Safe Handling of Agrochemicals

Module 1:
General Safety

Learner Guide

citrus academy
P.O. Box 461, Hillcrest, 3650
(031) 765-3410

cri citrus research international

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Scripted by:
Jacomien de Klerk

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Project coordinator:
Citrus Academy (Jacomien de Klerk)

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Introduction

In the process of producing and packing citrus fruit, we make use of many chemical products. There are fertilisers, herbicides and pest control chemicals used in the nursery and on the farm, chemical treatments used in the packhouse, and chemicals used to clean and sanitise work areas, to name a few examples. These chemical products are referred to as agrochemicals, meaning chemicals used in agriculture.

There is a wide range of agrochemicals that workers in nurseries, on farms and in packhouses regularly work with. All agrochemicals can be dangerous to humans, animals and plants, and can damage the environment if they are, for instance, allowed to get into waterways or into the soil. Even agrochemicals classified as safe can be harmful to your health – it is all a question of how much you are exposed to and how you are exposed.

Different agrochemicals can pose a danger to you in different ways. Some of them can be poisonous to humans or animals when they are swallowed – what we call "ingested" – while others can cause chemical burns or even poison you when they come into contact with your skin. Another great danger is inhaling certain agrochemicals while they are being sprayed in orchards. Others are very dangerous when, for instance get them in your eyes.

Remember that many agrochemicals, like pest control chemicals and herbicides, are made to kill living things like pest insects and weeds. Agrochemicals must be stored and always used with safety in mind. In this series we look at how we protect ourselves, others and the environment when using agrochemicals, how we store agrochemicals safely, and how we correctly mix and use agrochemicals. In this module we look at general safety procedures.

Occupational Health and Safety

Every workplace in South Africa – in our case every nursery, farm and packhouse – must adhere to the requirements of the Occupational Health and Safety Act. Under this Act there are very specific regulations for how all chemicals that are used in that workplace must be used and stored. Workers must receive regular training on the requirements of the Act and the Act itself must be printed out and put up on a wall in the workplace. Have a look at it, and make sure that you comply with the law.

There are also other requirements and regulations that citrus producers and packhouses must adhere to if they want to export citrus fruit. There is for instance the GlobalGAP accreditation system and the SIZA programme. Both of these require that the workplace must have a health and safety management system. Workers should also be trained about what they are required to do to comply with the system.

Communication is a critical part of a successful health and safety management system. Workers must not only know the hazards that they face in the workplace but also what to do in the event of an accident or emergency. Always remember that these regulations and systems are put in place to protect you. It is important that you play your part in making sure that you stay safe and healthy in the workplace.

Protective Equipment and Clothing

Protective equipment and clothing is the first thing that we need to keep ourselves safe when working with agrochemicals. Protective equipment and clothing is designed to prevent workers from ingesting or inhaling agrochemicals and from getting agrochemicals on their

skin. How much and what kind of protection you need depends on the agrochemical you are working with.

As we discuss in a later module, all agrochemicals are classified according to how dangerous they are. This is shown on the label of the agrochemical, where we can also see what protective equipment and clothing we need to wear when working with that particular agrochemical. Always follow the instructions on the label, even when it is hot or the equipment makes you uncomfortable.

Types of Protective Equipment and Clothing

All workers that come into contact with agrochemicals must have the following protective equipment and clothing available to them:

- **Cotton overalls**
  The best option is a two-piece overall. Overalls are worn just about all the time when working on a farm. Cotton provides better protection and is more durable than those made from lightweight synthetic fabric.
- **Rubber boots**
  Rubber boots are also worn most of the time on a farm, but it is especially important when working with agrochemicals. Rubber boots are water tight and strong.
- **Apron**
  An apron is worn while mixing agrochemicals to protect you in case of spillage.
- **Rain Coat and Hat**
  A rain coat and hat is worn while spraying agrochemicals, to protect from skin contact.
- **Goggles**
  Goggles are used to protect a worker's eyes while they are mixing agrochemicals and sometimes when they are applying them.
- **Rubber gloves**
  Rubber gloves prevent skin contact with agrochemicals while they are being mixed and applied.
- **Face mask**
  A face mask offers protection against inhaling agrochemicals.
- **Respirators**
  Some agrochemicals are even more dangerous when inhaled and a respirator is used in those cases.

Workers must know how to put on and use protective equipment and clothing correctly, and that it must be the right size for them. It is no use wearing a respirator that fits loosely or rubber gloves that are too big and keep falling off.

Maintenance of Protective Equipment and Clothing

Protective equipment and clothing will only protect you if it is clean, whole and working properly. Make sure that your overalls, gloves, boots, apron, raincoat, rain hat and face mask are whole and do not have any rips or tears. A hole or tear can bring the agrochemical into contact with your skin, and it can cause poisoning or a chemical burn.

One of the requirements of a health and safety management system is regular inspection of protective equipment and clothing. Workers are responsible for checking their protective equipment and clothing regularly, but this must be followed up by spot checks by the health and safety officer.

Best practice is to wash clothes and equipment immediately after it is used. This way you can be sure that it is clean when you need to use it again, and it will also stop agrochemicals from being absorbed by the clothing.

Protective equipment and clothing that is badly damaged and no longer effective must be replaced. Rather be safe than sorry – better to replace an item too soon than too late and risk injury.

Preventing Soil and Water Contamination

Farmers have a very particular responsibility to protect the environment and land from which they make their living. Pollution is very damaging to the environment, and a major source of pollution on a farm is agrochemicals that are not handled properly.

Remember that all agrochemicals can cause damage to the environment if they are at a high enough concentration, even if they seem to be harmless. This is why we must prevent accidents that can lead to agrochemicals getting into the soil and water supply, and why we must minimise the amount of runoff agrochemicals when they are being applied.

To limit this, chemical storage and mixing facilities should be constructed at least fifty meters away from natural water sources, even boreholes. To limit soil contamination, chemical mixing areas must also have a separate drainage system where chemicals can be trapped and contained. In a later module we will look at this in more detail.

Emergency Procedures

The workplace should have clear, written procedures for how agrochemicals must be handled to prevent them from getting into the water supply and the soil, and from posing a danger to wild animals, workers and all other humans that are on the farm. All workers that handle agrochemicals must be trained on these procedures.

Firstly, workers must now what to do every day when they work with agrochemicals to stay safe and to prevent emergencies. But no matter how careful we are, it is sometimes impossible to keep emergencies from happening. When it does happen, we must know what to do to minimise the damage caused by the incident.

Poisoning

Poisoning is the first emergency incident that we will look at. Poisoning can happen not only when an agrochemical is swallowed, or ingested, but also with some agrochemicals when they are absorbed through the skin or inhaled.

The first thing to do to is to work closely with the local doctor and other medical facilities. The doctor should have an up-to-date list of the agrochemicals stored and used in the workplace so that he can have the right antidotes available in case of an emergency.

The second important thing is to have a trained first aid officer in the workplace. A first aid officer is trained to recognise different poisoning symptoms and can react immediately if someone gets in trouble. All workers that come into contact with

agrochemicals should know the symptoms of poisoning. There are various posters available that show the symptoms of poisoning and they should be displayed where people work with agrochemicals.

If anyone develops poisoning symptoms, the first aid officer must be called immediately. Also arrange for medical attention as soon as possible or arrange for the worker to be taken to the hospital or clinic. While this is being done, the first aid officer will follow these procedures:

1. Try to find out which agrochemical caused the poisoning.
2. If this can be found out, consult the label for specific first aid procedures.
3. Try to determine how the agrochemical was taken in, being by mouth, through the skin or by inhalation.
4. Make sure that the breathing tract is open.
5. If the patient is unconscious, turn him or her onto their stomach.
6. Start artificial respiration if the person is not breathing.
7. If the patient absorbed the chemical via the skin, remove the patient from the contamination point, remove all contaminated clothing and wash affected areas with soap and water.
8. If the eyes have been affected, wash with clean water for at least fifteen minutes.
9. If the chemicals have been swallowed do not make the person vomit unless it specifically says so on the product label.
10. Keep the patient warm.

Spillage

The second type of emergency incident that we have to prepare for is spillage, or leakage. Even if workers are really careful when handling chemicals, spillages or leakages can still occur. It is important to have the right equipment available so that the damage can be limited. As part of their health and safety training, workers who work with agrochemicals must be trained on how to deal with spillages and leakages.

To do this quickly and effectively, we need the following tools and equipment:

- Extra sets of protective clothing, including respirators and face masks
- Brooms and shovels
- Powdered lime
- Sand or soil
- Open-top drums in which to put spilled chemicals

If a spillage or leakage occur, follow this procedure:

1. Give first aid to anyone that might have been in contact with or poisoned by the agrochemical.
2. Isolate the spill area and keep all unauthorised people away.
3. Every worker involved in the clean-up must wear protective clothing.
4. Try to contain the spillage or leakage as far as possible by constructing an absorbent barrier of sand, soil or lime around the spilt material.
5. Place leaking containers, if any, into open-top drums and label the drums clearly.

6. Collect the spilt agrochemicals and soil, sand or lime with the shovels and brooms, and place it into open-top drums for disposal.
7. If it is indoors, ventilate the building by opening all the doors and windows.
8. If the spillage is on soil or gravel, dig up the area and remove the contaminated soil.
9. If the spillage is on concrete neutralise the agrochemical with lime, sodium carbonate or sodium hydroxide, depending on the chemical that was spilt.
10. Clean all equipment used during the clean-up operation thoroughly, including laundering protective clothing, and store it for future use.
11. Dispose of the open-top drums and its contents in a responsible manner.

Conclusion

Agrochemicals used in citrus production can all be harmful to the people using it. By following procedures and sticking to safety guidelines, we can minimise the risks and ensure a safe working environment.