CropLife SOUTH AFRICA

Responsible Pesticide Use

A Guide for Operators

CropLife SOUTH AFRICA

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INTRODUCTION

This booklet was created by CropLife South Africa to guide you on the safe and responsible use of pesticides. It is important that you understand the contents of this booklet so that:

- we can continue farming sustainably.
- human or animal health is not compromised by pesticides.
- the environment is protected.
- pesticides are used correctly and responsibly.

LEGISLATION

There is specific legislation that deals with pesticides in South Africa. This legislation is primarily contained in the Fertilizers, Farm Feeds, Agricultural Remedies and Stock Remedies Act, 1947 (Act No. 36 of 1947), and the South African National Standard (SANS) 10206*.

There is also legislation that provides for the health and safety of people at work and for the responsible and safe use of hazardous chemicals. This legislation is primarily contained in The South African Occupational Health and Safety Act, Act 85 of 1993, and the Regulations for Hazardous Chemical Agents – 2021.

A few important aspects covered by our country's legislation to take notice of:

Pesticides

- All pesticides must be registered under Act No. 36 of 1947 by the Registrar (Department of Agriculture, Land Reform and Rural Development).
- Pesticides that are not registered in South Africa may not be utilised in the country.
- Pesticides may not be bought, acquired, sold, disposed of, or used to poison dogs, cats, domestic livestock, wildlife, or people.
- Pesticides may not be used for any purposes or in any manner other than what is indicated on their labels.
- Pesticides may not be decanted into containers other than their original containers that are labelled with their original labels. It is unlawful to be in possession of pesticides that are not in their original containers with their original labels and

*SANS 10206 can be acquired *via* www.sabs.co.za

such pesticides may not be used for any purposes, may not be acquired, sold, or disposed of by handing it over to anyone else for any purposes whatsoever.

Health and Safety in the Workplace

- The employer is responsible for establishing what the hazards are in the workplace, implementing the appropriate precautionary measures to protect the workers, to inform workers of the dangers in the workplace, to supply the necessary training to workers who use dangerous materials, to make sure workers know the safety precautions, and to issue protective personal equipment where necessary.
- Employers must also enforce measures that are necessary to protect the health and safety of workers.
- Employees must take reasonable care to protect the safety of themselves and others who may be affected by their work activities and must report any situation which may be unsafe or unhealthy.
- Employees must do their part in ensuring that safe working conditions are maintained and must cooperate with the employer and carry out/obey any lawful order or health and safety rules given to him/her by the employer.
- The South African Occupational Health and Safety Act is based on the principle that dangers in the workplace must be addressed by communication and cooperation between the workers and the employer.
- The workers and the employer must share the responsibility for health and safety in the workplace. Both parties must proactively identify dangers and develop control measures to make the workplace safe.

UNDERSTANDING THE LABEL ON THE PESTICIDE CONTAINER

What is a label?

Before using a pesticide:

- Know and understand its hazards – physical, health, and environmental.
- Know how to work with it safely.

A pesticide label is a hazard communication tool and is very important because it provides information on the specific pesticide's hazards, precautions that must be implemented to ensure safe and effective use of the product, and actions that must be taken in case of exposure to the product or in emergency situations.

You must look at the information on the pesticide label before opening the container and before applying/using the product.

To indicate the hazardous classification of pesticides, the labels must contain specific core elements that you must take note of to ensure your own safety, and that of your fellow workers.

LABEL CORE ELEMENTS

1. Product Identifier

The label identifies the product in the container – name of the product e.g., Acetone.

2. Supplier Identification

The name, address, and telephone number of the supplier of the pesticide.

3. Signal Word

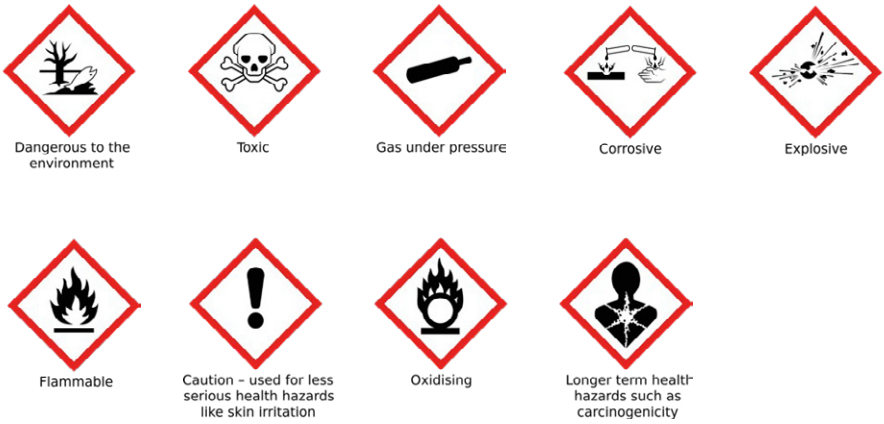
DANGER (for more severe hazards) or WARNING (for less severe hazards). Only one of the two will appear on the label.

4. Pictograms

A pictogram is a graphical presentation/picture of a pesticide's hazard.

Pictograms are composed of black symbols on a white background with a red diamond frame.

Nine pictograms are used to immediately alert the user/handler of the pesticide to the hazards of the product that they might be exposed to.



Each pictogram represents a specific type of hazard – physical, health or environmental.

The hazard information associated with each of the nine pictograms are described in Table 1:

TABLE 1: PICTOGRAM HAZARDS

PICTOGRAM	HAZARD/S	RISK
 Health (chronic toxicity)	Carcinogenicity	May cause or suspected of causing cancer.
	Mutagenicity	May cause or suspected of causing genetic effects.
	Reproductive Toxicity	May damage or suspected of damaging fertility or an unboron child.
	Respiratory Sensitiser	May cause allergy or asthma symptoms or breathing difficulties if inhaled.
	Target Organ Toxicity	Damage to organs or may cause damage to organs.
	Aspiration Toxicity	May be fatal/harmful if swallowed and enters airways.
 Corrosive	Skin Corrosion	Severe burns if in contact with skin.
	Serious Eye Damage	Serious eye damage if in eyes.
	Corrosive to Metals	Damage to metals resulting in corrosion.
 Exclamation Mark	Irritant – Skin and Eyes	May cause reversible inflammation or other discomfort to the body – itching, redness, etc.
	Skin Sensitiser	Could cause an allergic skin reaction.
	Acute Toxicity	Could cause harm/adverse effects following short term exposure if ingested, in contact with skin or inhaled.
	Narcotics Effects	Could depress the central nervous system causing drowsiness or dizziness.
	Respiratory Tract Irritation	Could cause coughing, pain, choking, and breathing difficulty.
	Ozone Layer Hazard	May damage the earth's ozone layer.

PICTOGRAM	HAZARD/S	RISK
 **Flammable** Note: Generally, the flame is not applicable to pesticides except in cases of flammable products.	Flammables	Could ignite and continue to burn when brought into contact with an ignition source resulting in injury or property and environmental damage.
	Pyrophoric	Could cause fires and explosions resulting in injury, property, and environmental damage.
	Self-Heating	
	Emits Flammable Gas	
	Self-Reactive	
	Organic Peroxide	
 **Oxidising**	Oxidisers	Oxidising materials could speed up the development of a fire and make it burn more intensely causing injury as well as property and environmental damage.
 **Explosive** Note: Generally, the exploding bomb is not applicable to pesticides.	Explosive	Could cause fires and explosions resulting in injury and damage to property.
	Self-Reactive	
	Organic Peroxides	
 **Chemicals under pressure**	Gases under pressure.	Gases can be toxic, flammable, corrosive or inert which poses the risk of fire, asphyxiation, chemical burns, or poisoning.

PICTOGRAM	HAZARD/S	RISK
 Acute toxicity	Acute Toxicity – Oral, Dermal or Inhalation: Fatal or Toxic.	If ingested, contact with skin, or inhaled – illness, serious harm, and the possibility of death.
 Environment	Aquatic Toxicity	If in water, causes harm to fish, crustaceans and water plans resulting in mortalities or longer-term effects like inhibition of growth or reproductive problems.

Most pesticides can have more than one hazard, in which case it is necessary to use two or more of the nine pictograms simultaneously on the label to alert users to these dangers.

Pictograms are harmonised chemical hazard communication tools that equip persons with essential information before the pesticide is handled or used.

5. Hazard Statements

Hazard statements are standard phrases that describe the **nature and severity of a chemical hazard**.

Each hazard statement is designated a code, starting with the letter H, and followed by 3 digits: Hxxx

- **H2xx: Physical hazards**

  e.g. H228: Flammable solid.

- **H3xx: Health hazards**

  e.g. H319: Causes serious eye irritation.

- **H4xx: Environmental hazards**

  e.g. H401: Toxic to the aquatic environment.

The H code is used for reference purposes only.

The actual phrase appears on labels and the code does not have to be included on labels, however it must be included on the safety data sheet.

The hazard statements are associated with a specific hazard pictogram. The hazard statements indicated below are associated with the corrosive pictogram:

H318: Causes serious eye damage.

H290: May be corrosive to metals.

H314: Causes severe skin burns and eye damage.

Pesticide users should always see **the same statement for the same hazards**, no matter what the product is or who produces it.

To inform the user, all the applicable hazard statements will appear on the product's label.

6. Precautionary Statements:

These statements help to explain how to handle a pesticide's hazard/s and what precautions to take to prevent adverse effects resulting from such hazards.

The types of precautionary statements are 'general', 'prevention', 'response', 'storage' and 'disposal'.

Precautionary statements are associated with specific hazard statements and pictograms. Each precautionary statement is designated a code, starting with the letter P and followed by 3 digits: Pxxx. For example: P265: Do not touch eyes. As with the hazard statements, these codes do not need to appear on the label, but must be present on the safety data sheet.

Examples of precautionary statements:

GENERAL:
Keep out of reach of children.
Read carefully and follow all instructions.

RESPONSE:
Get emergency medical help immediately.
In case of fire: Use powder for extinction.

PREVENTION:
Do not touch eyes.
Keep away from sparks and open flames.

STORAGE:
Store locked up.
Protect from sunlight.

DISPOSAL:
Dispose of contents/container in accordance with national and local regulations.

7. Ingredients with significant hazards

The chemical identity of all ingredients contributing to the final GHS classification of the remedy needs to be disclosed on the product label.

8. Active ingredient/s

The chemical name/s of the active ingredient/s in the pesticide, as well as the amount of it in the formulation, specified as grams/kilogram or grams/litre.

The active ingredient(s) is the ingredient(s) in the formulation that is used to eliminate, control, or repel the pest.

9. Additional Information

The label producer (manufacturer/importer) may provide additional instructions or information that it deems helpful. It may also list any other important hazards not already mentioned on the label.

Other supplementary information may include directions for use, expiration date or fill date, the percentage of ingredients, batch number/s, net mass/volume of the product, etc.

10. Emergency Number/s:

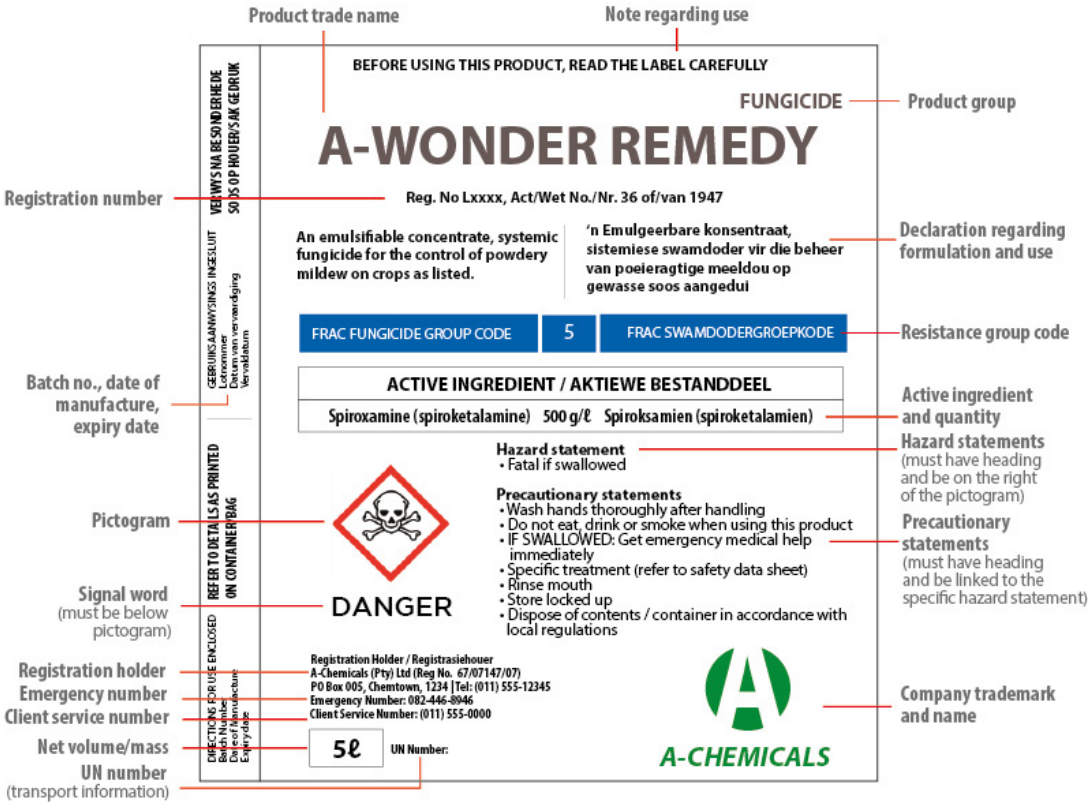
An emergency number that can be used in case urgent product information, information on the appropriate use or information on the hazards of the product is needed.

Final notes on the pesticide label content:

- The South African legislation requires that all labels display **at least two** precautionary statements to guide the user to prevent personal harm caused by the pesticide, prevent harm to the general population, the environment, and to animals.
- The other relevant precautionary statements must be included in the product's safety data sheet (SDS).
- The following precautionary statements are important for pesticides and will be included on most labels:
  - If medical advice is needed, have product container or label at hand.
  - Keep out of reach of children.
  - Read carefully and follow all instructions.
- The following additional advice for safe handling is also often included on the label:
  - Keep locked away.
  - Wear appropriate protective clothing as described in the SDS.
  - Triple rinse empty container, pour the rinsate into spray tank, puncture to make the container useless and recycle.
  - Do not apply in close proximity to open water bodies.
- It is important to note that the expiration date printed on the container, or the label, does not indicate that the hazard classification of the product will decrease after this date. If only a date of manufacture is printed on the container or the label, the product expires after two years; once again, the hazard classification of the product will not decrease after the two-year period.

11. Example of a pesticide label:

An example of a pesticide label that illustrates all the core label elements is included below:



READING AND USING THE PESTICIDE LABEL IN THE WORKPLACE

Pesticides are labelled to help identify their toxicity and hazards.

A pesticide container label consists of several panels of information. If all the information cannot fit on these container panels, then additional information may be found in a separate booklet.

There could also be stickers, tags, seals, leaflets, brochures, and wrappers on or attached to a container.

It is important that the label is always readable and not damaged.

If a label becomes difficult to see and read, a new label must be obtained from the supplier and attached to the pesticide container.

The pesticide label will supply specific information about the exact product you are using.

1. How to read the panels of the pesticide label:

- Fist always determine what the name of the product in the container is – read the name and check if it is the correct product that is required for use.
- Determine the product hazards by checking the pictograms and associated hazard statements.
- Read the signal word and remember that "DANGER" means a severe hazard.
- Determine the pesticide type – this element is a description of the intended purpose of the product. Some of the most used pesticides include herbicides, insecticides, and fungicides.
- Determine the type of formulation – the physical form of the product such as dust, liquid, wettable powder, etc.
- Read the precautionary statements that inform you of the different things that must be done to ensure the health and safety of the user – what preventative measures to take when using the pesticide, what to do in case things go wrong (emergencies) and how to safely store and dispose of the

pesticide product. An emergency number is available on the label that can be called in case of an accident.

- Make sure that the above-mentioned preventative measures are in place before the container is opened and the product is used.
- Read the directions for use and any additional first aid measures included on the label carefully.
- Check for any personal protective equipment (PPE) that is needed when using the product – this could be included in the label's precautionary statements and will always be described in the product's safety data sheet (SDS).
- Put on the required PPE and prepare for using the pesticide.
- Use the pesticide in the container as instructed on the label.
- When work has been completed, store the pesticide as described on the label and in the SDS.
- Handle, store and dispose of the pesticide's waste and storage containers as described on the label and in the product's SDS.
- Wash and clean the equipment, the used PPE and yourself as indicated on the label and described in the SDS.

2. Make sure that you are in control:

- Always understand the hazards of the pesticide.
- Re-read the label before using or reusing a pesticide, don't rely on your memory.
- Never remove a pesticide label from the container or use unlabelled pesticides.

3. Labels – directions for use:

A pesticide should never be used in a manner that contradicts its label. The pesticide label is a legal instruction in terms of Act No. 36 of 1947, where any off-label handling is illegal and punishable by law.

The directions for use on the label tell you how to properly use a product to get the best results without harming yourself, others, and the environment.

The label's directions for use will tell you:

- what pests the product is registered to control.
- where the product can be used (plants, animals, locations).
- how to apply the product.
- how much product to use.

- when the product should be applied.
- how often to apply the product.
- how to manage resistance.
- how soon the crop can be used or eaten after an application.
- when people and animals can re-enter a treated area after application.

4. Test yourself: Does a pesticide label contain the following information?

i.	What's in the product (hazardous ingredients)	Y or N
ii.	How toxic/harmful the product is	Y or N
iii.	How the product can be used safely	Y or N
iv.	What to do if the product gets in a person's eyes, mouth, lungs or on skin	Y or N
v.	Who to call in case of emergencies involving the product	Y or N
vi.	How and where to use the product	Y or N
vii.	Appropriate firefighting measures	Y or N
viii.	What to do with leftover product not needed anymore	Y or N
ix.	Manufacturer's contact information	Y or N
x.	Information on the pesticide type	Y or N

NOTE: The answers are included in the Appendix (p 69).

Read the entire label.

The label is the LAW!

The label describes where and how to properly use the product.

SAFETY DATA SHEETS (SDSs)

1. What is a safety data sheet (SDS)?

The SDS is a summary document and hazard communication tool that provides information about a product, especially:

- its potential hazards (hazard classification)
- its properties
- its safe use procedures (safety precautions)

The SDS describes the measures and equipment that enables the safe use/ work with the specific pesticide.

The supplier of the product is responsible for preparing the SDS and making it available to users.

The SDS must be available in the workplace – employees that work with the product must have access to the SDS.

The SDS contains 16 sections, each with specific information to advise the user. The first eight sections of the GHS safety data sheet cover areas including:

- **The identity of the substance or mixture and the supplier**
- **Its hazards**
- **First aid measures**
- **Handling and storage**
- **Exposure controls and personal protection**

The last eight sections of the GHS safety data sheet cover areas including:

- **Physical and chemical properties**
- **Stability and reactivity**
- **Disposal and transport information**
- **Toxicological information**
- **Ecological information**

2. Purpose of the SDS for workers:

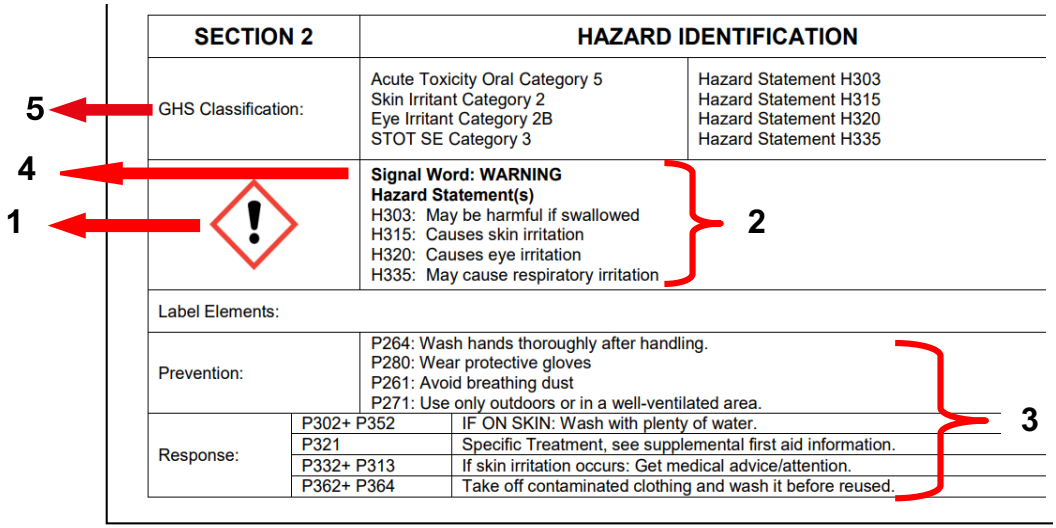
For workers, the SDS has four main purposes. It provides information on:

- Identification: of the pesticide that will be handled.
- Hazards: physical (fire and reactivity) and health.
- Prevention: steps you can take to work safely and to reduce or prevent exposure.
- Response: appropriate responses in various situations like emergencies (e.g., when first-aid treatment is necessary, fire, accidental releases, and spills, etc.).

3. Relevant sections in the SDS for workers:

The following sections in the SDS are important for persons who handle and use the pesticide:

- **Section 2 Hazard(s) Identification –** the specific hazards associated with the product is described in this section e.g.:



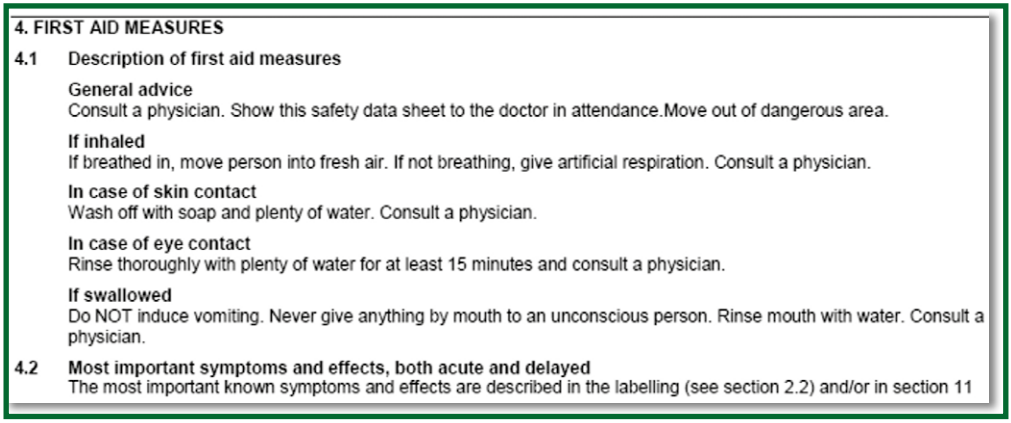
SECTION 2	HAZARD IDENTIFICATION	
GHS Classification:	Acute Toxicity Oral Category 5 Skin Irritant Category 2 Eye Irritant Category 2B STOT SE Category 3	Hazard Statement H303 Hazard Statement H315 Hazard Statement H320 Hazard Statement H335
	Signal Word: WARNING **Hazard Statement(s)** H303: May be harmful if swallowed H315: Causes skin irritation H320: Causes eye irritation H335: May cause respiratory irritation	
Label Elements:		
Prevention:	P264: Wash hands thoroughly after handling. P280: Wear protective gloves P261: Avoid breathing dust P271: Use only outdoors or in a well-ventilated area.	
Response:	P302+ P352	IF ON SKIN: Wash with plenty of water.
	P321	Specific Treatment, see supplemental first aid information.
	P332+ P313	If skin irritation occurs: Get medical advice/attention.
	P362+ P364	Take off contaminated clothing and wash it before reused.

1 = Hazard Pictograms
2 = Hazard Statements
3 = Precautionary Statements
4 = Signal Word
5 = GHS hazard classification

- **Section 4 First Aid Measures –** to provide workers and farmers with enough information to deliver immediate and appropriate first aid to anyone adversely affected by the pesticide if:
  - inhaled
  - ingested
  - in contact with skin
  - in contact with eyes

This section also supplies information on the symptoms of exposure, as well as if any immediate medical attention/special treatment will be required after exposure.

Examples:
Eye contact – Immediately wash out the eyes with plenty of running water or eyewash solution. Hold the eyelids open and wash for at least 15 minutes.
Ingestion – Rinse the mouth. Do **not** induce vomiting.



4. FIRST AID MEASURES

4.1 Description of first aid measures

General advice
Consult a physician. Show this safety data sheet to the doctor in attendance.Move out of dangerous area.

If inhaled
If breathed in, move person into fresh air. If not breathing, give artificial respiration. Consult a physician.

In case of skin contact
Wash off with soap and plenty of water. Consult a physician.

In case of eye contact
Rinse thoroughly with plenty of water for at least 15 minutes and consult a physician.

If swallowed
Do NOT induce vomiting. Never give anything by mouth to an unconscious person. Rinse mouth with water. Consult a physician.

4.2 Most important symptoms and effects, both acute and delayed
The most important known symptoms and effects are described in the labelling (see section 2.2) and/or in section 11

- **Section 6 Accidental Release Measures –** includes emergency procedures, protective equipment and proper methods of containment and clean-up in case of spills.

Example – methods for spill clean-up:

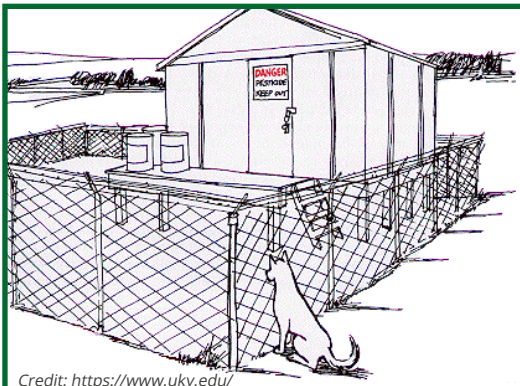
For small spills, soak up with damp non-combustible absorbent material. Sweep together and place into a labelled waste container with a shovel (using spark-resistant tools). Cover for subsequent disposal.

Dispose of collected spilled material as hazardous waste. Clean the contaminated surface with water to remove any residues of the spilled product. Keep the wash water out of drains, sewers, and waterways.

For large spills, do not wash away into sewers. Contain/dyke or cover to prevent dispersal using absorbent socks, pillows or pads supplied in a spill kit. Collect the spilled product and place it into suitably labelled containers for proper disposal as hazardous waste.

- **Section 7 Handling and Storage –** to provide workers with the precautions necessary for safe handling and storage of the product.

Example: Storage area



Credit: https://www.uky.edu/Ag/Entomology/PSEP/7transportation.html

- Separate storage facility for pesticides and fertilizers
- Limit access
- Lock up
- Put up warning signs
- Ventilate area well
- Prevent leakage
- Keep containers tightly closed
- Check storage area regularly

- **Section 8 Exposure Controls and Personal Protection –** describes the engineering controls (specific methods or mechanical equipment) to implement to ensure exposure is reduced to a minimum as well as the personal protective equipment (PPE) that is needed to work safely with the product.

Example:
Ventilation:

- **Natural:** Opening specific windows to increase airflow through the building/use only outdoors.
- **Mechanical:** Installing a **local exhaust ventilation/extraction** system close to the source of exposure to forcefully remove contaminated air from the area.

- **Section 13 Disposal Considerations –** describes how to handle and dispose of product and container waste in a safe and legal manner.

Example: How not to dispose of the product waste.

- Do NOT dump pesticide waste into drains (e.g., storm water or sewerage).
- Never empty pesticide containers into rivers, dams, or streams.
- Never burn or bury containers.
- Dispose of empty containers responsibly.

Credit to illustrator: Chris O'Connor and https://ipm.ucanr.edu/WATER/U/storedispose.html

4. Final notes on the importance and use of the SDS:

Workers need the information contained on the SDS to protect themselves from exposures to pesticides and to work safely with such products.

The SDS effectively communicates information about the hazards of the particular pesticide that is being used or handled in the workplace.

The SDS informs employees on what to do if a spill, accident, or emergency occurs with the pesticide.

Employers must provide employees with ready/easy access to SDSs for the hazardous products used in their workplace.

Employees must know where to look in the SDS (the important and applicable sections) to find the information discussed above so that they can protect themselves adequately against the hazards of the pesticide and so that they can react appropriately in case of emergencies.

PERSONAL PROTECTIVE EQUIPMENT (PPE)

PPE is equipment worn whilst working with the pesticide that helps to minimise exposure to the hazards that could cause serious workplace injuries and illnesses.

PPE serves to protect certain body parts where a pesticide can easily enter the user's body e.g., the eyes, skin, nose, mouth, feet, hands, head, etc., and should always match the hazard/s of the pesticide.

The supplier can only **make suggestions** (on the label and in the SDS) of the **PPE** which would protect against exposure. It is therefore best to conduct a **risk assessment** to ensure that the correct controls are selected and implemented. **Different pesticides and circumstances will require different PPE.**

1. Eye and Face Protection:

PPE here includes safety goggles and face shields and should be used for tasks that can cause **eye damage or loss of vision, sprays of toxic liquids, splashes, and burns**.

Full facial shield when handling pesticides that are fatal or toxic if ingested, or that can come in contact with skin, or that could cause skin corrosion (burns).

Safety goggles protect the eyes against splashes of corrosive and toxic pesticides.

Safety glasses protect the eyes against splashes of pesticides that could cause eye irritation.

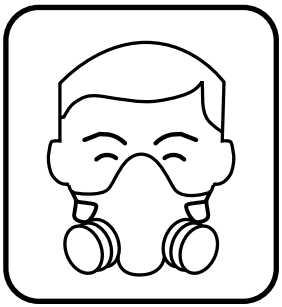
Eye wear should cover from the eyebrow to the cheekbone, and across from the nose to the bony area on the outside of the face and eyes. When eyewear/ glasses sit halfway down the nose, protection from the hazard is reduced.

In high exposure situations when both face (skin) and eye protection are needed, a face shield should be worn over goggles.

Special care should be taken of the headband of eye protection equipment as it is often made of a material which readily absorbs and holds chemicals. Make sure you have several spares and change them often or use a chemical-resistant strap. If possible, wear the strap under the head covering (e.g., hat).

2. Respiratory Protection:

This PPE protects workers from breathing contaminated and/or oxygen-deficient air as well as harmful dusts, fogs, smokes, mists, gases, vapours, and sprays. These hazards may cause cancer, lung impairment, diseases, or death.



Full-face dual cartridge and reusable

Air purifying respirators have reusable particle filters, chemical cartridges, canisters, or a combination of these that remove contaminants from the air by passing ambient (surrounding) air through the air purifying element before it reaches the user. Most have negative pressure; the user pulls air through the filter when he/she inhales.

The face-piece covers the face and eyes, which also offers eye protection.

There are different types of respirators.

Half-mask dual cartridge and reusable

Each type will come with its own instructions which must be followed.

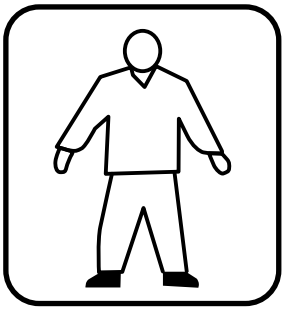
Always wear a respirator while mixing or filling highly toxic pesticides or when repeatedly exposed to small amounts of moderately toxic pesticides for a day or several days.

Filtering face-piece respirators (disposable half mask) – particle filters are suitable for protection against harmful solid particles e.g. dust, smoke, fibres, and fumes.

Dispose of masks marked “not reusable” after a single shift (8 hours).

3. Body Protection:

This PPE protects the body parts e.g. the torso, chest, abdomen, legs, and arms from exposure to harmful pesticides.



Work overalls, preferably made of thick and impenetrable cotton, provide a barrier against the chemical hazards of pesticides.

Aprons made of impenetrable plastic (chemical resistant) protect the body against corrosive liquids that are poured and that could splash.

Wear aprons when repairing or cleaning spray equipment and when mixing or loading. Aprons can be easily worn over other protective clothing and are comfortable enough for use in warm climates.

A poncho is a one-piece clothing item with a built-in hood. It is open on the sides but offers protection in the front and back.

A chemical resistant hood or wide-brimmed hat should be worn to protect against spray drift and to further help keep pesticides away from the neck, eyes, mouth, and face in addition to the face mask and goggles.

A waterproof hat and cape must be worn during aerial spraying.

4. Hand Protection:

Gloves protect the forearms, hands, and fingers from potential hazards, including skin absorption of harmful substances, chemical or thermal burns, bruises, abrasions, cuts, and punctures.

Gloves that reach up to the elbows and are preferably made of thick rubber; it should not have a soft inner lining. Sleeves should be drawn over the gloves to keep the pesticide from running down the sleeves and into the gloves.

When working with hands above the head, roll the glove tops into cuffs. This helps to prevent the pesticide from running down the gloves to the forearms. As an extra safety measure, duct tape around where the glove and sleeve meet, is recommended.

5. Foot Protection:

Safety shoes and rubber boots protect the legs, feet, and toes from spilled corrosive, toxic, and skin irritating substances and from impact when handling (lifting or moving) heavy objects like steel drums.

Foot protection should be used when pouring, washing equipment, rinsing containers, or spraying pesticides.

Additional workplace risks that will require the wearing of foot protection include:

- Ankle injury from uneven walking surfaces or rough terrain.
- Slips and falls on slippery walking surfaces.
- Exposure to liquids that may penetrate the footwear, causing damage to the foot and the footwear.

Wear unlined chemical-resistant boots which cover your ankles when handling or applying moderately or highly toxic pesticides.

Long length rubber boots. The trouser pants pipes must be draped over the boots so that no pesticide can drip into the boots.

CARING FOR YOUR PERSONAL PROTECTIVE EQUIPMENT (PPE)

Without proper maintenance, the effectiveness of PPE cannot be assured. Maintenance should include:

- PPE inspection
- cleaning
- repair
- proper storage

The most important part of caring for PPE is continuous inspection of the PPE. If carefully performed, inspections will identify damaged or malfunctioning PPE before it is used. PPE that is not performing up to manufacturer's specifications, such as eye wear with scratched lenses that do not allow the user to see properly, should be discarded and replaced.

Wearing poorly maintained or malfunctioning PPE could be very dangerous as it gives the workers a false sense of security - they think they are protected, but in reality, they are not.

1. Safe Storage:
Store protective clothing away from normal clothing, preferably in a lockable cupboard (locker) or closet. Store in a clean and dry place.

PPE must also be easily accessible in case of emergencies.

2. Cleaning:

Eyewear:

Clean safety glasses and goggles regularly with mild soap and water. Wash lenses with water before wiping to prevent scratching. If clean water is not available, blow dust and grit from lenses before wiping.

Respiratory protection:

After using respirators, clean and disinfect them according to the manufacturer's instructions. Also check for holes, cracks, deterioration, and any other problems that could interfere with the effectiveness of protection.

Foot protection:

Wipe wet or dirty shoes with a clean cloth or paper towel. Change socks during the lunch break to keep feet and shoes dry if feet sweat a lot.

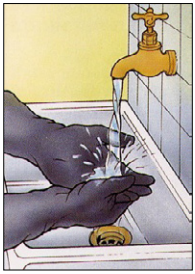
Hand protection:

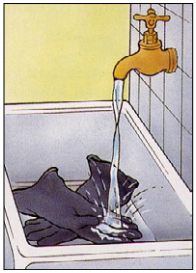
Be sure that the gloves you plan to wear are clean. Carefully inspect the gloves before you put them on. Look for cracks, tears, holes, swelling or other damage. Pesticides can pass through even the smallest hole. Discard the gloves if any damage is noticed. Bandage/cover any minor cuts, scrapes or wounds on hands before putting on your gloves.

Never touch contaminated gloves with bare hands.

Immediately remove contaminated gloves if the pesticide gets inside. Thoroughly wash your hands and put on clean gloves before continuing with work.

Credit: https://safetyresourcesblog.files.wordpress.com/2014/10/use-and-care-of-protective-gloves.pdf





Wash reusable gloves with soap before removing from hands.

Remove from hands and wash the inside and outside with soap and water. Air-dry thoroughly before using again.

Never wash or reuse disposable gloves.

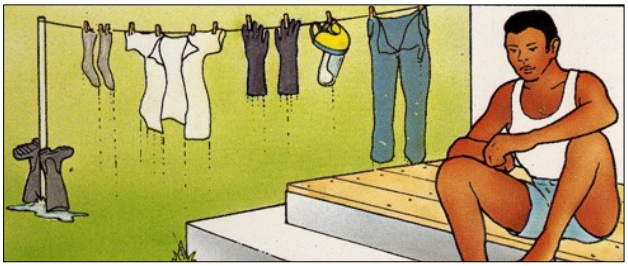
Wash hands thoroughly after gloves have been removed.

Work clothing (e.g., overalls):
Always assume that clothing worn while working with pesticides has been contaminated.

Work clothing should be washed after each use. The longer pesticide contaminated clothing remains unwashed, the more difficult the process of pesticide removal becomes.

Do not wear work clothing that has not been washed or decontaminated.

Always wash the clothing with soap and warm water, separately from any other clothing.



Hang the washed work clothing out to dry properly. If it cannot be washed, it must be disposed of.

3. Inspection:

PPE must be inspected before and after each use. Employees should check the following basics:

- Footwear: proper fit, contamination, loss of water resistance, damage.
- Gloves: proper fit, contamination, loss of elasticity, damage (tears, holes, cuts, etc.).
- Respiratory protection: proper fit, damage or missing components, condition of filters.
- Eye wear: proper fit, scratches, contamination, cracked or broken parts.
- Work overalls: proper fit, cleanliness, damage (e.g., tears, rips, etc.).

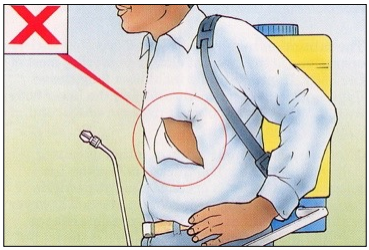
4. Final notes on the management and use of PPE:

Mixing pesticides normally requires more PPE than applying them (except fumigation). This is because the mixing process requires the handling of the pesticide in its most concentrated form.

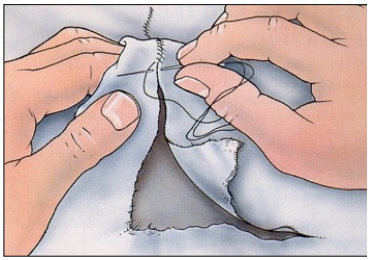
Responsibly using all PPE that you are provided with on the job is the best way to ensure that injury or illness in the workplace is prevented.

Even for those jobs that "only take a few minutes", you should never not wear the required PPE.

Take responsibility for looking after your own PPE:



Carefully check PPE and equipment thoroughly for damage.



If PPE is damaged it should be mended or replaced. Damaged or contaminated gloves must immediately be discarded.

Think of your PPE as a type of **support system** for the work your job requires you to do.

Remember that PPE helps us perform an activity or task in a safer way.

Never get complacent and see your PPE as an add-on. PPE is a must, a non-negotiable component of your work environment.

Providing employees with PPE shows that the employer takes their employees' health and safety into consideration and cares about them.

By providing PPE to employees, employers are fulfilling their responsibilities and adhering to the requirements of the South African Occupational Health and Safety Act.

PPE provides peace of mind to both the employer and the employee.

PERSONAL HYGIENE WHEN WORKING WITH PESTICIDES

Personal hygiene is the best way of dealing with skin contact situations, especially hand contact.

Wash your hands (with soap and cold water) before putting on gloves.

NOTE: The benefit of washing with cold water is that it keeps skin pores closed, preventing pesticide residues from entering the body, whereas warm water results in the opposite.

Wash your gloved hands before removing the gloves and as often as necessary whilst working.

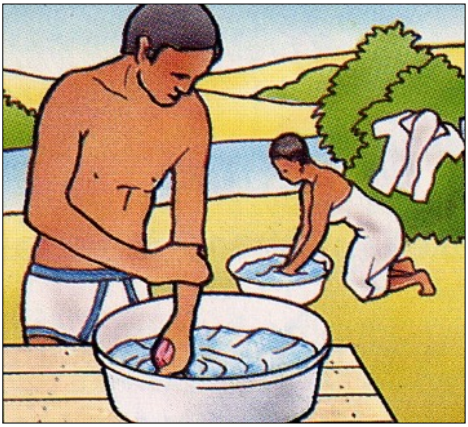
The hands and forearms should be thoroughly washed with soap and water after removing the gloves.

Taking a shower or washing when your work is done is a very effective way of cleaning yourself and making sure that you do not contaminate other people that you come into contact with.

It is important to always have clean water available when handling pesticides.

If you handled, mixed, or applied pesticides, wash yourself thoroughly before eating, drinking, smoking, or using the toilet.

Remember, never touch your face or any bare skin with dirty or contaminated hands or gloves.



Wash or shower thoroughly at the end of each day's spray operation or shift.

Each operator must have their own soap, towels, and water container (if no running water is available).

The water used for washing must never be disposed of into any water source such as a river, dam, stream, or the sewerage system. Decant this wash water over a dirt road or open soil in a fallow land.

EXPOSURE TO PESTICIDES

Hazard versus risk:
Chemicals, including pesticides, have intrinsic hazards. Hazards are the intrinsic potential of a substance to cause harm or adversely affect people or the environment.

Hazard definition: any source of potential damage, harm or adverse health effects on something or someone.

The pictograms indicate what the hazards of a pesticide are.

- Flammable
- Toxic
- Harmful to health e.g., causing irritation

When working with pesticides, there is the **risk of exposure** to the hazards resulting in harm to the operator, the environment or to infrastructure.

Risk definition: Risk is the chance or probability that a person will be harmed or experience an adverse health effect if exposed to a hazard.

Example: Some of the RISKS associated with exposure to A-WONDER REMEDY include:

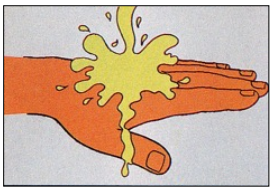
- Fire in case of a spill when a source of ignition is present.
- Fatal if swallowed.
- If splashed onto skin, the skin could become red, painful, and sensitive. Skin rash or blistering are also possible.

Most pesticides are harmful, and some could be toxic.

Toxicity is the capacity of a pesticide to cause harm to a living organism. Some pesticides are inherently more poisonous than others. In all cases, the toxicity is dose related. For example, the more toxic the pesticide, the smaller the dose required to cause harm.

When a person has been 'exposed' to a pesticide it means that the pesticide has entered or come into contact with parts of their body. Before injury/ illness can occur (risk resulting from exposure), the pesticide must come into contact or enter the body.

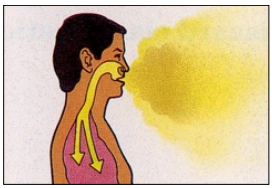
A person can be exposed to pesticides in three ways (the exposure routes).



Skin

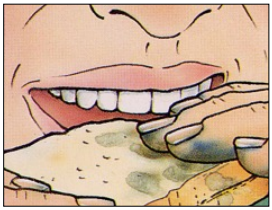
Eyes

Dermal exposure – through the skin or eyes. This is the most common route of exposure. People can be exposed to a splash or mist when mixing, loading, or applying the pesticide. Skin contact can also occur when you touch a piece of equipment, protective clothing, or surface that has pesticide residue on it.



Lungs

Inhalation exposure – through the nasal tract into the lungs. This may happen when working near powders, airborne droplets (mists) or vapours. Pesticides with a high inhalation hazard will be labelled with directions to use a respirator.



Mouth

Oral exposure – by mouth/ingestion. This is a less common way of exposure, but it can result in the most severe poisonings. Examples include workers accidentally drinking a pesticide that has been put into an unlabelled bottle or beverage cup/container (including soft drink cans or bottles), or unintentionally ingesting the pesticide by not washing their hands before eating/smoking.

The risk of a pesticide to cause harm can be high or low, and depends on two things:

- Exposure – how much of the pesticide entered the body and how long did the exposure last?
- The hazard/s of the pesticide (including its toxicity).

Example:
If a pesticide can cause eye corrosion (hazard) but you wear goggles so it won't get in your eyes (prevention of exposure), the chances of causing serious damage to the eyes (risk) will be low.

Exposure to pesticides may produce external or internal injury. Any of the following symptoms may be an indication that the person has been poisoned:

- Headache.
- Dizziness.
- Nausea and vomiting.
- Tremors (shaking) of tongue and eyelids.
- Salivation (excessive salivation and dripping from the mouth).
- Cramps in the abdomen and muscles.
- Sweating and rapid, shallow breathing.
- Weak muscles.
- Anxiety (feeling stressed) and accelerated pulse rate.
- Blurred vision (cannot see properly) and totally constricted pupils.

Pesticides often contain more than one hazardous ingredient – each one may have a different hazard. Look at the pictograms and hazard statements on the label as well as at the signal word so that you know the hazards of the product that you will be working with.

PESTICIDE EMERGENCIES

Although accidents and emergencies involving pesticides are rare, unfortunately they do occur. Many pesticide accidents can be traced to carelessness or misuse.

Pesticide emergencies could include any of the following:

- Poisoning of people and animals.
- Pesticide fires.
- Spills.
- Environmental pollution.
- Damage to non-target plants.

It is important to be ready and prepared to react correctly in case of an emergency. The information in the SDS will assist employers and employees to appropriately react to pesticide emergencies so that potential damage or harm is prevented or minimised.

First aid/Decontamination kits:
This equipment must be available at all times in the workplace – this is a legal requirement.

The General Safety Regulations of the Occupational Health and Safety Act in the Annexure, describes the minimum contents of a first aid box. SANS 10206 also prescribes that two operators in each team must be trained in basic first aid.

1. Actions to be taken in case of operator exposure to a pesticide:
Appropriate first aid treatment **depends on the pesticide** used. The label has precautionary statements regarding first aid. Here is some general advice regarding basic treatments. The advice does not substitute the label directed first aid treatment, nor medical advice or treatment.

Step one in any poisoning emergency is to prevent further exposure and to make sure the victim is breathing – then call emergency medical personnel or a Poison Information Center.

Then do the following:

Dermal contact
Immediately remove all of the contaminated clothing. Drench the skin with water (shower, hose, faucet, pond, etc.). Thoroughly wash the pesticide off the affected area of contact (skin and hair) with soap and water. Do not scrub or rub hard. Wrap the person in a blanket. Later, discard contaminated clothing or thoroughly wash it separately from other laundry.

Inhalation into the lungs
If the victim is in an enclosed area, wear an appropriate respirator when removing the person from the contaminated area. Move the person to where he/she can comfortably breathe fresh air. Loosen clothing around throat and neck to assist breathing.

Apply artificial respiration if breathing has stopped or is irregular and keep the victim as quiet as possible. Important: no mouth-to-mouth artificial respiration should be performed on a poisoned patient but an artificial respirator pump must be used. If the victim is convulsing, watch breathing and protect the person from falling and striking their head. Pull the chin forward so that the tongue does not block the air passage. Wrap patient in blankets but do not overheat.

Eye contact

Eye membranes absorb pesticides faster than any other external part of the body. Eye damage can therefore occur in a few minutes with some types of pesticides.

It is very important to wash out the affected eye/s as quickly but as gently as possible. Hold the eyelids open and wash eyes with a gentle stream of clean running water immediately. Continue washing for at least 15 minutes.

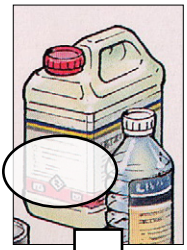
Cover the eye with a clean, sterile pad and take the person to the hospital immediately.

Chemical burns on the skin

Immediate action is extremely important. Remove contaminated clothing and wash skin with large quantities of cold running water. Immediately cover the affected area loosely with a clean, soft cloth. **Do not use** ointments, greases, powders, or other drugs as first aid treatments for chemical burns. Take the person to the hospital immediately.

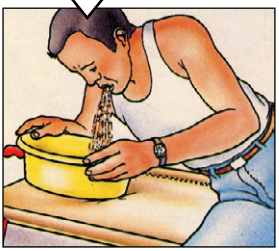
Oral intake (by mouth)
If the pesticide is still in the mouth, wash it out with plenty of water. Do not induce vomiting or give the person anything to drink unless the label expressly advises to do so or if emergency personnel on the phone tells you to do so **– check the label**.

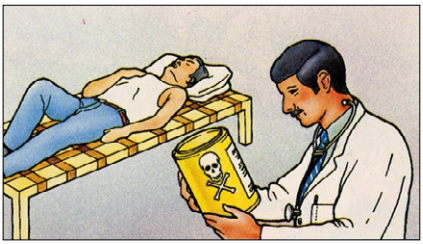
It will depend on what the person has swallowed; some petroleum products or corrosive poisons will cause more damage if the person is made to vomit.



After exposure, take the person to a doctor, clinic, or hospital immediately.

Always take the pesticide container or label and the SDS of the pesticide with you to show the nurse or doctor.



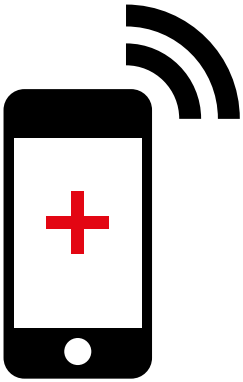


Make sure that you know where your nearest clinic, doctor or hospital is located. The telephone numbers must be available at all times.

You can also phone these numbers at any time should you need help or advice about poisoning:

Poison Information Help Line of the Western Cape: 0861 555 777

Griffon Poison Information Centre: 082 446 8946



Correct and prompt action is crucial when someone is exposed to a pesticide. The longer a person is exposed, the more the product is absorbed by the body resulting in more harm being caused.

2. Actions to be taken in case of fire:

Flammable pesticides must be handled with great care as fires pose a special hazard in pesticide storage areas.

Check the pictograms to determine if a pesticide product is flammable:

Flammable pesticides typically include the following precaution in the label statement: "Do not use or store near heat or open flame."

To reduce the risk of fire, make sure that flammable pesticides are always stored and used away from any type of ignition source. Ignition sources could include:

- hot surfaces
- radiant heat
- naked flames
- electric arcs
- sparks from mechanical friction

Pesticides containing oils or petroleum solvents are the most flammable and likely to have the flammable pictogram, although certain dry formulations also present fire and explosion hazards.

Keep a fire extinguisher that is approved for chemical fires nearby, or near each exit within the storage building. Read the pesticide SDS to determine what type of fire extinguisher(s) is needed.

Personnel should only fight a fire if it can be done with certainty that the fire can be safely and easily extinguished, otherwise, alert other people in the facility and evacuate to an upwind position.

Specific fire-fighting information can be found on the SDS's for each pesticide product, in section 5 – Fire-Fighting Measures. The product manufacturer may also be contacted directly.

When flammable pesticides are stored or handled, it is important for employers to develop an emergency plan for response to a fire and train all workers in its execution. Also keep flammable pesticides in a locked store when not in use.

While not all pesticides are flammable, they will decompose in the heat of a fire and may release toxic/corrosive gases, vapours, or smoke.

HEALTH MONITORING WHEN HANDLING/USING PESTICIDES

It is a legal requirement for people who regularly use pesticides as part of their work to have routine medical check-ups (health monitoring) at the time employment starts and at least once a year thereafter. Employers may also require a medical check-up at the end of employment – when an employee retires or resigns.

These check-ups are for a person's own health and safety, so that he/she will know if treatment for any adverse health condition is required.

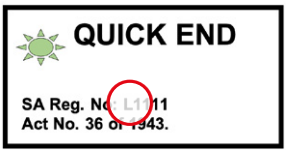
It is a person's right to know and understand the results of any tests that are done.

BUYING PESTICIDES

First calculate out how much pesticide is required.

Only buy as much product as is required.

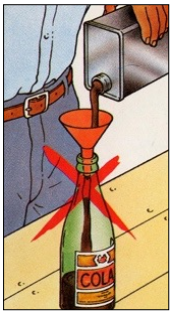
It is safer not to have any left-over pesticide at the end of the season.

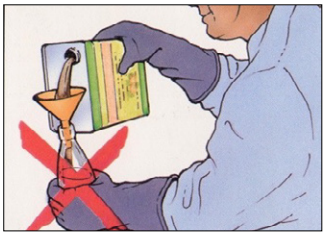


Only buy and use pesticides (including biological pesticides) that are registered according to Act No. 36 of 1947 with the Department of Agriculture, Land Reform and Rural Development (DALRRD).

These have 'L' numbers on the label.

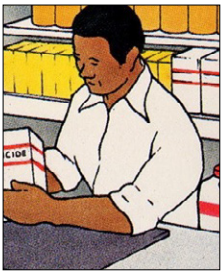
Do not accept pesticides in damaged containers.





Never buy, accept, or use pesticides in containers without their original labels.

Do not accept pesticides that have been decanted into other containers such as cold drink or milk bottles.

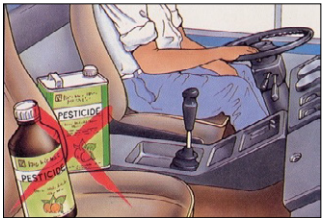


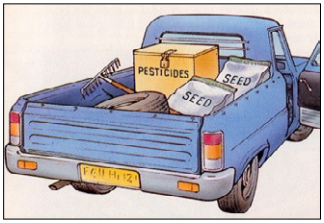
The person who sells the pesticides should be selling a full service, namely correct advice, and the product itself.

Important: Be cautious of products advertised on social media and get advice from a qualified person if you are unsure about the authenticity of a product before purchasing.

SAFELY TRANSPORTING PESTICIDES

Transport vehicles should always be in a good mechanical condition.





Never transport pesticides in the same loading space as food, animal feeds or other products that people will use, such as tobacco and clothing.

If a small amount of pesticide is transported and no separate transport vehicle is available, place the pesticide safely in a separate container such as a steel drum to keep it away from all other items.

Also do not transport any livestock, poultry, or pets along with pesticides.

Keep pesticide containers in the original shipping box.

Secure and protect pesticide containers against falling, punctures and impacts from items packed closely together.

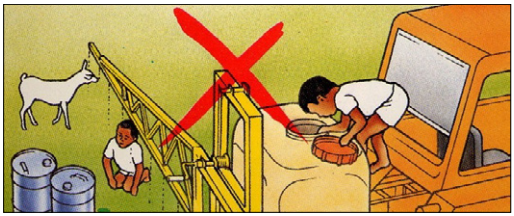
Have spill prevention equipment available on the vehicle in case of a spill during transport.

Protect pesticides from extreme temperatures and moisture during transport. Depending on the pesticide, either extremely low or extremely high temperatures can alter the stability of certain pesticide formulations.

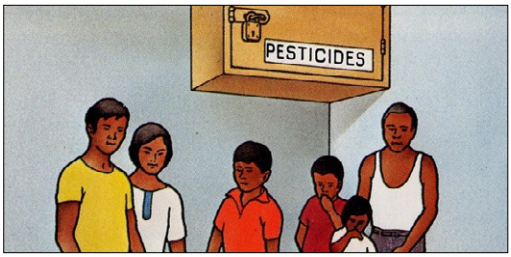
STORAGE OF PESTICIDES

1. Administrative measures for safe storage:

Pesticides must always be kept under lock and key when not in use.



Children, animals, and unauthorised people should not be able to reach pesticides or be present while pesticides are handled, mixed or applied.



For small quantities of pesticides, a steel cabinet can be fixed to a wall above body height and locked with a padlock.

For optimal security, two padlocks with keys held by different people should be used to lock the cabinet.

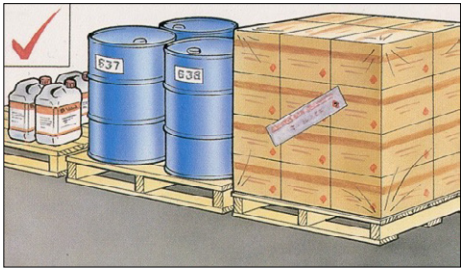
For large quantities, a separate pesticide store is best.

It is recommended that the store is at least 10 metres away from other buildings.

If the store is part of a complex:

- It must be sealed off from the rest of the complex.
- There must be no free movement of air between the store and the rest of the complex.

Always keep the store's door locked.



Store all pesticides in the following manner:

- Stack containers on pallets in rows.
- When stacking products, make sure herbicides are always stacked at the bottom.
- Keep herbicides separate from other pesticides.
- GHS group 1 products must be kept in a separate, lockable facility and a register must be kept when such products are sold.
- Pack flammable products away from non-flammable products in a different section of the store.
- Ensure good stock management where you use the **FIFO Rule: 'First In First Out'** which means the oldest products must be used first to avoid ending up with stockpiles of outdated/expired products.
- Remember it is very costly to dispose of obsolete stocks.

2. Pesticide store signage:

Storage of pesticides – Unauthorized entry prohibited

Stoor van plaagdoders – Ongemagtigde toegang verbode

The above hazard pictograms signage applies when toxic and flammable pesticides are stored. The "No Smoking" signage applies to all pesticide stores. **All lettering must be in RED, with large font size (75 mm) script for easy reading.**

SANS 10206 requires that signs be erected to warn about the hazards and risks of pesticides.

SANS 10206 also requires that workers are trained on these signs and on what to do in case of an emergency.

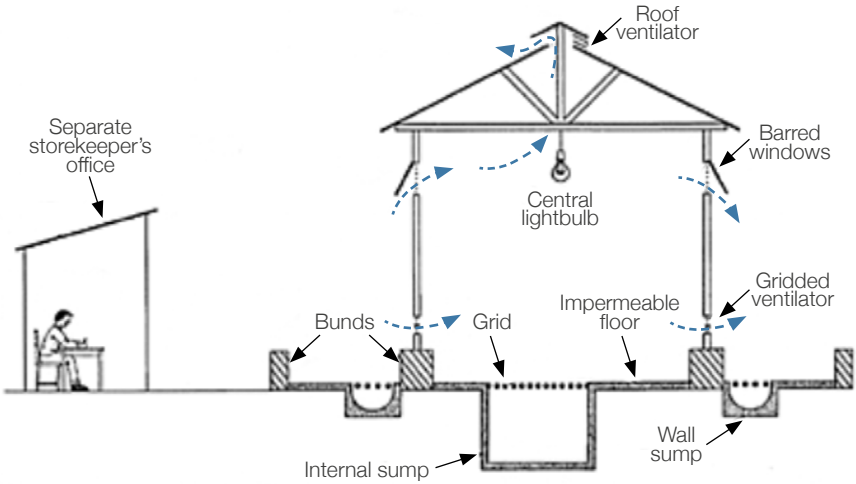
Ideally, the pesticide store should:

- be large enough to accommodate the quantities of pesticides planned for storage.
- be big enough to allow for stock movement, possible future needs, space for dispensing, repacking pesticides and for empty containers.
- have good ventilation in order to prevent the build-up of pesticide vapour.
- have floors that are smooth, impermeable (e.g., made from concrete) to avoid absorption of spillages and to allow easy cleaning.
- have the storekeeper's office separate from the store.
- have direct access to the outside without passing through another building.
- have a well-lit working area.
- have a floor area that is slightly raised at the edges to prevent spills from leaking out of the building and floodwater from getting in.
- have an emergency exit in addition to the entrance doors, preferably at the other end of the store (especially when flammable pesticides are stored).

- have notices displayed on the outside of the store in one of the official languages and in at least one other language indigenous to the region, warning employees of toxic and flammable product storage.

3. Layout of the pesticide store:

The picture below illustrates the features of a typical pesticide store:



Credit: Sourced from http://www.fao.org/docrep/V8966E/V8966e.htm

Keep copies of the storage unit floorplan and a current or seasonal pesticide inventory (indicating all the products and their quantities in the store) in a secure place away from the storage unit. It is good practice to also keep copies of labels and SDSs for every chemical in storage.

Always store pesticide containers with the labels in sight and make sure that the labels are always legible (readable).

4. Pesticide store security:

Pesticide stores should have security measures in place. Routinely review security measures to determine if all risks have been accounted for. Make sure that the store is not vulnerable to both internal and external theft or vandalism. This could put both employees and the community at risk. Effective security also prevents costly losses.

PESTICIDE SPILLS

Remember that you will need the appropriate personal protective equipment to enter a storage area if a spill or other accident has occurred.

If anyone notices spilled pesticide, they must immediately report the spill to a responsible person.

Unauthorised people as well as animals must be kept away from the spill.

Spilled products must not be left unattended to build up or spread.

The spill must first be contained with absorbent material such as sand, wood shavings, activated charcoal, vermiculite, or Arabic gum.

Thereafter it must be cleaned up quickly and safely using a broom, shovel, and a drum with a lid for storing the contaminated material.

PESTICIDE LEAKS

Leakage from pesticide containers is a major problem in the storage and transport of pesticides.

Some of the reasons for leakage are the following:

- Rough handling resulting in dented drums, weakening, or splitting seams and weakening of closures (lids, caps, and stoppers).
- Mechanical damage caused by puncturing or abrasion during transport when packages and containers rub against one another or against the sides of the truck travelling over uneven surfaces or rough roads.
- Corrosion of the container (some emulsifiable concentrate formulations are very corrosive).
- Strong sunlight that can degrade some plastic containers, including bottles and plastic bags.
- Rodents and termites may damage paper, board, cardboard, or fibre containers.

Inspect pesticide stores regularly, at least every two months. Old, rusted, and leaking containers are extremely difficult to move safely, so any leaking containers should be dealt with immediately.

MANAGING PESTICIDE WASTE

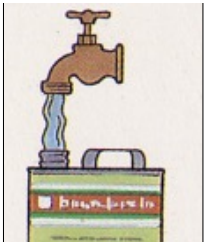
Triple rinsing is the standard safety procedure.

Any pesticide related waste must be disposed of responsibly.

Triple rinsing of containers is compulsory to make such containers safe for handling.

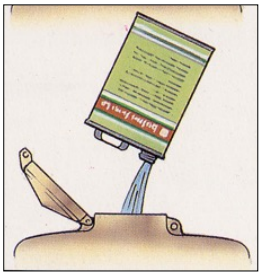
Empty pesticide containers are rinsed three times to reduce the risk to human beings, animals, and the environment.

Do not dispose of the remaining pesticide in any other place than the spray tank. Keep the container over the spray tank until all the pesticide has run out. Wait another thirty seconds so that everything runs out.



STEP 1
Fill the container with one quarter of the container volume fresh water.

Close the lid and shake well.

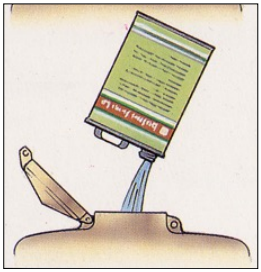


Pour the rinse water out into the spray tank and keep the container there for thirty seconds. The pesticide concentration in the container is now significantly reduced.

STEP 2

Fill the container again with one quarter of the container volume fresh water.

Close the lid and shake well.

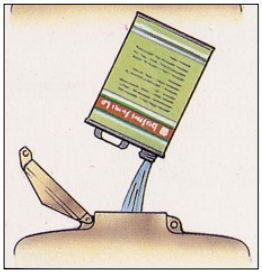


Pour the rinse water out into the spray tank and keep the container there for thirty seconds. The pesticide concentration in the container is now further reduced.

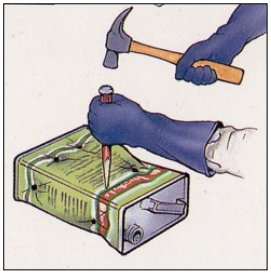
STEP 3

Fill the container for the third time with one quarter of the container volume fresh water.

Close the lid and shake well.



Pour the rinse water out into the spray tank and keep the container there for thirty seconds. The pesticide concentration in the container is now reduced to non-detectable levels.

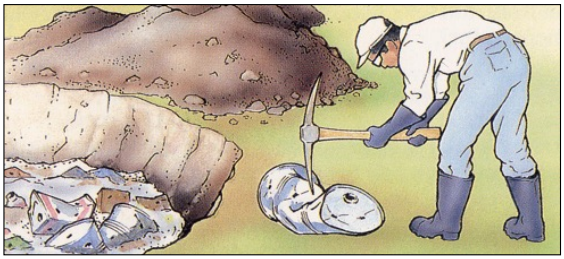


Make the container unusable by puncturing it or cutting it into quarters.

Responsible disposal of triple rinsed empty pesticide packaging.

Empty containers should never be simply dumped.

Cut the triple rinsed empty containers into quarters and take it to a CropLife SA approved recycling company (see Container Management on www.croplife.co.za for guidelines for cleansing and a list of approved service providers).



EMPTY CONTAINERS MAY NOT BE BURIED OR BURNED. NOT ONLY IS IT A CRIMINAL OFFENCE (ACT NO. 59 OF 2008), BUT IT CAUSES POLLUTION AND POSES A SEVERE RISK FOR PEOPLE AND THE ENVIRONMENT.

Even if pesticide containers are thoroughly cleaned, re-using, selling or donating them as packaging for any other purposes is unlawful.

NATURAL DISASTER RESPONSE

Preparing for natural disasters (e.g. floods, heavy rain, wind, veld/run-away fires, lightning strikes, etc.) will help minimise injury and property damage. It can also help prevent unnecessary exposures to pesticide products.

Consider some of the following options when planning storage facilities for possible disasters:

- Purchase pesticide products only when needed - keep the stock low.
- Keep a stock list, including dates of purchase.
- Keep pesticides secure and stored off the floor (e.g., on pallets or shelves).
- Store vulnerable products like paper bags and brittle containers in larger, secondary containers (bin, tub, tote, etc.) made of plastic or metal to contain leaks and prevent any water damage.
- Move pesticides and application equipment away from any water or drains.
- Have suitable fire prevention equipment at hand and close to storage areas.

APPENDIX

Answers to label questions:

Question (i)	**Yes**
Question (ii)	**Yes**
Question (iii)	**Yes**
Question (iv)	**No**
– This information is available in section 4 of the SDS.	
Question (v)	**Yes**
Question (vi)	**Yes**
Question (vii)	**No**
– This information is available in section 5 of the SDS.	
Question (viii)	**Yes**
Question (ix)	**Yes**
Question (x)	**Yes**

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