canned Sweet Corn*, annual trade report, USDA/FIS 1994.
3. Wiley, R. C., F. D. Schales, and K. A. Corey, Sweet corn, in *Quality and Preservation of Vegetables* (N. A. M. Eskin, ed.), CRC Press Inc., Boca Raton, FL, 1989.
4. work place hazards . <https://www.youtube.com> accessed 23/09/19

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| Instruction sheet | Learning Guide 02 |
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This guide will also assist you to attain the learning outcome stated in the cover page. Specifically, upon completion of this Learning Guide, you will be able to –

- Follow procedures for hazard control
 - ❖ Following procedures to remove/minimize hazards
 - ❖ Using required PPE and safety equipment
 - ❖ Describing the potential consequences of failing

Learning Instructions:

1. Read the specific objectives of this Learning Guide.
2. Follow the instructions described
3. Read the information written in the information “Sheet
4. Accomplish each “Self-check respectively.
5. If you earned a satisfactory evaluation from the “Self-check” proceed to the next or “Operation Sheet
6. Do the “LAP test”

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| Information Sheet-1 | Following procedures to remove/minimize hazards |
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Assure Adequate Hazard Controls and Emergency Equipment: Once the hazards have been identified, commensurate hazard controls and emergency equipment must

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be planned and acquired or developed to adequately control the hazards to a negligible risk level and to respond to any emergencies which may arise for general guidance.

Safe work practices

Safe work practices are generally written methods outlining how to perform a task with minimum risk to people, equipment, materials, environment, and processes. Safe Work Practices (SWPs) are a control.

SWPs must be developed to address specific company work activities, tools and equipment.

- Every activity must be carried out in accordance with a developed safe working Practice.
- The safe working Practice shall follow a logical sequence of progression.
- Consider what must be done before the task starts?
- How the task is done?
- What training is needed?

Safe job procedures

Safe job procedures are a series of specific steps that guide a worker through a task from start to finish in a chronological order. Safe job procedures are designed to reduce the risk by minimizing potential exposure.

Developing safe work practice

Safe work practices should be developed as a result of completing a Hazard Assessment and should closely reflect the activities most common in the company's type or sector of construction. Safe job procedures are usually developed by management and workers as a result of a Hazard Assessment, accident investigation and/or as a supplement to a safe work practice.

General Principles to maximize comfort and reduce the risk of injury

The human body is healthiest when it is moving. Working in the same position for long periods of time should be avoided.

Here are some easy ways to maximize comfort and reduce the risk of injury whatever your job.

At the workstation

- Take regular breaks from your workstation – at least every 30 minutes.
- Vary tasks so you are not keying for extended periods of time.

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- Change your posture as frequently as practical.
- Avoid eye strain when using the computer: focus on an object in the distance at least 6 meters every 10-15 minutes.
- Take your lunch break away from your desk, preferably going for a walk outside for 15-20 minutes.
- Make sure your chair is adjusted to support your lower back - use safe sitting posture.
- Make sure that your chair is in good working order - do not use a chair that needs maintenance.
- Learn to touch type (less repetitive movement for your neck).
- Switch the computer mouse to the other hand regularly.
- Place frequently used items near you.

In general

- Keep hydrated and drink plenty of water
- Reduce clutter in your work and storage areas - you'll work in a more organized way, feel less pressured and avoid trips and falls.
- Switch tasks if possible to manage repetitive tasks. This will keep your body and your mind fresh.
- Change your method of doing repetitive by using a different body part or different muscles, such as switching hands.

Manual handling

- Eliminate manual handling tasks from your work processes as much as possible.
- Use suitable and well-maintained equipment as much as possible.
- Avoid repetitive movements and postures.
- Use safe manual handling methods when manual handling can't be avoided.

Workplace stress

Workplace stress is recognized as a contributing factor of injury. We are all vulnerable to workplace stress, influenced by personal issues, work/life balance, general health and relationships at work.

Here are some general strategies to reduce workplace stress that team members can implement:

- Be aware of each other's workload
- Clarify priorities and deadlines

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- Clarify team roles and support flexibility.
- Discuss changes.
- Improve physical environment or comfort.
- Recognize and acknowledge each other's efforts.
- Develop your communication, negotiation and conflict management skills.

All these safe working practices among many others are included in the range of CRS Australia injury prevention services, including training programmes and information brochures.

Mental health

Maintaining good mental health in the workplace is important.

Pesticide Use

Pesticides are crop protection products which include natural and man-made substances such as insecticides, herbicides, fungicides, disinfectants and rodenticides. The use of pesticides is not without risks. It is the responsibility of every pesticide applicator to prevent harm from occurring to humans, pets, livestock, wildlife or the environment.

1. Is a Pesticide Necessary?

Identify the problem and the pest. Is controlling it necessary? Will it cause unacceptable damage? Consider all control options including alternatives to pesticides such as hoeing, hand weeding, excluding the pest with barriers, sanitizing the area, and/or removing food, water or cover for the pest.

1. Choose the Right Pesticide

- Choose the lowest toxicity pesticide that can be used legally on the target area, crop or plant and that will safely and effectively control the pest.
- Plan ahead and buy no more pesticide than you need.
- Keep pesticides separate from other items in a shopping cart, and make sure they are wrapped in a separate bag at the checkout stand.
- Make sure you have the proper safety and application equipment available and know how to use it.

2. Read and Follow the Label Directions

As a pesticide applicator it is your legal responsibility to read, understand and follow the label directions. Pesticide labels will usually contain the following sections:

- **Product name:** Indicates type of pesticide or what types of pests it will control.

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- **Ingredient statement:** Lists the amount of each active ingredient and the total amount of inert ingredients.

- **Signal word:** Indicates the toxicity of the product.

Products labeled "DANGER POISON" and accompanied by a skull and crossbones symbol are highly toxic. Products labeled "DANGER" without the word "POISON" or the skull and crossbones symbol can cause severe skin injury or irreversible eye damage.

Products labeled "WARNING" are moderately toxic or may cause moderate eye or skin irritation.

Products labeled "CAUTION" are slightly toxic or may cause slight eye or skin irritation.

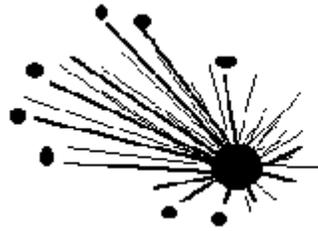
- **Precautionary statements:** Warn about potential hazards to humans, domestic animals and the environment. They also indicate special fire, explosion or chemical hazards and methods to avoid or minimize risks.
- **Statement of practical treatment/ first aid information:** Indicates antidote or first aid treatment to administer.
- **KEEP OUT OF REACH OF CHILDREN:** Pesticides must always be stored and kept out of reach of children.
- **Directions for use:** Warns that federal law requires the pesticide to be used according to label directions. Indicates location, amount, frequency, and method and timing of the application. The label also indicates when it is safe to reenter the treated area to harvest the fruits or vegetables. ***Do not exceed recommended limits.***
- Other information on the label includes the name and address of the manufacturer, EPA Registration and Establishment numbers, and storage and disposal information.
- **Hazardous chemical waste** refers to any material substance that is
- **CORROSIVE** (pH<2 or pH>12)
- **REACTIVE** (oxidizers, water reactive)
- **FLAMMABLE** (flash point <140 F)
- **TOXIC**

It is a violation of the law to disregard label directions.

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Flammable



Explosive



Toxic



Corrosive

3. Safety during pesticide transportation

- Transport pesticides in the trunk of the car instead of the backseat to avoid contaminating the car interior in case of breakage.
- Never carry pesticides in the passenger section
- Never allow children and other passengers to ride with pesticides\
- Never transport pesticides with food. Clothing or other things meant to be eaten or in contact with people or animals
- Never leave your vehicle unattended when transporting pesticides in an unlocked trunk compartment or open-bed truck
- Consider transporting highly volatile pesticides in separate trips from other chemicals

4. Safety on storage

- The structure should have a concrete floor which is impermeable and easy to wash
- The structure should be fire resistant, explosion-proof and located away from other building
- Adequate ventilation is needed to prevent exposure of the pesticides to extreme heat and reduce the concentration of toxic or inflammable vapors in the building
- Lighting facilities in the storage must be sufficient to allow easy identification of stored materials
- Pesticide storage areas should not be used for other purposes. Pesticides should never be stored with food, feed, seed, planting stock, fertilizers, or veterinary supplies.

5. Safety on Application equipment

- Agricultural sprayers should be operated so that the required rate of pesticide is delivered to the target site.
- The applicator must know the safe operation of application equipment and that all equipment is inspected and in good operating condition before each use, and choose applicable equipment before use.
- The pesticide sprayer or granular applicator needs to be in good operating condition and properly calibrated to apply the correct amount of pesticide.

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Calibrate the sprayer or applicator to apply the correct amount. It is illegal and unsafe to apply more pesticide than the label states.

- Clean all equipment, including mixing tools, after each use. Triple rinse with clean water and allow to dry.
- If a sprayer was used, rinse it with a small amount of water and spray over an area that may be legally treated. Clean the sprayer with water or as directed on the label. Rinse well and spray on an area that can be legally treated.
- Properly clean the sprayer before working in other crops or with other pesticides.

Sprayer calibration

6. Tank-Mixing Precautions

- Read the label information very well carefully and follow all applicable directions, precautions, and limitations.
- Examine the toxicity of the pesticide before use and be especially careful while working with the concentrated pesticide during mixing.
- Use protective gloves and/or masks when recommended by label instructions.
- Wear thin hand gloves and respiratory mask if available or cover your nose and mouth with clean cloth and use some kind of eye glass
- Clean the sprayer tank before using
- Use wide mouth container and clean water for dilution
- Properly measure the pesticide with a plastic container
- Dilute or dissolve the pesticide in well-ventilated open place keeping your face in the direction of the wind to avoid inhaling fumes never opposite to the wind
- Always perform a jar test to ensure the compatibility of products to be tank mixed before mixing a full tank.
- Do not exceed recommended application rates for respective products or maximum allowable application rates for any active ingredient in the tank mix. Apply a pesticide at or below the rate specifies on the label. Use of larger amount of a pesticide than the label specifies can also cause residues on a crop
- For products packaged in water-soluble packaging, do not tank mix with products containing boron. Also, do not mix in equipment previously used to apply a product mixture containing boron unless the tank and spray equipment have been adequately cleaned. (See Equipment Clean-Out Procedures.)
- Wash hands thoroughly with soap and water after handling pesticides and before eating.

7. Safety on use in the field

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- Examine the area to be treated and the surrounding area. Are there plants or animals that could be harmed by the pesticide? Don't spray if you cannot guarantee they will not be injured. You are responsible for any damage that could occur.
- Wear all protective clothing and equipment listed on the label, such as long-sleeved shirts, coveralls, chemical-resistant gloves, goggles, etc.
- Apply pesticides only to crops specifically listed on the label; since pesticides degrade at different rates depending on how the crop is growing, use of a pesticide on a crop may depend on how the crop is produced as well as the type of the crop grown
- Apply a pesticide only by methods listed on the label; complying with the instructions helps reduce the possibilities of excess residues on harvested produce.



The farmer is safe as he is protected from coming into contact with the product.





The farmer is exposed and has a high chance of coming into contact with the chemical solution.



Safe application of fertilizers





The farmer is applying fertilizer with his bare hands. Chemical contact with the skin is dangerous.

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| Self-Check 1 | Written Test |
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Name: _____

Date: _____

Directions: Answer all the questions listed below. Illustrations may be necessary to aid some explanations/answers.

1. What is product name of chemicals?(5pts.)
2. What information can be found on a product label? (5pts)

Note: Satisfactory rating - 30points

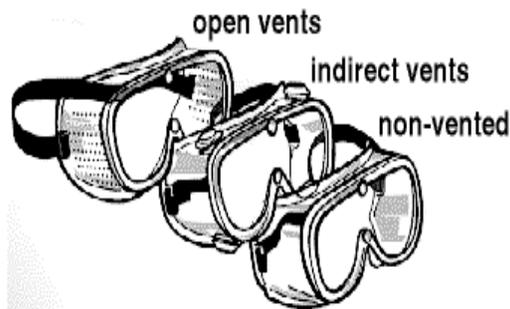
Unsatisfactory - below 30 points

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| Information Sheet-2 | Using required PPE and safety equipment |
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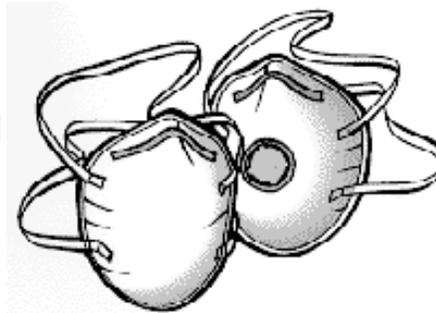
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Personal Protective Clothing and Equipment for Pesticide Applicators



Eye Goggle



Dust Mask

- Protection for head, eyes, ears, skin, feet, hands, respiratory system, or body is necessary under certain hazardous working conditions
- Wear waterproof, unlined knee-high boots of rubber or neoprene when you load, mix or apply pesticides. Wear your pant legs outside of your boots so the pesticide doesn't run into your boots. Do not wear boots made of leather or fabric. Wash the outside of your boots after each use.
- Eye injuries can translate into pain, loss of time, money and even your eyesight.
- Eye injuries are more likely to occur when servicing farm equipment than when operating it.
- Wear goggles and face shields
- **Hats:** If there is a risk of exposure to pesticides by splashing or drift, wear a wide-brimmed, rubber rain hat. Some spray suits have attached hoods which protect your head and neck area.
- Do not wear baseball caps, fabric hats, straw hats or hats with leather or cloth inner bands as these will absorb and retain pesticides.

Helmets

1. Employees working in areas where there is possible danger of head injury from impact,
2. Falling or flying objects, or electrical shock and burns must wear protective helmets. The typical "hard hat" is the protective helmet of choice in most situations. Hard hats for short-term use can be obtained from the Facilities Services Tool Room.

Respirators

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- Respirators protect against harmful dusts, fogs, fumes, mists, gases, smokes, sprays, or vapors
- **Canister Respirators** are similar to cartridge respirators but generally have a full face piece and a larger canister of absorbent material. Canister respirators provide more protection from vapors than cartridge respirators. They can be used in areas where there may be a relatively high concentration of vapors, such as for escape from a greenhouse after release of a fumigant. They should not be used to work in a greenhouse after release of a fumigant.
- **Supplied-Air Respirators** come with their own air supply, either a cylinder worn on the back, or a line to a distant tank. They are designed for use in emergencies such as re-entries to fumigated areas or fighting fires in a pesticide storage area.

Training

It is the responsibility of supervisors to provide training to their employees on identifying when the selected personal protective equipment is necessary, on how to use the equipment, and on proper care and maintenance of it.

Container disposal

1. Paper bags must be completely emptied and placed with other trash destined for sanitary landfill disposal
2. Rigid containers (plastic or metal, other than pressurized containers) must be either triple rinsed or pressure rinsed and then placed with solid waste destined for a sanitary landfill.

Pesticide waste disposal

1. Acutely hazardous wastes (toxicity category 1, LD50 of 50mg/kg or less in quantities greater than 2.2 pounds) must be disposed of in an approved hazardous waste site.
2. Smaller quantities of hazardous pesticide waste (or pesticides not classified as being highly hazardous) generated by an agricultural producer can be disposed of on the property of the producer. Such disposal must be done in a manner that prevents potential environmental damage, away from water ways, wells, wildlife habitats and sites that may erode or allow leaching.





Empty chemical containers are a health hazard for humans and for animals and therefore must not be reused or discarded in fields or on road sides. Farmers should not reuse empty chemical containers. It is a health hazard.



It is dangerous to discard empty chemical containers in the fields. Children and animals may come in contact with the poisonous chemical residues. Empty containers must be taken to a collection point that will ensure proper disposal.

The Five golden Rules for Safe Use of Crop Protection Products (pesticides)

- Exercise caution at all times.

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- Read and understand the product label.
- Practice good personal hygiene.
- Take care of and maintain application equipment.
- Wear appropriate Personal Protective clothing and Equipment (PPE).

I) **Exercise caution at all times**

- 1 Always keep products under lock and key, out of the reach of children and animals.
- 2 Handle and transport products with caution. Transport crop protection products separately from foodstuff or animals.
- 3 Always triple rinse emptied product containers and dispose by following local best practice.
- 4 Wear a hat and do not spray during the hottest part of the day.
- 5 Carry an adequate supply of drinking water to avoid dehydration. Always wash before drinking.

II) **Read and understand the product label**

The product label contains important information on product features and on risks relating to product use, together with correct measures to take in the case of an emergency.

- 6 Always follow the label instructions for use (crops, targets application rates and water volumes per unit area).
- 7 If you cannot understand the label then have it read and explained to you
- 8 Understand the meaning of the pictograms if used.
- 9 Read the emergency procedures.
- 10 Check that the product has not expired.
- 11 Check when purchasing products that the WHO hazard classification color coding band and select the least hazardous.

III) **Practice good personal hygiene**

- ❖ Always have clean water available when working with chemicals.
- ❖ Wash any chemical splashes immediately from skin or eyes.
- ❖ Do not eat, smoke or drink whilst handling, working with or applying crop protection chemicals.
- ❖ Always wash yourself and clothes after working with chemicals.
- ❖ Wash spray clothes separately from the domestic washing.
- ❖ Do not work with chemicals if you feel unwell before you start.

IV) **Take care of and maintain application equipment.**

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- ⇒ Check spraying equipment before use; any leaks must be repaired before use.
- ⇒ Check the nozzle is working correctly, clean or replace if necessary.
- ⇒ Spraying equipment should be calibrated at least once a season depending on the amount of use.
- ⇒ Wash spraying equipment after use and store securely away from children, animals and feed.
- ⇒ Always avoid operator exposure to any spray drift; walk up-wind from the nozzle.
- ⇒ Do not spray in windy conditions.

V) Wear appropriate protective clothing and equipment (PPE)

- ✓ Follow the label pictograms for PPE requirements for both mixing and spraying.
- ✓ Different products and application methods sometimes require different PPE.
- ✓ The minimum requirement is long sleeved shirt, long trousers and non absorbent footwear when spraying with nozzle at less than waist height. The use of a wide brimmed hat will give protection from both the sun and potential spray drift.
- ✓ When mixing liquids, eye and hand protection are also required. A dust mask is required when mixing powder formulations.
- ✓ Wash gloves before removal to avoid potential contaminate

Use Pesticide Alternatives

Cultural pest control methods

- Select plants resistant to insects and diseases.
- Remove dead plant material that could harbor insects or diseases.
- Pull weeds before they bloom.
- To keep insects away without pesticides, try physical barriers such as cheese cloth, netting and row covers. Surround developing plants with tin can collars to protect against insects that feed or lay their eggs at a plant's base.
- Try removing pests with a forceful jet of water.
- Spray plants with insecticidal soaps to kill soft-bodied insects such as aphids and grubs.

Biological pest control methods

- Try a natural insecticide such as *Bacillus thuringiensis* (Bt), which has been shown to be effective against caterpillars and beetles without harming humans or wildlife.
- Spread boric acid liberally in areas where insects typically enter houses to kill ants and roaches. Boric acid should not be used where children or animals may encounter it.

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- Plant a variety of crops that flower throughout the season (such as some marigolds) to deter some pests.
- Remove sources of food, water and cover.

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| Self-Check 2 | Written Test |
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Name: _____

Date: _____

Directions: Answer all the questions listed below. Illustrations may be necessary to aid some explanations/answers.

1. What are the cultural methods to control pest? (5pts)
2. Write the Five golden Rules for Safe Use of Crop Protection Products (pesticides)? (5 pts.)

Note: Satisfactory rating - 30points Unsatisfactory - below 30 points

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| Information Sheet-3 | Describing the potential consequences of failing |
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Careful use of pesticides helps ensure that a variety of high-quality produce is available all year. The Environmental Protection Agency (EPA) sets the legal levels of pesticide residues that may remain on food sold to supermarkets or food processors.

The Food and Drug Administration (FDA) tests food samples for pesticide residues and inspects them to make sure that only legally registered pesticides are used. Food materials should be tested for pesticide residues. If illegal pesticides or improper amounts are detected, the food is to be removed from the market place.

- Consumers who grow food for themselves or others also need to exercise caution.
- Although pesticides vary in their toxicity, all pesticides should be treated as potentially harmful.
- **The label directions must be followed, and the pesticide must not be applied above the recommended rate or more often than recommended.**
- The pesticide should not be applied closer to harvest than recommended to allow for the pesticide residue to be degraded.

General Health for Farm Workers

- Take care of your self
- Know your physical limits

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- Exceeding personal limitations is a factor in many farm accidents. Working in extreme heat or cold or attempting jobs beyond your physical capabilities elevates accident or illness risk.
- Be ready for a safe day. This includes dressing right for the weather and job, getting the proper nourishment and adequate rest. Take work breaks to fight fatigue and extend your energy. Stop when you've had enough.
- Use motor power rather than muscle power when possible.
- Plan your work to make maximum use of your available energy.
- Consider age and state of health in deciding what and how much you can do safely.
- Be willing to reassign jobs and activities that can no longer be done safely because of age or health problems.
- Exercise regularly for improved cardiovascular fitness, muscle tone, and to stay agile.

Ensure personal safety

- Never use defective tools such as split or cracked handles tools which are not complete, such as without handles. Defective tools can cause serious and painful injuries. If a tool is defective in some way, double check all tools prior to use; and ensure defective tools are repaired. Tag and/or remove defective tools from service.

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| Self-Check 3 | Written Test |
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Name: _____

Date: _____

Directions: Answer all the questions listed below. Illustrations may be necessary to aid some explanations/answers.

1. How to protect pesticide hazards? (5pts)
2. What measures are important when considering your personal hygiene? (5pts)

Note: Satisfactory rating - 30points Unsatisfactory - below 30 points

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| Operation Sheet 1 | Selecting personal protective equipments and personal hygiene |
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Objectives

- To reduce hazards
- To know PPE equipment's

Materials

Gloves
Coverall
Boots
Hats
Goggle
Respirators

Procedures

Any time and everywhere before the use of chemicals everybody should know how to use personal protective clothes and equipment's properly to minimize the chance of chemical exposure. Therefore, during the application of personal protective clothes you should have to follow the following procedures.

1. Identify chemical which needs protective equipment and which does not needs
2. Identify different types of protective equipment
3. Carry out how to wear protective equipments and clothing, never wear leather products which absorbs chemicals
4. Mix one of the chemical and apply
5. In case of a pesticides spill or splash at work site, wash your body immediately after contact.
6. Clean protective equipment's and clothing after application
7. Wash your hands or take shower at the end of the application.

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| LAP Test 1 | Practical Demonstration |
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Time started: _____ Time finished: _____

Instructions:

1. You are required to perform any of the following:
 - 1.1. Store chemicals.
 - 1.2. Handle chemicals
 - 1.3. Use PPE

List of reference

- The Almanac of Canning, Freezing, Preserving Industries*, Vol. 2, 71st ed., Edward Ejudge and Sons, Westminister, MD, 1993, p. 714.
2. Winn, J., *Canned Sweet Corn*, annual trade report, USDA/FIS 1994.
3. Wiley, R. C., F. D. Schales, and K. A. Corey, Sweet corn, in *Quality and Preservation of Vegetables* (N. A. M. Eskin, ed.), CRC Press Inc., Boca Raton, FL, 1989.
4. Pesticide application. <https://www.youtube.com> accessed 25/09/19

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| Instruction sheet | Learning Guide 03 |
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This guide will also assist you to attain the learning outcome stated in the cover page. Specifically, upon completion of this Learning Guide, you will be able to –

❖ **Follow emergency procedures**

- Recognizing emergency alarm
- Communicating on OHS procedures
- Following instructions related to emergency

Learning Instructions:

1. Read the specific objectives of this Learning Guide.
2. Follow the instructions described
3. Read the information written in the information “Sheet
4. Accomplish each “Self-check respectively.
5. If you earned a satisfactory evaluation from the “Self-check” proceed to the next or “Operation Sheet
6. Do the “LAP test”

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| Information Sheet-1 | Recognizing emergency alarm |
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What is an Emergency?

An emergency is an event, either actual or imminent, which endangers or threatens to endanger life, property or the environment, and which requires a significant and coordinated response.

Emergency is a sudden unforeseen crisis (usually involving danger) that requires immediate action.

Emergency responses

Emergency *response* is a term for a series of appropriate actions and precautions in the event of a disaster. No matter the type of catastrophe, proper emergency response can protect family members and even save lives. By having a full knowledge of the surroundings, keeping a supply of rescue goods, and having a detailed plan with household members, emergency response can allow peace of mind and better chance of safety in any situation.

Emergency response allows people to act quickly and without panicking should an emergency occur. Knowing that plans have been made and supplies arranged can help take considerable worry and fear out of the process. By following emergency response procedures and listening carefully for any contact or orders from emergency personnel, you can ensure a better chance of safety and survival in any situation.

Basic life support/First Aid

First aid is the treatment of the sick and injured before professional medical help can be given.

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The aims of first aid are to prevent death or further injury, to counteract shock and to relieve pain.

Unconsciousness, severe bleeding or burns require immediate treatment.

Serious trauma is most likely from road traffic accidents, gunshots, stab wounds, fire, or blasts from bombs and land mines.

First aid kit

A first aid kit is a collection of supplies and equipment for use in giving first aid.[1] First aid kits may be made up of different contents depending on who has assembled the kit and for what purpose. It may also vary by region due to varying advice or legislation between governments or organizations. It is recommended that all kits are in a clean, waterproof container to keep the contents safe and aseptic.[2] Kits should also be checked regularly and restocked if any items are damaged or out of date.

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| Self-Check 1 | Written Test |
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Name: _____

Date: _____

Directions: *Answer all the questions listed below. Illustrations may be necessary to aid some explanations/answers.*

1. What is emergency ? (5 pts)

2: Mention the purpose of first aid. (5 pts)

Note: Satisfactory rating - 16 points and above
points

Unsatisfactory - below 16

You can ask you teacher for the copy of the correct answers

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| Information Sheet-2 | Communicating on OHS procedures |
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Any work in the agriculture may be dangerous in some way. It is important to know about your workplace's occupational health and safety procedures. As an employee you have a responsibility to:

- ❖ Follow your workplace's occupational health and safety procedures
- ❖ Follow manufacturers' guidelines for machinery and equipment
- ❖ Respond to a situation where someone is put at risk of injury (as long as you do not endanger yourself)
- ❖ Report any incidents or situations which cause you or other people injury, or put you or others at risk.

Environmental issues

In agricultural workplaces hazards including **dust, noise, chemicals, machinery and organisms can affect the health and safety of workers** and other people in the surrounding **environment**. Examples are wind-borne chemical drift, chemicals getting into water supplies and drainage and dust blowing into a neighbor's premises. Horticultural workers should recognize their duty of care to others and ensure that no harm is caused to off-target sites or downstream properties, and those that work there.

OHS RISK

Safeties in the strategic approaches to reducing farm injury risk are multifaceted and include:

- ⤴ identifying elimination and substitution options
- ⤴ improving design and engineering solutions

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- ▲ Administrative or work practice solutions, including education and skills development
- ▲ Identification of requirements for personal protective clothing and equipment
- ▲ Identification of incentives for adoption of improved systems
- ▲ Ensuring compliance with regulatory requirements for supply of safe plant and equipment and safe operation in the farm workplace.

While providing the support there are possible risks that may endanger your health and safety, the dangers could be those which cause physical injury during land preparation, loading, unloading, mounting different plowing implements to tractors, etc.

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| Self-Check 2 | Written Test |
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Name: _____

Date: _____

Directions: Answer all the questions listed below. Illustrations may be necessary to aid some explanations/answers.

1. State the strategic approaches to reducing farm injury risk? (5pts)
2. State the environmental issues conserving about agricultural production? (5pts)

Note: Satisfactory rating - 25 points

Unsatisfactory - below 25 points

You can ask you teacher for the copy of the correct answers

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| Information Sheet-3 | Following instructions related to emergency |
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What is a workplace emergency?

A workplace emergency is an unforeseen situation that threatens your employees, customers, or the public; disrupts or shuts down your operations; or causes physical



or environmental damage. Emergencies may be natural or manmade and include the following:

- Floods, Hurricanes, Tornadoes,
- Fires,
- Toxic gas releases,
- Chemical spills,
- Radiological accidents,
- Explosions,
- Civil disturbances, and

Emergency Equipment Checklist

The following emergency equipment must be located within or near the lab. Know the location and operation of the following:

1. Dry chemical fire extinguisher;
2. Eyewash;
3. Emergency shower;
4. Stocked first aid kit;
5. Evacuation route map (posted); and
6. Emergency response instructions (Center Emergency Guide).

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| Self-Check3 | Written Test |
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Name: _____

Date: _____



Directions: Answer all the questions listed below. Illustrations may be necessary to aid some explanations/answers.

1. Mention the type of emergency in work place? (5 pts.)
2. State the magnitude of emergency hazards in work place ?(5 pts)

Note: Satisfactory rating - 20 points and above Unsatisfactory - below 20 points

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| Instruction sheet | Learning Guide 04 |
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This guide will also assist you to attain the learning outcome stated in the cover page. Specifically, upon completion of this Learning Guide, you will be able to –

- **Report problems**
- ✓ Recording and documenting hazards and incidents
- ✓ Informing and reporting appropriate persons when hazard arises

Learning Instructions:

1. Read the specific objectives of this Learning Guide.
2. Follow the instructions described
3. Read the information written in the information “Sheet
4. Accomplish each “Self-check respectively.
5. If you earned a satisfactory evaluation from the “Self-check” proceed to the next or “Operation Sheet
6. Do the “LAP test”

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| Information Sheet-1 | Recording and documenting hazards and incidents |
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- Records can **establish proof of proper use** or they are helpful in finding the cause of error, if an error is made.
- They can also **provide information** to trace residue and /or damage problems.
- Records can also **save money**.
- They **allow the Farmer to compare the results** obtained from different chemicals.
- It **helps improve Pest control** practices and efficiency too.
- They also help to reduce **chemical misuse**.
- Careful records from year to year guides the farmer in buying only the amount of Chemicals needed.

Rerecording chemical inventory

Information needed

- ✧ Time of day and date of application
- ✧ Crop or target
- ✧ Pest, weed and diseases
- ✧ Equipment used
- ✧ Agrochemical used
- ✧ Common name
- ✧ Trade name
- ✧ Formulation and % active ingredient
- ✧ Lot number (in case of cross-contamination or failure to control)
- ✧ Total formulation added to tank or hopper
- ✧ Amount of mixture used
- ✧ Amount or numbers treated (hectares, buildings, sheep, etc.)

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Additional comments

- ✓ Location
- ✓ Weather
- ✓ Applicator
- ✓ Severity of infestation

Reporting chemical application details

Pesticide application

There are different types of application equipment. The type of equipment to be used **depends** on:

- The **scale** of operation; and
- The form in which the agrochemical is applied.

Users should ensure that the training has adequately covered the following aspects of application:

- ⌘ Choice of equipment
- ⌘ Checking of equipment to ensure proper functioning
- ⌘ Filling the applicator with the agrochemical
- ⌘ Calibrating
- ⌘ Operating
- ⌘ Safety precautions and emergency measures in the event of malfunction or accident
- ⌘ cleaning, maintenance and replacement of spare parts
- ⌘ Fault-finding
- ⌘ Attending to simple repairs.

Users should ensure that the users' instruction manual (or similar operating instructions guide) giving detailed instructions on:

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- operating procedures
- replacement of spare parts and
- Repairs.

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| Self-Check 1 | Written Test |
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Name: _____

Date: _____

Directions: Answer all the questions listed below. Illustrations may be necessary to aid some explanations/answers.

1. List chemical inventory? (5 pts)

2. Type and application equipment of chemical depend on? 5pts

Note: Satisfactory rating – 12points and above Unsatisfactory - below 12

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| Information Sheet-2 | Informing and reporting appropriate persons when hazard arises |
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Workplace hazards are identified and reported to appropriate person according to standard operating procedures. Workplace hazards encountered in the course of daily activities are noted and reported to authorize personnel.

Hazard report may include the following points

Reporting potential hazards

To: _____

Reporter's name and sign: _____

The type of potential hazard that may happen: _____

Description of the hazard: _____

Location: _____

The degree/amount of hazard:

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- a) To life _____
- b) To property _____
- c) Environment _____

Recommendations/Measure that should be taken: _____

Reporting hazards

To: _____

Reporter's name and sign: _____

The type of hazard happened: _____

Cause of the hazard: _____

Location: _____

The degree/amount of hazard occurred:

- a) To life _____
- b) To property _____
- c) Environment _____

| | |
|---------------------|---------------------|
| Self-Check 2 | Written Test |
|---------------------|---------------------|

Name: _____

Date: _____

Directions: Answer all the questions listed below. Illustrations may be necessary to aid some explanations/answers.

1. Discuss hazard reporting format? (10pts)

Note: Satisfactory rating – 12points and above

Unsatisfactory - below

12



List of reference

- The Almanac of Canning, Freezing, Preserving Industries*, Vol. 2, 71st ed., Edward Ejudge and Sons, Westminister, MD, 1993, p. 714.
2. Winn, J., *Canned Sweet Corn*, annual trade report, USDA/FIS 1994.
3. Wiley, R. C., F. D. Schales, and K. A. Corey, Sweet corn, in *Quality and Preservation of Vegetables* (N. A. M. Eskin, ed.), CRC Press Inc., Boca Raton, FL, 1989.
4. Pesticide application. <https://www.youtube.com> accessed 25/09/19

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