

Artificial Insemination

Level-I

Learning Guide #25

Unit of Competence: Follow Basic

Chemical Safety Rules

Module Title

Following Basic

Chemical Safety Rules

LG Code: AGR ATI1 M08 0919 LO1-LG-25

TTLM Code: AGR ATI1 TTLM 0919 v1

**LO 01: Recognize risks associated
with chemicals**

This learning guide is developed to provide you the necessary information regarding the following **content coverage** and topics –

- ✓ Recognizing Functions of Chemicals in work places
- ✓ Recognizing and identifying Chemical symbols and labels
- ✓ Identifying Chemical storage location
- ✓ Recognizing and Observing Chemical transport, handling and storage
- ✓ Identifying and observing use, Maintenance and storage of PPE
- ✓ Identifying and observing application equipment's

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 Functions of Chemicals in work places
- ✓ Recognize and identifying Chemical symbols and labels
- ✓ Identify Chemical storage location
- ✓ Recognize and Observing Chemical transport, handling and storage
- ✓ Identify and observing use, Maintenance and storage of PPE
- ✓ Identify and observing application equipment's

Learning Instructions:

1. Read the specific objectives of this Learning Guide.
2. Follow the instructions described below 3 to 6.
3. Read the information written in the information “Sheet 1, Sheet 2, Sheet 3 and Sheet 4”.
4. Accomplish the “Self-check 1, Self-check t 2, Self-check 3 and Self-check 4” **in page -6, 9, 12 and 14** respectively.
5. If you earned a satisfactory evaluation from the “Self-check” proceed to “Operation Sheet 1, Operation Sheet 2 and Operation Sheet 3 ” **in page -15**.
6. Do the “LAP test” **in page – 16** (if you are ready).

1. Recognizing Agrichemicals

Agrichemicals are used every day in forestry work. Most at risk are those involved in applying them. Every individual may react differently to contact with any particular agrichemical. This guide sets out examples of hazards to users of agrichemicals in forestry workplaces and some steps to control any risk. It is intended not only for workers but also for employers, supervisors and forest owners — who should ensure that anyone coming into contact with agrichemicals is well aware of the potential for injury or ill health and knows how to avoid the hazards. Although this guide focuses on the application of agrichemicals using hand sprayers, its principles also apply to the application of agrichemicals from the air and in forest nurseries.

Responsibilities

If you are an employee....

As an employee you are responsible for ensuring that your actions or inaction do not endanger yourself, your co-workers, or members of the public. This includes being aware of your responsibilities for preventing accidents, injuries and illness. You are required to report all situations — including unsafe acts and conditions — that are a hazard to you, your co-workers, or others. You also have a responsibility to report all hazards you encounter or are aware of. This includes any health conditions which could be affected by spraying, such as asthma or a skin allergy. Where appropriate, your employer is responsible for correcting these hazards or ensuring safe procedures are used to deal with them.

Safety programme

Every employer should have a Health and Safety Management Plan. The written plan will outline what is required for ensuring workplace safety. It must include information on:

- Required worker training and supervision;
- Information to employees;

- Safety inspections;
- Accident investigation and injury reporting;
- Safety meetings
- Hazard identification and control; and
- Emergency procedures.

If you are an employee, you should ask to see a copy of your employer's safety programme and become familiar with its contents

To be competent at using agrichemicals in forestry work, employers and employees must:

- Understand the techniques of doing the job.
- Identify the hazards and be able to minimize or eliminate them.
- Know the responsibilities, rules, standards and regulations which must be met in the job.

Chemical hazards

You must know what sort of chemical you are applying and its potential harmful effects. Many different agrichemicals are used in forestry. Each is "scheduled" or rated according to the hazard it poses to the person handling it. The most dangerous class of chemicals are rated Class 1: "Deadly Poison". These are followed by Class 2: "Dangerous Poison" then Class 3: "Poison". The fourth rating of chemicals are rated Class 4: "Caution". Chemicals with an even lower hazard are rated Class 5: "Unclassified". With the exception of paraquat (dangerous poison), Reglone, 2,4-D, Grazon and Tordon Brushkiller (poison), most agrichemicals used in forestry either have a "caution" rating or are "unclassified". All agrichemicals should be treated as being potentially poisonous. Even agrichemicals rated as very low in toxicity can be a health hazard. They may cause irritation if breathed in, irritation to eyes, and some may cause skin irritation. The label on the agrichemical should warn you about the hazard it poses and the precautions you need to take — read it. Do not take more agrichemical to the

workplace than is required to do the day's work. Store the agrichemical in accordance with the label recommendations in a suitable store.

Do not store chemicals which have been mixed.

The most important rule is:

Always read the label on the container. Make sure you know what you are using and its effects.

If you can't understand the label, don't use the agrichemical.

Remember, your employer or supervisor has a responsibility under the Health and Safety in Employment Act to make sure that this information is clear to you and any other employee affected.

It's your right to know.

The label will tell you what the minimum protective clothing is for the job as well as storage container disposal and emergency procedures.

Follow the label directions. The agrichemical user should have at least the minimum of skin protection, including waterproof boots, gloves, long-sleeve overalls and head covering. Even if protective clothing is not specified on the label, protection will be needed to reduce the risk of exposure.

Material safety data sheets

Another common way of providing information about a chemical product is the Material Safety

Data Sheet (MSDS).

A Material Safety Data Sheet (MSDS) on the agrichemical being used should be made readily available to you on request. The principal should have this.

Mixing chemicals

When diluting sprays from a concentrate or mixing agrichemicals, you should wear eye protection and a full waterproof apron as well. It is important that the person mixing the spray is accurate in measuring out and diluting agrichemicals. Take care when pouring liquids — use eye protection.

When opening bags of powders, use a knife — don't tear at the bag.

Mix agrichemicals as directed, using calibrated equipment. Keep the mixing area away from eating and washing-up areas.

Clothing and equipment

Spray equipment must be well maintained and not leak. This is most important when knapsack spraying. Agrichemicals may leak on to your back and be taken in through the skin during the course of the working day. Carry a spare nozzle and a nozzle cleaning brush to fix blockages safely.

Protective clothing must be properly selected and cared for.

Change out of wet or contaminated clothing at work before travelling home. Do not wash these

Clothes with other washing — wash them separately and store protective clothing separately from agrichemicals. Keep bare skin covered with freshly washed clothing. This should preferably be made from a breathable fabric, such as cotton. Chemicals are more readily absorbed through the skin when a

Person is hot and sweating. Gloves should be checked daily to make sure that they are in good condition. Spare gloves should be available on site. Start each day with clean protective clothing. Boots should be checked to ensure that they are not letting chemical through cuts.

Respirators need special cleaning care. Read the manufacturer's instructions for replacement of filters.

Washing facilities

Washing facilities must be provided wherever agrichemicals are being handled, mixed or applied; the employer in charge of the operation must provide sufficient water for the crew to wash up at least twice a day.

Know where the clean water is to wash any chemical off if you need to.

Water used for drinking must be clearly identified and kept separate from water used for washing in or mixing.

Washing facilities may include a shower if the manufacturer's instructions require one.

Wash yourself and your equipment at the end of each day's spraying.

Always wash your hands before eating or smoking

Spills and emergencies

Each employee must know the emergency procedures for different situations that may arise. If chemical splashes into your eye, flush with clean water for at least 15 minutes.

Then go to a doctor. Don't add anything to the water you use for flushing a contaminated eye. If chemical is accidentally swallowed, different chemicals are treated differently — read the label. You should know what to do if there is a serious chemical spill. This could happen following a vehicle accident on the way to the site.

Know the emergency procedures.

Signs of chemical poisoning vary and may include any of:

- Headache;
- Blurred vision;
- Chest pains;
- Vomiting;
- Giddiness;
- Nausea.

Always be alert for any of these signs. Even small quantities of agrichemicals taken into the body over the course of a day can become harmful when you are doing spraying over several weeks.

Remember: Everyone reacts differently to different chemicals.

Avoid spraying onto yourself, other workers and non-target areas.

Safety Rules

General Precautions

Follow all instructions. Never perform activities without the approval and supervision of your teacher. Do not engage in horseplay. Never eat or drink in the laboratory. Keep work areas clean and uncluttered.

Dress Code

Wear safety goggles whenever you work with chemicals, glassware, heat sources such as burners, or any substance that might get into your eyes. If you wear contact lenses, notify your teacher. Wear a lab apron or coat whenever you work with corrosive chemicals or substances that can stain. Wear disposable plastic gloves when working with organisms and harmful chemicals. Tie back long hair. Remove or tie back any article of clothing or jewelry that can hang down and touch chemicals, flames, or equipment. Roll up long sleeves. Never wear open shoes or sandals.

First Aid

Report all accidents, injuries, or fires to your teacher, no matter how minor. Be aware of the location of the first-aid kit, emergency equipment such as the fire extinguisher and fire blanket, and the nearest telephone. Know whom to contact in an emergency.

Heating and Fire Safety

Keep all combustible materials away from flames. When heating a substance in a test tube, make sure that the mouth of the tube is not pointed at you or anyone else. Never heat a liquid in a closed container. Use an oven mitt to pick up a container that has been heated.

Using Chemicals Safely

Never put your face near the mouth of a container that holds chemicals. Never touch, taste, or smell a chemical unless your teacher tells you to. Use only those chemicals needed in the activity. Keep all containers closed when chemicals are not being used. Pour all chemicals over the sink or a container, not over your work surface. Dispose of excess chemicals as instructed by your teacher. Be extra careful when working with acids or bases. When mixing an acid and water, always pour the water into the container first and then add the acid to the water. Never pour water into an acid. Wash chemical spills and splashes immediately with plenty of water.

Using Glassware Safely

If glassware is broken or chipped, notify your teacher immediately. Never handle broken or chipped glass with your bare hands. Never force glass tubing or thermometers into a rubber stopper or rubber tubing. Have your teacher insert the glass tubing or thermometer if required for an activity.

Using Sharp Instruments

Handle sharp instruments with extreme care. Never cut material toward you; cut away from you.

End-of-Experiment Rules

Unplug all electrical equipment. Clean up your work area. Dispose of waste materials as instructed by your teacher. Wash your hands after every experiment.

Self-Check -1	Written Test
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Directions: Answer all the questions listed below. Use the Answer sheet provided in the next page:

1. Explain the Personal protective equipment's . (4 points)
2. What is the objectives of SOPs (4 points)

Note: Satisfactory rating - 5 and 8 points

Unsatisfactory - below 5 and 8 points

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

Answer Sheet

Score = _____
Rating: _____

Name: _____

Date: _____

Short Answer Questions

Information sheet -2	Recognizing and identifying Chemical symbols and labels
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2. Chemical labels and symbols

A label will tell

- The name of the chemical—common name, chemical name, or both. If the substance contains more than one chemical, they'll all be listed unless they are a "trade secret".
- The name, address, and emergency telephone number of the company that manufactured or imported the chemical.
- The chemical's physical hazards—what could happen if the chemical is not handled properly. Is it flammable or combustible? explosive? Is it reactive? radioactive?
- The chemical's health hazards, or possible health problems that could result from overexposure. Some of the terms that describe health hazards are carcinogen (causes cancer), highly toxic (poisonous) agent, toxic agent, reproductive hazard, irritant (temporarily inflames tissue), corrosive (destroys tissue), sensitizer (causes an allergic reaction after repeated exposure), hepatotoxin (produces liver problems), nephrotoxin (damages kidneys), and neurotoxin (causes nervous system problems).
- Some labels also include important information such as storage and handling instructions. This could include such information as "use only in well-ventilated areas" or "store in tightly closed containers".
- Basic protective clothing, equipment, and procedures that should be used to work safely with the chemical might also be listed. **These might include "avoid contact with skin," "use eye protection," etc.**

Words, Pictures, Symbols

Special signal words are used on many labels to quickly tell how dangerous the chemical could be. Common signal words and their meanings are:
Danger: can cause immediate serious injury or death. It may refer to a substance that is extremely flammable, corrosive, or toxic.

Warning: can cause potentially serious injury or death.

Caution: can cause potentially moderate injury.

Special Symbols

Special symbols are also used on many labels to depict the kinds of hazards the chemical could present. These symbols appear on labels of containers that have been shipped by truck, rail, or air: the skull-and-crossbones symbol for poison, used to identify toxic substances; flames to indicate flammability; an object blowing apart to warn of explosion danger; and a drip that eats away at a hand or an object to warn of corrosion.

Information sheet -3	Identifying Chemical storage location
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Chemical storage locations Chemicals and their containers must be stored only in facilities approved by the Area Safety and Health Manager and where consideration has been given to the hazardous nature of the pesticides, potential environmental damages, and adequate personal safety and security systems in and around the storage site. Storage sites shall be selected according to the following criteria: Where flooding is unlikely; Where easily accessible by firefighting equipment; Located away from any public building or activity so that if an emergency spillage, fire, or explosion occurs, it would not cause harm to the general population; Located a safe distance away from any potable water supply, streams, lakes, or drainage canals that discharge to water supplies; and Not stored in any facility used primarily as food/feed/fertilizer/seed storage or processing centers.

Self-Check -1	Written Test
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Directions: Answer all the questions listed below. Use the Answer sheet provided in the next page:

1. Explain the Personal protective equipment's . (4 points)
2. What is the objectives of SOPs (4 points)

Note: Satisfactory rating - 5 and 8 points

Unsatisfactory - below 5 and 8 points

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

Answer Sheet

Score = _____

Rating: _____

Name: _____

Date: _____

Short Answer Questions

Information sheet -4	Recognizing and Observing Chemical transport, handling and storage
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Safe driving: load and unloading

Loading and unloading can be dangerous. Machinery can seriously hurt people. Heavy loads, moving or over turning vehicles and working at height can a lead to `injuries death

This guidance should be followed to help avoid problems

Guidance

Loading and unloading areas should be :-

- Clear of other traffic, pedestrians and people not involved in loading and unloading
- Clear of over head electric cables so there no chance touching them, or electricity jumping to earth through machinery, loads or people

- To maintain stability trailers should be packed on firm level ground
- Loads should be spread as evenly as possible, during both loading and unloading. Un even loads can make the vehicle or trailer unstable
- Load should be secured or arranged so that they do not slide around racking may help stability
- Safety equipment must be considered. Mechanical equipment and heavy moving loads are dangerous
- Gauds or skirting place may be necessary if there is a risk of anything being caught in machinery (e.g dock levelers or traffic tail lifts). There may other mechanical dangers and safety procedure to be considered.
 - Ensure the vehicles or trailer its brakes applied and all stabilizers are used. The vehicle should be as stable as possible
 - In some workplaces it may be possible to install a harness system to protect people working at height provide a safe place where drivers can wait of they are not involved Drivers should not remain in their cabs if this can be avoided No-one should be in the loading/unloading area if they are not needed.
 - Vehicles must never be overloaded Over loaded vehicles can become unstable, difficult to steer or be less able to brake.
 - Always check the floor or deck to the loading area before loading to make sure it is safe look out for debris, broken boarding, etc.
 - Loading should allow for safe unloading.
 - Loads must be suitably packaged. When pallets are used. The driver needs to check that.
 - ✚ They are in good condition
 - ✚ Loads are properly secured to them.
 - ✚ Loads are safe on the vehicle. They may need to be securely attached to make sure they cannot fall off.

Transporting, handling and storage of chemicals

- Have bulk chemicals delivered to the farm wherever possible.
- Do not transport chemicals in the passenger area or a boot of a vehicle.

- If transporting chemicals in the back of a ute, use secure containers and tie them down.
- When not in use, store all chemicals in locked, purpose-built chemical store. Chemical storage should provide spill containment and be well ventilated.
- If the yards are away from the main chemical store, use a lockable cupboard or steel locker with spill containment. Do not leave chemicals in the open.
- Children should not be able to access chemicals at any time.
- Keep veterinary chemicals requiring refrigeration in a separate refrigerator from that used for food and drinks (for example, a small, lockable bar-type fridge). Do not use a large lockable fridge as there have been a number of incidents involving children being locked in fridges.
- Return chemicals, including drenches, to the locked store after use.



Forklift Safety

Self-Check -1	Written Test
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Directions: Answer all the questions listed below. Use the Answer sheet provided in the next page:

1. Explain the Personal protective equipment's . (4 points)
2. What is the objectives of SOPs (4 points)

Note: Satisfactory rating - 5 and 8 points

Unsatisfactory - below 5 and 8 points

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

Answer Sheet

Score = _____

Rating: _____

Name: _____

Date: _____

Short Answer Questions

Information Sheet 5	Identifying and observing use, Maintenance and storage of PPE
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PPE and application equipment

Ventilation requirements: Ventilate via mechanical methods (general or local exhaust) to maintain exposure below TLV(s), if applicable. Good industrial hygiene practice dictates that indoor work areas should be isolated and provided with adequate local exhaust ventilation.

Respiratory: None normally required if good ventilation is maintained. If mist is generated during application process, use a disposable mist respirator.

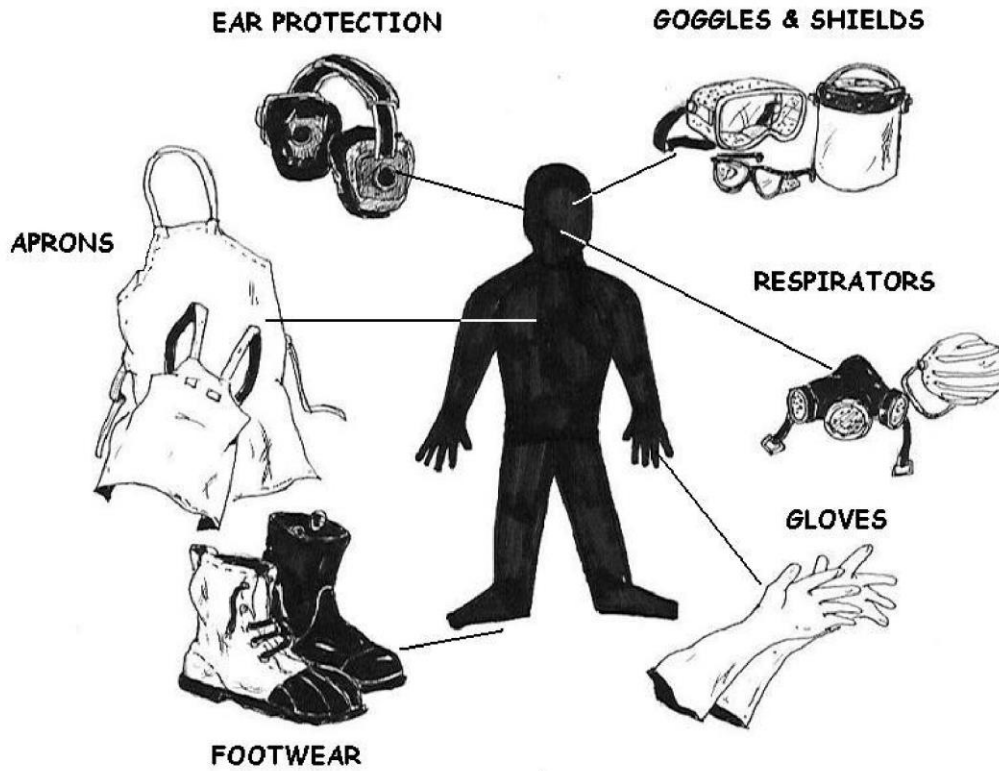
Eye: Wear chemical splash goggles and/or face shield during mixing and when exposed to mist.

Gloves: Wear rubber gloves when handling, using, or applying this product. Special precautions should be taken to ensure that material cannot get inside gloves.

Other protective equipment: None normally required. Use as necessary to prevent exposure.

Safety showers and eyewash stations should be provided in all areas in which this product is stored and/or handled. Persons exposed routinely to this material should shower prior to leaving work each day. Work clothing should be changed daily.

LABORATORY SAFETY EQUIPMENT



Self-Check -1

Written Test

Directions: Answer all the questions listed below. Use the Answer sheet provided in the next page:

1. Explain the Personal protective equipment's . (4 points)
2. What is the objectives of SOPs (4 points)

Note: Satisfactory rating - 5 and 8 points

Unsatisfactory - below 5 and 8 points

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

Answer Sheet

Score = _____
Rating: _____

Name: _____

Date: _____

Short Answer Questions