Safe Handling of Agrochemicals

Module 2:
Agrochemical Storage

Learner Guide

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Introduction

All agrochemicals, including plant protection products, fertilisers, herbicides and cleaning products, must be handled with the greatest care. Agrochemicals are not only potentially toxic to humans, but can also harm animals and pollute water sources and soil. Storing agrochemicals properly is essential to making sure that we have a safe working environment, and that we are able to deal with unexpected incidents such as spillage.

Regulations for Storing Agrochemicals Safely

The rules for the storing agrochemicals safely are prescribed by Good Agricultural Practices regulations and by certification organisations like GlobalGAP. The basic principles are:

- Agrochemicals must be stored in a secure, well-ventilated, cool, dry building that cannot be accessed by children, animals or unauthorised persons.
- There must be easy access to washing facilities with running water, soap and towels. An eye-flushing bottle must be available in the event that eyes are contaminated.
- The storeroom must have a smooth, level cement floor.
- Warning signs must be placed on the outside of the storeroom and they must clearly show that this is an agrochemical storeroom.
- The storeroom must have at least two 9kg dry-powder fire extinguishers on hand, placed outside the storeroom.
- No food products, animal feed or seeds may be taken into the storeroom.
- No eating, drinking or smoking is allowed inside the storeroom.
- Pesticides, fungicides, herbicides and growth-regulators must be separated in the storeroom. Each storage area must be demarcated so that products cannot be mixed by accident. Herbicides should preferably be stored completely separately.
- Powders and granular products must be stored apart from liquid products to avoid contamination in the event of spillage.
- Group the agrochemicals in the store according to their hazard potential. For example, store red-band agrochemicals, meaning those in group 1a and 1b, in the same part of the store.
- Products should be used on a first-in-first-out basis. This will help to make sure that agrochemicals are used before reaching their expiry date.
- Bags and containers that are not on shelves should be stacked on pallets to prevent moisture from building up.
- All containers and bags must be marked properly. If a label is destroyed or lost, mark the container with a marking pen, clearly stating its contents. The label should always be visible.
- Containers with agrochemicals that have been opened and partly used should be resealed and returned to the store.
- Bulk tanks that are used for products such as spray oil should be placed in a dam that has a greater volume than that of the tank, so that the spillage can be contained if the tank should leak or rupture.

- A stock movement recordkeeping system that shows the quantities of each agrochemical purchased, issued and returned must be in place. From the recordkeeping system, one should be able to determine the exact type and quantity of agrochemicals on hand at any given time.

Safety Signs

Adequate, easily visible signage that is in line with the requirements of the authorities must be put up where agrochemicals are stored and used. Signs either give you information or they give you clear instructions on what to do or not to do, in a way that is understandable no matter what language you speak. The signs that are most common are:

- Danger
- No entry
- No smoking
- No drinking and eating
- Fire extinguisher
- First aid equipment
- Emergency exit
- Protective clothing required
- Do not drink the water from this tap

Agrochemical Identification

Now that we know what the storeroom should look like, let's find out how we can identify different agrochemicals to ensure that the are stored in the right place. It is against the law to use products that are not officially registered and permitted in the country of use, or to use a product on crops that it is not registered for. It is also good practice to only use products from trustworthy sources. It is important to know how to read the labels of agrochemicals, because this is where we can find all the information we need.

All agrochemicals are approved and registered with the Department of Agriculture, Forestry and Fisheries. The product label is part of the registration of the agrochemical. On this label the following information must be available:

- Full **instructions** on how to use the chemical, together with detailed information on the uses for which the product is registered. Read these instructions carefully and follow them strictly. This will make sure that we get the best results and that people and the environment are not put in danger. It is against the law to use an agrochemical in a manner for which it is not registered.
- A **physical description** of the product, including its colour and whether it is a fluid, powder or granules. The crop protection manager should look at the agrochemical in the container to make sure that it answers to this physical description. If not and the container has never been opened before, the manufacturer or supplier must be contacted immediately. If the container has been opened before, the container and its contents must be discarded, as prescribed.
- The **chemical composition** of the product.
- The **toxicity** of the product, along with instructions for how to handle it safely.

- The **pre-harvest interval (or PHI)** of the product. The PHI, also known as the withholding period, is the period after application of the agrochemical during which the fruit may not be harvested. PHIs vary considerably from agrochemical to agrochemical and must be checked by the crop protection manager when he compiles the crop protection program.
- The product **expiry date**, being the date on or before which the agrochemical should be used. Agrochemicals must be used before the expiry date to make sure that it is still effective.

Hazard Classification

Agrochemicals are classified in terms of their toxicity in five groups, from group one for the most dangerous agrochemicals, to group five for agrochemicals that are unlikely to cause harm to humans if used in the normal way. There is also a colour band for each group, and the first four groups also have hazard statements.

Internationally recognised symbols are used to indicate the toxicity of chemicals in groups one and two.

Advice pictograms indicate what steps to take to protect yourself against contamination. In particular, it shows what protective gear and clothing to use.

Warning pictograms is used if the agrochemical is dangerous or harmful to particular types of animals, or if it shouldn't be applied in a particular way, such as by crop sprayers.

Sanitation

The agrochemical store, the area around it and the protective gear and clothing that is used when agrochemicals are handled or applied must be kept clean and sanitised to limit the chance of contamination.

There must be a wash trough or large basin close to the agrochemical store; so that workers can wash their protective gear and clothing on site and immediately after it is used.

Equipment, such as scoops, buckets and measuring cups, must be washed at the end of the workday.

Disposal of Contaminated Items

Empty chemical containers must under no circumstances be reused for any purpose whatsoever. Even if the container has been washed thoroughly, the risk of contamination is too high.

Rinse the empty container by filling it to about a quarter with clean water, closing it, and shaking it well. Pour the rinse water into the spray tank or down the drain. Repeat this process at least three times. Puncture the container after rinsing it, so that it cannot be reused.

To dispose of used items, burn waste bags, paper and mildly contaminated items. Severely contaminated items and redundant chemicals must be disposed of using a high-temperature incinerator, which can also be used for empty containers. Containers of highly flammable chemicals must however not be burned, even if they have been rinsed. A professional waste disposal company must take care of these containers.

Recordkeeping

Recordkeeping forms an important part of the well run agrochemical store. A system must be in place from which we must always be able to tell what agrochemicals are in storeroom, and how there is of each one. The system must also be used to make sure that we use the oldest agrochemicals in the store first.

There are various ways to keep stock records in a agrochemical store, but whatever system you choose to use, it is important that it must make it possible for you to record the details of new agrochemicals when they are received, record the details when an agrochemicals is taken from the store to be used, and record when any agrochemical are disposed of for whatever reason.

Incident reporting is another important part of recordkeeping. An "incident" refers to an accident or a near accident at the workplace where workers were or could have been injured or killed, safety was compromised, or property was damaged.

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Conclusion

Storing agrochemicals properly is important to make sure that we limit the chance of pollution and contamination, and to make sure that we do not waste money due to sloppy recordkeeping and wasting agrochemicals.