



ANIMAL HEALTH CARE SERVICE

Level -I

Learning Guide #29

Unit of Competence:Apply knowledge of animal welfare and behaviours

Module Title:Applying knowledge of animal welfare and behaviours

LG Code: AGR AHC1 M8 LO6LG29

TTLM Code: AGR AHC1 TTLM 0919V1

LO6:Prepare, maintain and store equipment used to humanely handle the animals

This learning guide is developed to equip you with the necessary information regarding the following content coverage and topics

- Checking of Equipment and materials for humanely treating livestock.
- Cleaning, maintaining and storing Equipment, materials and facilities in line with manufacturer's specifications.
- Disposing of Livestock residues and waste in an environmentally responsible manner.

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:**

- Check of Equipment and materials for humanely treating livestock.
- Clean, maintain and store equipment, materials and facilities in line with manufacturer's specifications.
- Dispose of livestock residues and waste in an environmentally responsible manner.

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, and Sheet 3.
4. Accomplish the “Self-check 1, Self-check t 2, and Self-check 3 **in page -3, 7, and 13** 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).

Information Sheet-1	Check of Equipment and materials for humanely treating livestock.
----------------------------	---

Human safety needs to be considered in order to minimize risks from animals and equipment within a handling system. When considering any changes to animal treating systems, consultation should be held with the livestock handlers who use the system in order to incorporate their practical knowledge and experience.

Systems should:

- Be safe and easy to use by staff without specialist technical knowledge
- Be tamper-proof
- Minimize user fatigue
- Optimize the number of staff involved in the handling
- Allow accessibility at the required places
- Help stock handlers work effectively and efficiently
- Accommodate 'worst-case operators.

For every system designed, there should be procedures in place for staff to give feedback to management. This feedback should include reports of maintenance requirements, breakdowns, areas where handling problems occur and suggested improvements.

Environmental factors

Systems should:

- Be quiet during operation (minimal air hissing, metal clanging, etc.) and incorporate noise absorbent materials where possible
- Provide adequate lighting, ventilation and thermal comfort
- Bandages and clean clothes for cleaning wounds and covering them and for holding broken legs in place
- Bottle for giving medicine by mouth. If a glass bottle is used, it is useful to put a rubber tube over the end to stop it breaking.

- Container for sterilizing equipment. A cooking pot with a lid will do. Sterilize equipment by boiling it in water.
- A sharp knife or scalpel. Scalpels have sterile blades that can be thrown away after use
- Pen and notebook for keeping records
- Rope. Ropes are essential for any livestock keeper! They are very useful for tying up animals, for making halters to lead animals during transport.
- Syringes and needles for injection. With the very great distance between vets, skilled farmers can learn to do basic treatment before the vet is called. Most useful sizes are 10ml, 20ml, and 50ml. some syringes can be boiled to sterilize them for reuse-others cannot be boiled so need to be thrown away after use.
- A syringe without needle is useful for measuring liquids such as dewormers or medicines given by mouth, and for flushing wounds and abscesses
- Castration rings- mostly for goats and sheep but can also be used for small new born calves.
- A burdizzo castrator(no blood) is the best and cleanest tool for castrating bulls, rams, and bucks. The burdizzo should be used on the young animal.
- Needles and stitching Material (thread= suture) for stitching wounds.
- Tape measure for measuring animals to estimate their weight. When treating animals it is very important to know the approximate body weight in order to give correct dosage of medicine
- A trocar for making a hole into the rumen to treat serious cases of bloat.

Self-Check -1	Written Test
----------------------	---------------------

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

1. What is the advantage of tape measure?(5 points)

Note: Satisfactory rating - 5 points Unsatisfactory - below 5 points

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

Answer Sheet

Score = _____
Rating: _____

Name: _____

Date: _____

Information Sheet-2	Clean, maintain and store equipment, materials and facilities in line with manufacturer's specifications.
----------------------------	---

- Buildings maintained in clean/sanitary condition
 - Free of infestation by rodents, birds, insects, and other vermin
 - Trash and organic waste held and disposed of in a timely and sanitary matter
- Written sanitation procedures to include schedules, methods, equipment materials for cleaning of buildings and facilities
- Written procedures for use of suitable rodenticides, insecticides, fungicides, fumigation agents and cleaning and sanitation agents to prevent contamination
- Sanitation procedures also apply to contractors and temporary employees as well as full-time employees during the ordinary course of operations.

Equipment used in the manufacture, processing, packing, or holding of a drug product shall be of appropriate design, adequate size, and suitably located to facilitate operations for its intended use and its cleaning and maintenance cleaning and maintenance activities are to prevent malfunctions which could lead to contamination of a drug product. Written procedures for cleaning and maintenance of equipment should be established and followed. Records SHALL be kept for cleaning, sanitizing, maintenance and inspection.

Disinfectants are chemical agents that kill pathogens on contact.

The choice of disinfectant depends on the purpose of disinfectant. In the case of notifiable disease, it must be active against a defined pathogen.

In the case of prophylactic disinfection, it must be active against a broad spectrum of microorganism. Disinfection in animals house/premises includes the following:

- Livestock buildings.
- Livestock/ their feed transportation vehicles.
- Incubators
- Hatching tray

- Milk tankers
- Milking machines
- Feeding and drinking utensils.
- Bedding materials etc....

Types of disinfectants: They are grouped in to 5 chemical categories

- | | | |
|------------------------|------------|--------------|
| 1. Soap and detergents | 3. Alkalis | 5. Aldehydes |
| 2. Oxidizing agents | 4. Acids | |

- 1. Soap and detergents:** Are essential components of cleaning procedures prior to many of decontamination procedures. The primary aim is the removal of organic material, dirt, greases from the surface to be disinfected. Mostly important in hospitals, surgeries, dairies, food – processing areas. Soapy combination of phenolic or quaternary ammonium (QUATS) & iodophors are used.
- 2. Oxidizing agent:** These are disinfectants recommended for most application. E.g. Chlorine, hypochlorite sol -Virkon[®], a modern disinfectant with outstanding virucidal properties.
- 3. Alkalis:** Effective against wide range of pathogens. E.g. sodium hydroxide (caustic soda) & sodium carbonate (washing soda). Ideal agent for decontaminating animals housing, yards, drains, effluent waste pit & sewage-collection areas.
- 4. Acids:** Generally highly virucidal. E.g. Hydrochloric acid, a strong acid & less toxic than others. - Citric acid, a milder acid Acids particularly useful for the inactivation of FMD virus, when they added to detergents.
- 5. Aldehydes:** Glutaraldehyde are very effective disinfectant against all virus family & other micro organisms in concentration of 1 to 2 percent. Formalin is effective to kill various Bacteria, virus, Fungi & including anthrax spore. Also effective against mycobacterium vitro. Gaseous formaldehyde are products used as fumigants for poultry houses. As long as the houses are empty. Because they are toxic to birds. E.g. wavicide[®] Also important to decontaminate:
 - Air space
 - Equipments such as electronic device
 - Inside motor of vehicles.

Basic principles to consider for disinfection are listed below:

- Some disinfectant solution may only be active for few days after mixing or preparing
- Not use expired or contaminated disinfectant by manures.
- Not to be applied to animals & feeders directly unless labeled for such use.
- There must be sufficient concentrates & contact time, to have effective result.
- Important to rotating low ^{PH}& high ^{PH} compatible disinfectant, to reduce the possibility of microbial resistance in continuous use of same disinfectant.
- Microbes can acquire resistance to disinfectants, just as they can to antibiotics.

Acid & Alkalis:

When diluting concentrated chemicals, the concentrate should always be added to water never water to concentrate. Do not mix acid & alkali disinfectants. Apart from the resulting chemical remix, the effect of both chemical is nullified. Read all labeled instruction & use all personal protective equipments properly. If contact occurs:

- Wash with copious amount of water immediately.
- Alkali burns, apply vinegar;
- Acid burns, apply bicarbonate soda
- Eyes wash the eyes copiously with eye wash & refer to hospital.

Self-Check -1	Written Test
---------------	--------------

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

1. What are the 5 chemical categories of disinfectants? (5 points)

Note: Satisfactory rating - 5 points Unsatisfactory - below 5 points

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

Answer Sheet

Score = _____
Rating: _____

Name: _____

Date: _____

Information Sheet-3	Dispose of livestock residues and waste in an environmentally responsible manner.
----------------------------	---

Disposal: Sanitary removal of animal carcasses and other infected material by burial, burning or some other process, so as to prevent the spread of disease.

Waste disposal:

Only animal waste from the keeping of domestic animals is accepted. A maximum of two bin liners can be deposited per household per day, and waste must be double bagged before disposal. Please inform site staff of the waste type before placing in the household waste bin for final disposal. Waste from livestock, breeding, boarding, stabling or exhibiting of animals is not accepted.

Disposal of dead animals:

Like most business enterprises, every farm produces some type of waste material. Like manure, these waste materials must be disposed of in an environmentally acceptable manner to minimize the likelihood of contaminating soil and water. Common waste materials found on farms include:

- dead animals;
- animal health care products;
- general packaging (for example, boxes, bags, plastics);
- petroleum products such as used motor oil;
- paints and preservatives;
- pesticides;
- machinery and equipment including inert components, tires and restricted use
- components such as batteries;
- farm structures such as old buildings including building components; waste forage; and,
- Waste fruit and vegetables (including organic waste dumps).

Disposal of dead animals

Commercial livestock operations are normally subject to mortalities and therefore generate many carcasses for disposal. Proper disposal of dead livestock is extremely important to protect the health of both people and livestock. Any animal carcass may contain bacteria and other disease organisms that can infect humans directly or through contamination of a residential water supply. Disposal of dead livestock must be in accordance with the Waste Materials Disposal Act.

Mortalities must be kept in a secure and frozen state if not disposed of within 48 hours of the time of death. A secure state would be one where scavenger animals such as coyotes, wolves (in Labrador), dogs and birds, are prevented from access to the mortalities. Disposal is specified to be by delivery to a rendering plant, burial, composting or incineration. Leaving mortalities outside for scavengers to feed on is not an acceptable method of dead animal disposal.

Methods of disposal:

Rendering

Delivery of the carcasses to a rendering company is the preferred method for disposing of dead animals. Currently, a rendering plant (Roth say Rendering Plant) operates at Fox trap.

Rendering companies may have certain restrictions regarding the condition of the carcass. In general, the animals must be brought in as quickly as possible in the summertime. Smaller animals that die during the winter can be frozen and delivered to the renderer at convenient intervals. Rendering companies will generally not accept dead animals that do not remain intact when handled. Depending on the end product of the rendering process, there may be restrictions on carcass quality and condition.

Rendering companies that produce meat and bone meal and inedible tallow will usually accept mortalities regardless of the course of death; companies that produce an edible material may not. If a processor is not nearby, however, the time and expense for travelling may make delivery impractical for small numbers of dead animals or farms located far away from the plant.

If this is the case and the dead animal is small in size (for example, piglets), you must freeze and store mortalities until such time as the animals can be buried or incinerated. Fur farms in Newfoundland and Labrador accept mortalities and cull or off-sex animals as feed. Fur farmers are also feeding fish waste, meat cuttings and some wild animals killed on roadways (such as moose). Disposing of birthing mortalities is not considered a major issue in the province as adult animals often dispose of these naturally.

Burial

During the summer months, the carcass can be buried if a rendering service is not available. The Waste Materials Disposal Act prohibits the disposal of waste materials on any lands which are not waste disposal sites approved by the Government Services Centre. Place dead animals in a trench that is backfilled each time animals are added. Caution is required for burial of dead animals. While at one time carcasses could be brought to sanitary landfills, this is no longer possible in many areas. Municipalities that bury their refuse on a daily basis may allow animals to be deposited in landfill sites. Check with your local municipal office to determine if this is allowed in your area.

Ensure that the burial pit is or has:

- at least 90 metres (300 ft) from wells or domestic water intakes;
- at least 30 metres (100 ft) from any other surface water;
- constructed such that the bottom of the pit is 1.2 metres (4 ft) above the high water table;
- sized for a maximum of 700 kilograms (1,500 lb);
- hydrated lime (quick lime) to speed up decomposition and deter scavengers and insect infestation; and,
- A minimum 0.6 metre (2 ft) of soil covering the carcasses (offers protection from scavengers that will drag the carcasses around, creating both a nuisance and a possible health hazard).

Dead animal burial pits need the approval of a Government Services Centre, Department of Government Services and Lands. Contact the regional Government Services Centre for details. During the winter it is advisable to put dead animals in a

holding area, such as a covered trailer, where they can remain frozen until burial is possible in the spring.

Composting

Composting dead animals is becoming more popular in Canada and, as local experience is gained, it is anticipated that some farm composting facilities will be constructed in the future. Operations using composting of mortalities must be designed and managed in such a way that they do not cause pollution. An aerobic environment must be maintained, and all material must be heated throughout to a temperature of 55C (130? F) for at least three days for adequate reduction of pathogen levels.

Where composting is employed for dead animal disposal, they must:

- be of sufficient capacity to dispose of normal mortality rates;
- have all contaminated runoff collected, and clean surface water directed away from the composting facility;
- be located to take the farm residence and any neighbouring residences into account. While offensive odours are not usually generated in the composting process, the handling of dead livestock and compost on a daily basis may not be aesthetically pleasing. When locating a composter, consider traffic patterns required in moving dead livestock to the composter, moving the required ingredients to the composter, and removing finished compost from the composter; and,
- be situated on a well-drained site and must provide all-weather capability for access roads and work areas. Where this is not a common practice in Newfoundland and Labrador, such composting would be appropriate if initiated on a small scale in consultation with the appropriate agricultural and environmental agencies.

Fully composted animals, where there is no sign of bones or other materials, can be added to manure for eventual land spreading.

For the proper design of a composting facility for dead animal disposal, qualified professionals should be consulted.

Incineration

Incineration is an acceptable method of disposal if performed properly. For the dead animals to be burnt without creating an odour problem, the temperature of the incinerator must be sufficiently high.

Where incinerators are employed for dead animals' disposal, they must:

- where possible, be located so that prevailing winds carry exhaust fumes away from neighbours;
- have sufficient capacity so that all odour levels stay within tolerable limits;
- be 50 m (160 ft) minimum from wells or domestic water intakes;
- be fire safe; and,
- Consume all material fed into them.

The installation and operation of any incinerator must be in compliance with the Environment Act. Generally, a single chamber-two burner type of incinerator, or equivalent, will be required. Single burner incinerators are not recommended.

For the proper design of an incinerator for dead animal disposal, qualified professionals should be consulted. An incineration shall be operated to meet the maximum requirements of 0.5 hour retention time in the chamber at 1400-1600oF.

Disposal at an approved landfill site or incineration at an approved waste disposal site with the consent of the owner/operator is acceptable.

Self-Check -1	Written Test
----------------------	---------------------

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

1. Define the Methods of disposal? (5 points)

Note: Satisfactory rating - 5 points Unsatisfactory - below 5 points

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

Answer Sheet

Score = _____
Rating: _____

Name: _____

Date: _____

REFERENCE:

Www, medical-tools.com

Regina, Brown. (2015). Facilities & Equipment: CGMP Requirements, Regulatory Education for Industry (REdI):Sheraton