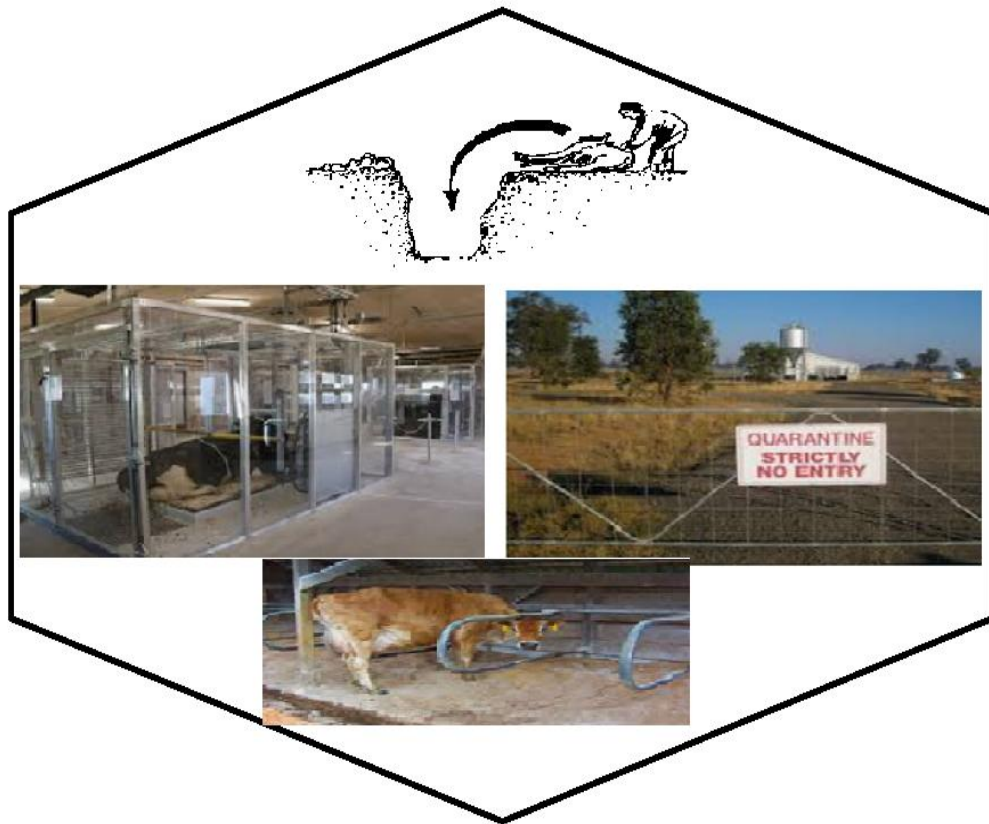


Animal Production

Level – II

**Based on March 2022, Version-4 Occupational
Standard**



**Module Title: - Undertaking Quarantine Procedures
for Livestock Farm**

LG Code: AGR APN2 M10 LO (1-4) LG (44-47)

TTLM Code: AGR APN2 TTLM 0922v1

**September, 2022
Addis Ababa, Ethiopia**

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Introduction to the Module

This module covers the knowledge, skills and attitude required to undertake quarantine procedures of livestock farm and respond to problem that are designed to reduce the likelihood of pathogenic organisms entering the site. It required the ability to prepare for quarantine site activities, carryout quarantine site activities/work, follow quarantine site procedures and respond to quarantine site breach or problem.

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LG # 44	LO #1- Prepare for quarantine site activities
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Instruction sheet
<p>This learning guide is developed to provide you the necessary information regarding the following content coverage and topics:</p> <ul style="list-style-type: none"> Ensuring personal and/or work vehicles decontaminated Reporting contact with potential contaminants Washing hands before handling livestock, feed, plant stock or other products Storing appropriate clothing and footwear and other products <p>This guide will also assist you to attain the learning outcomes stated in the cover page. Specifically, upon completion of this learning guide, you will be able to:</p> <ul style="list-style-type: none"> Ensure personal and/or work vehicles decontaminated before entering the quarantine site Report contact with potential contaminants Wash hands before handling livestock, feed, plant stock or other products Store appropriate clothing and footwear and other products
Learning Instructions:
<ol style="list-style-type: none"> 1. Read the specific objectives of this Learning Guide. 2. Follow the instructions described below. 3. Read the information written in the information Sheets 4. Accomplish the Self-checks 5. Perform Operation Sheets 6. Do the “LAP test”

Information Sheet -1

1.1. Ensuring personal and/or work vehicles decontaminated before entering the quarantine site

1.1.1. General concept of Quarantine

Quarantine is designed to prevent the introduction, establishment, or spread of animal, plant or human pests and diseases. Pests and diseases could be carried, by animals, in animal products such as meat, in plants or in plant products such as timber, or soil. All of these must undergo quarantine inspection and may require treatment, or in some cases destruction.

Quarantine Site means the whole farm, an apiary, enterprise premises, or part of the premises or industry, such as an isolation area or sick bay. In some cases, the quarantine area may extend beyond the industry boundaries.

At the international level, the primary purpose of quarantine is to minimize the risk of introducing pathogens into the territory of the importing country and their transmission to susceptible species. An additional purpose, unrelated to pathogen concerns and thus not discussed further in this manual, is to prevent the introduction of potentially harmful aquatic organisms (pests or “fellow travellers”) that have not been approved for introduction.

1.1.2. Purpose of quarantine

The purpose of such quarantine-for-decontamination is to prevent the spread of contamination, and to contain the contamination such that others are not put at risk from a person fleeing a scene where contamination is suspect. It can also be used to limit exposure, as well as eliminate a vector.

At the subnational level, quarantine can similarly be applied by states to prevent the spread of pathogens between different river systems, watersheds, islands, disease zones or political units.

The basic requirements for effective quarantine include:

- Adequate physical infrastructures appropriate to the level of containment required (e.g. secure facilities, secure intake water source, etc.)
- Established operating protocols (including traceability and chain of custody)
- Well-trained staff

1.1.3. Decontaminating Personal

The quarantine facility should be in an enclosed and covered building with no direct access to the outside. It should be adequately isolated from all rearing and production areas to avoid any possibility of cross-contamination. Decontamination that all vehicles are driven through a dip of treated solution before entering the site.

Facilities for disinfection of feet [footbaths containing hypochlorite solution at >50 parts per million (ppm) active ingredient] and hands [bottles containing povidone iodine (20 ppm and/or 70 percent alcohol)] should be provided for use upon entering and exiting.

Entry into the quarantine facility should be via a staff dressing room equipped with lockers and shower facilities. This room should lead into a second dressing room where working clothes and boots are stored, which in turn, leads into the quarantine area proper.

Typically, individual holding tanks of >100 liters per individual brood stock should be provided. Plastic buckets and other similar containers should be available in adequate numbers in the quarantine room to facilitate effective daily routine movement of shrimp in and out of the facility.

A keeper should be designated to care only for quarantined animals or a keeper should attend quarantined animals only after fulfilling responsibilities for resident species. Equipment used to feed and clean animals in quarantine should be used only with these animals. If this is not possible, then equipment must be cleaned with an appropriate disinfectant (as designated by the veterinarian supervising quarantine) before use with post-quarantine animals.

Institutions must take precautions to minimize the risk of exposure of animal care personnel to zoonotic diseases that may be present in newly acquired animals. These are:

- Use of disinfectant foot baths, wearing of appropriate protective clothing and masks in some cases, and minimizing physical exposure in some species.
- A footbath containing disinfectant should be placed at the entrance door to the quarantine facility

1.1.4. Ensuring the decontaminating personal and/or work vehicles

The Decontamination involves a combination of physical and chemical procedures that are used to remove soiling and inactivate the target disease organism. The process should also take into account appropriate disposal of waste products.

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An effective decontamination program is vital during all stages of any emergency disease response. Appropriate procedures are required to allow personnel, chemicals and equipment to move safely between premises during the surveillance, destocking or clean-up stages of the operation. Decontamination will also reduce the period between initial destocking and the re-introduction of healthy fish stocks to a previously contaminated site.

The decontamination process comprises a number of stages. These are:

- planning: identification and assessment of risks, design of efficient and effective procedures, and training of personnel;
- Implementation: cleaning, disinfection, and waste treatment and disposal; and
- Testing for effectiveness.

Ineffective decontamination usually:

- fails to include adequate cleaning as part of the process
- uses inappropriate disinfecting agents
- does not allow adequate contact time with the disinfecting agent

Decontamination procedures, whether being used during an emergency response or as part of routine management, must be effective in order to be worthwhile. However, they should also be straightforward. Overly cumbersome or complex procedures tend to be ignored or done in a cursory

1.1.5. Vehicle Management

Any vehicle entering the Quarantine Zone must be disinfected by passing the vehicle under the vehicle wash where jet pressure pump will disinfect the vehicle. The vehicle will be disinfected on both the occasions of entry and exit.

Vehicles that contact animals, animal waste, equipment, or staff may become contaminated with pathogens of concern. Vehicle access to the quarantine unit must be limited to essential vehicles and vehicle parking areas must be clearly identified. Those vehicles that transport animals and/or enter the quarantine unit are subject to cleaning and disinfection procedures.

Water, detergent, and scrub brushes should be used to remove all visible organic matter from the outside surfaces of the vehicle prior to disinfection to ensure efficacy. Wheel wells and tires should not be missed. The cleaned vehicle should be rinsed with pathogen free water and

allowed to dry before application of the disinfectant. The disinfectant should be applied and left in place for a duration as indicated on the manufacturer's instructions.

Managing the quarantine unit equipment within the vehicle can remove the need for cleaning of the entire vehicle interior. Specific areas of the vehicle should be designated for quarantine unit materials to prevent cross contamination. Areas of the vehicle which are easily disinfected (e.g. trunk or box) should be used for transport of quarantine unit materials and all quarantine unit equipment should be placed into the designated quarantine unit area of the vehicle (e.g. in totes, in plastic bags etc.).

Only the areas of the vehicle that have been in contact with the quarantine unit equipment and/or materials require cleaning and disinfection.

To help ensure the safety and health of the responders, several activities should occur at the end of each day or when exiting premises.

The exit procedures of vehicle are:

- Use soapy water, remove dirt, debris, and organic material from the vehicle and trailer tires, wheel wells, and undercarriage, and/or take the vehicle through a pressure car wash.
- Use a brush and approved disinfectant solution to clean and disinfect all equipment thoroughly including personal items such as eyewear and jewelry. If these items are harmed by disinfectant, they may be washed thoroughly with soap and water or dipped in vinegar (acetic acid) since FMD is an acid susceptible virus.
- Follow guidance provided by the Vector Control Group Supervisor regarding pest control measures related to vehicle biosecurity. Place all disposable dirty items (for example, disposable coveralls, boots, and supplies) in a plastic garbage bag to be left on the premises with the owner for disposal. If this is impossible, place the plastic bag in the dirty area of the vehicle and dispose of it in a manner that prevents animal exposure to the items.
- Place dirty reusable coveralls and boots into a clean plastic garbage bag or other container and place in the dirty area of the vehicle for cleaning and disinfecting.
- Scrub the bottoms of soiled rubber boots with a brush to remove all dirt or debris. Clean and disinfect the boots with an approved disinfectant.

- Dispose of the disinfectant solution according to the label instructions.
- Before entering the clean area of the vehicle, remove soiled coveralls so that they are inside out, place them in plastic garbage bags, and put them in a dirty area of the vehicle along with other soiled reusable clothing.
- Shower and shampoo
- Launder clothing

1.2. Reporting contact with potential contaminants

Potential contaminants

Biosecurity is to stop transmission of disease causing agents by preventing, minimizing or controlling cross-contamination of body fluids (feces, urine, saliva, etc.) between animals, animals to feed and animals to equipment that may directly or indirectly contact animals. Biosecurity management practices are designed to prevent the spread of disease by minimizing the movement of biologic organisms and their vectors (viruses, bacteria, rodents, flies, etc.) onto and within your operation. Biosecurity can be very difficult to maintain, because the interrelationships between management, biologic organisms and biosecurity are very complex. While developing and maintaining biosecurity is difficult, it is the cheapest, most effective means of disease control available, and no disease prevention program will work without it.

Pathogen can be spread between operations by:

- The introduction of diseased or healthy animals incubating disease,
- Introduction of healthy cattle who have recovered from disease but are now carriers,
- Vehicles, equipment, clothing and shoes of visitors or employees who move between herds,
- Contact with inanimate objects that are contaminated with disease organisms,
- Carcasses of dead animal that have not been disposed of properly from quarantine site,
- Feedstuffs, especially high risk feedstuff which could be contaminated with faeces,
- Impure water (surface drainage water, etc.),
- Manure handling and aerosolized manure and dust,
- Non livestock (horses, dogs, cats, wildlife, rodents, birds and insects).

Potential contaminants; include pathogens entering on clothing/footwear, equipment, vehicles or items being delivered to the enterprise. Potential contaminants may also enter in foodstuffs, including food

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for animal, bee or human consumption, vaccines, water or soil, or be brought on to the site by new livestock, bees or pests. If the potential contaminants have been happened in the working site the worker should be report to the organization or the supervisor

The FMD virus is highly contagious and can spread easily through fomite movement for example. In addition, an outbreak of FMD would have significant economic implications in terms of interstate trade and international commerce.

The capabilities required to respond to an FMD outbreak are extensive.

Any response effort, whether the outbreak is large or small, will require significant operational capabilities.

Very effective disinfection can be achieved against specific disease agents such as

- virus,
- bacteria,
- protozoa and
- Fungi at low cost using readily available chemicals.

Washing soda (sodium carbonate) is highly effective against FMD, for example. An excellent alternative to liquid disinfectants is a fumigating agent. Formalin generated by the mixing of potassium permanganate and formaldehyde solution and used with suitable safeguards, is one of the most effective disinfecting agents. Animals and stockmen must be excluded from the building until fumigation is completed and the building has been thoroughly ventilated.

A certification that shows the animals were inspected by a veterinarian within 30 days preceding the date of exportation were subjected with a negative result to the diagnostic tests recommended by the OIE for Blue tongue, maedi-visna, FMD and Caprine and Ovine Brucellosis, Tuberculosis, Para tuberculosis, Caprine Arthritis-Encephalitis, Contagious Agalactia, Enzootic Abortion of ewes /OIE standards will be used as periodically updated.

All sheep and goats should be vaccinated for Pox, PPR, Ovine Pasteurellosis, and CCPP. The animal must have not been exposed to any communicable disease within sixty days preceding the date of the inspection;

The animal must pass through pre-export quarantine period for twenty one days in the country of origin;

- Veterinary certificates are compulsory to be submitted with the animal; the animal must pass through post-entry quarantine period for twenty one days in Ethiopia.

- The feeding to small ruminants of meat and bone meal or greaves of ruminant origin should be banned in the country where the animals originate and the prohibition is strictly enforced;
- The animal were treated for internal and external parasites within 30 days of export
- The animal must pass through pre-export quarantine period for twenty one days in the country of origin;

1.3. Washing hands before handling livestock, feed, plant stock or other products

• Facilities in quarantine

Access to the quarantine facility should only be through a personnel entrance leading to a separate outer change room provided with facilities for staff and quarantine officers to wash their hands and change outer clothing prior to entering or leaving the quarantine area.

Staff and visitors who have had contact with water or aquatic animals should wash their hands and forearms with soap and water prior to exiting the quarantine facility. Thorough washing of hands is recommended when exiting any animal facility or farm.

To promote positive hygiene standards on your quarantine, it is important that you provide adequate facilities where everyone on farm can access them easily. These should be located at appropriate sites around your farm, in particular next to animal handling areas, and should include the following hand washing facilities;

- Hot running water
- Permanent sinks
- Liquid soap
- Paper towels

Before you start working in the quarantine, wash your hands with a liquid detergent and dry them with paper toweling. At the end of the period, before leaving the quarantine, wash them again.

1.4. Storing appropriate clothing and footwear and other products

1.4.1. Put on appropriate clothing and footwear in quarantine site

- Staff entering the isolation premises (quarantine) must always change into protective clothing and footwear.

- On leaving, the overalls and footwear must be removed and left within the isolation area, and the footwear must be disinfected.
- Hands should be washed, or otherwise disinfected, on entering and leaving.
- The following guidelines are designed to alert growers and operators to the possible dangers associated with picking, and how to prevent accidents.

1.4.2. Clothing and personal protective equipment

- Wearing appropriate clothing and using protective equipment where necessary can reduce the risk of an accident occurring.
- Wear close fitting shirts, trousers or shorts. Wear fitting clothing during work in quarantine site
- Wear sturdy, fully enclosed shoes with a good grip on the sole.
- Wear a wide brimmed hat to prevent sunburn.
- Tie up long hair and remove any jewellery.
- Personal protective equipment such as eye goggles, dust masks and earmuffs should be worn when needed, e.g. when cleaning.

Diseases may carry out on your clothes and boots, hands, hair and even in your throat. You can therefore take positive action to protect your animals from these risks. This may include provision of Personal Protective Equipment (PPE) and facilities for those visiting and working site.



Figure 1.1: Overall/cloths



Figure 1.2: Gloves



Figure 1.3: Steel toed

Figure 1.4: Slip/water resistant rubber soled shoes

Remember that some animal diseases may also be transferred to people so these measures also protect you, your farm staff and visitors.

Any personnel with oversight responsibility, as well as other individuals, visit multiple premises routinely and can inadvertently come into contact with viruses and bacteria on these properties. Without the proper precautions, personnel can spread microorganisms to other premises. Therefore, field personnel should make extraordinary efforts to prevent the spread of pathogens to other facilities or animals. During a known emergency animal disease outbreak, additional precautions specified by animal health officials must be followed.

All response personnel will take the following minimum biosecurity measures:

- Wear rubber boots (or other footwear that can be cleaned and disinfected) or disposable plastic boots. Clean street shoes or boots are acceptable when visiting low-risk areas such as offices or homes away from animal areas. It may be possible to store footwear at facilities that would only be worn there. Some animal owners provide rubber boots or disposable plastic boots for visitors.
- Prior to entering or leaving an animal facility, remove all dirt and organic matter from boots and thoroughly disinfect them using a bucket, brush, and an appropriate broad-spectrum disinfectant. Animal facilities include backyard facilities.
- Wear disposable or clean coveralls, laboratory coats, smocks, or other suitable outerwear when coming into contact with animals, manure, or animal secretions. When visiting

multiple facilities, personnel must have an ample supply of disposable or clean coveralls so a fresh pair can be used at each site. Remove outwear when leaving a premises. Place dirty materials in a double plastic bag and seal it.

- d) Thoroughly wash hands with antimicrobial soap prior to entering and when leaving a premises. The proper hand washing technique is
 - remove all watches, jewellery, and other items prior to washing;
 - lather soap in hands vigorously for 1–20 seconds
 - Rinse under a stream of warm water
- e) Avoid driving through manure and wastewater. Park the response vehicle away from pens, pastures, or areas where animals may be held. Park on concrete or paved areas when available.
- f) Do not enter animal production areas unless authorized and accompanied by a facility employee.
- g) Clean the response vehicle between visits to animal facilities, including tires and floor mats (carpets should be covered with plastic floor mats). A commercial car wash is adequate. Tire sprays may be necessary in some situations.
- h) Dispose of used disposable boots, gloves, and coveralls at the facility, if possible. Otherwise, place them in a double plastic garbage bag and seal them for later disposal in the designated trash container at the facility designated area for disposal of contaminated items.
- i) Keep all equipment used in the field clean. Disinfect any equipment that comes into contact with animals or their secretions before taking it to another property, or use disposable equipment. When visiting farms, select equipment that is easily disinfected (for example, plastic clipboards are easier to disinfect than wooden ones because organic material is easier to see on them).
- j) Keep clean and dirty clothing, equipment, and supplies separate. Designate clean and dirty storage areas in vehicles.
- k) Personnel that come in contact with a sick or dying animal and should be considered carriers of FMD and should follow proper disinfection procedures prior to coming into contact with other animals.

A quarantine facility should consist of a minimum of two discrete areas physically separated from the outside and from each other, including an access area where clothes, footwear and

protective articles are changed, and where locker, hand-washing and, if possible, showering facilities are provided.

Procedures should be in place to prevent the cross-contamination of clothes and footwear worn outside the quarantine facility from potentially contaminated protective clothing worn inside the animal holding area.

The Occupational Health, Safety and Welfare Act came into force in 1994. The objectives of this Act are:

- to promote and secure the health, safety and welfare of persons at work
- to protect persons at work against hazards
- to assist in securing safe and hygienic work environments
- to reduce, eliminate and control the hazards to which persons are exposed at work
- to provide for formulation of policies and for the co-ordination of the administration of laws relating to occupational health, safety and welfare
- to promote education and community awareness on matters relating to occupational health, safety and welfare

All new staff should be advised by the station manager about their safety responsibilities. They should be provided with information about;

- evacuation procedures
- fire safety procedures and the location and use of fire extinguishers and hydrants
- location of first aid equipment
- when to have an accident form completed by the station manager
- the need to complete hazard report forms

Self-check- 1	Written test
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Name..... ID..... Date.....

Directions: Answer all the questions listed below.

Test I: Multiple choices

- One is not facilities for those visiting and working on site (5pts).
A. Overall B. Boots C. Disposable glove D. Animals
- Prevent the spread of disease by minimizing the movement of biologic organisms and their vectors onto and within your operation is called___ (5pts)
A. House B. Biosecurity C. Carcasses D. Animal waste

Test II: Short Answer Questions

- What are facilities/solution for disinfection of feet and hand? (3pts)
- What must be take precautions to minimize the risk of exposure of animal care personnel to zoonotic diseases (5pts)
- What are the decontamination processes? (5pts)
- What are the hand washing facilities (5pts)
- What are the uses of biosecurity? (5pts)
- What are the potential contaminants include? (3pts)

Note: Satisfactory rating -18 points Unsatisfactory - below 18 points

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

Operation Sheet -1

Methods of making procedure of exiting vehicle from quarantine site

A. Tools and equipment's

- Boots
- Soap
- Vehicle
- Brush
- Disinfect
- Water

B. Procedures/Steps/Techniques

- Use soapy water; remove dirt, debris, and organic material from all part of the vehicle
- Use a brush and approved disinfectant solution to clean and disinfect all equipment
- Place all disposable dirty items (for example, disposable coveralls, boots, and supplies) in a plastic garbage bag to be left on the premises with the owner for disposal.
- Place dirty reusable coveralls and boots into a clean plastic garbage bag or other container and place in the dirty area of the vehicle for cleaning and disinfecting.
- Scrub the bottoms of soiled rubber boots with a brush to remove all dirt or debris. Clean and disinfect the boots with an approved disinfectant.
- Dispose of the disinfectant solution according to the label instructions.
- Shower and shampoo
- Launder clothing

LAP TEST -1	Practical Demonstration
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Name: _____ Date: _____

Time started: _____ Time finished: _____

Instructions: Given necessary templates, tools and materials you are required to perform the following tasks within 1 hour.

Task: Make procedure of exiting vehicle from quarantine site

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LG # 45 LO#2- Carryout quarantine site activities/work

Instruction sheet

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

- Handling and storing chemicals and medications
- Keeping of different feed mixes, soil, and growing media separately
- Identifying and reporting pest or parasite infestation cases
- Identifying OHS hazards and taking appropriate action
- Disposing waste products
- Designing and implementing animal quarantine plans
- Recording observations
- Taking measures on sick or exposed animals

This guide will also assist you to attain the learning outcomes stated in the cover page. Specifically, upon completion of this learning guide, you will be able to:

- Handle and store chemicals and medications
- Keep different feed mixes, soil, and growing media separately
- Identify and report pest or parasite infestation cases
- Identify OHS hazards and take appropriate action
- Dispose waste products
- Design and implement animal quarantine plans
- Record observations
- Take measures on sick or exposed animals

Learning Instructions:

1. Read the specific objectives of this Learning Guide.
2. Follow the instructions described below.
3. Read the information written in the information Sheets
4. Accomplish the Self-checks
5. Perform Operation Sheets
6. Do the “LAP test”

Information Sheet -2

2.1. Handling and storing chemicals and medications

i. Handling and storing chemicals

Working around chemicals is one of the most common and dangerous hazards encountered during picking. To avoid possible electrocution, make sure you follow a few simple practices when picking:

- Before you start selecting and use chemicals and medications consult a farm map and note the location of all power lines and their proximity to where you will be working. Provide workers with accurate, up to date diagrams depicting the location of property, and also indicating safe paths to eliminate the possibility of power line contact.
- Complete a risk assessment to identify and implement appropriate control measures to prevent any hazards which may have the potential to harm the health or safety of a person. This should be completed for each paddock and piece of chemicals to be used.
- Check all chemicals and medicines are safe.
- Install visual markers in areas where electrical hazards are identified before commencing work.
- Carefully monitor weather conditions as chemicals and medicine can sway in wind, rich of children; and direct sun light
- Assign a competent safety observer to each work team to guide chemical and medicine movements, conditions and ensure that minimum safety approach distances are maintained.
- If chemicals and medicine does come into contact with a foods and feed and rich of children, try to break the contact:
- All farm chemicals can be dangerous, so operators must ensure that they are safety conscious at all times.
- Always follow the directions outlined in the manual - never operate using defective equipment, don't interfere with safety devices, only operate while sitting in the driver's seat, and keep windows and mirrors clean.
- Mount and dismount properly using the ladders, and maintain the ladders regularly to ensure stability. It is also important to always lower equipment before dismounting.
- Keep clear of exposed moving parts.

To reduce the risk of injury, perform regular maintenance checks and procedures on site chemicals to keep it in a good working condition.

Chemical disinfectants must be stored in a manner that prevents their degradation and maintains efficacy. Manufacturer's instructions must be followed for proper storage of chemicals. The chemicals should be stored in a dry, secure area and in a location with the manufacturer's recommended room temperature. Expiry dates of chemicals should be noted before use and those expired should be properly discarded.

ii. Handling and storing medications

Disinfectants, antibiotics and other chemicals and drugs for use in quarantine facilities should be chosen and applied in conformation with local laws and regulations and in a manner that ensures the protection of personnel, the aquatic animals being held and the external environment from their possible harmful effects.

A wide range of products and procedures can be applied in the cleaning and disinfection of quarantine facilities. Competent Authorities should evaluate the effectiveness of such products and procedures against relevant pathogens under local conditions. Decisions on which products to use should take into account their legality, microbiocidal efficacy and their safety for personnel, animals, aquatic animals and the environment. Approved procedures (SOPs) for the use of disinfectants should be established.

All effluent and wastes generated by a quarantine facility should be treated in a manner that effectively destroys all pathogens. To ensure continuous operation and complete containment, quarantine effluent systems should be equipped with fail-safe backup systems. As treated effluent and waste may contain substances deleterious to the environment (e.g. active disinfectants), they should only be disposed of in a manner that minimizes environmental impact.

2.2. Keeping of different feed mixes, soil, and growing media separately

- Use optimal procedures for harvesting, handling, and storage of all crops.
- Make sure that feed bunks and storage areas are inaccessible to rodents, birds, dogs, cats, and other wildlife.
- Check for and dispose of moldy or spoiled material in silos, bunks, and bins. Upright silos need to be emptied to thoroughly clean.
- Bags of feed or feed ingredients should be stored off the floor (e.g. on pallets).



Figure 2.1.: Feed bunks and storage

- Opened bags should be placed in or emptied into barrels with tight lids.
- Use steel feed bins rather than open-front commodity shed bays to reduce shrinkage (i.e., loss to wind, rodents, or birds) and prevent contamination.
- Clean in and around storage areas between batches of feed.
- Rotate inventory to limit the amount of pathogens in stored feeds.
- Keep covers on barrels and bins; make sure water is not getting into storage areas.
- Address any moisture problems periodically. Ensure that the storage environment is appropriate for feed.
- Protect all feeding areas from animal carcasses and manure.
- Follow optimal feed management practices.
- Use smooth feeding bunks to minimize the surface area that could be colonized by pathogens.
- Dispose of feed refusals if not eaten within 24 hours. Do not feed refusals from adult animals to young stock.

2.3. Identifying and reporting pest or parasite infestation cases

2.3.1. Prevention of Environmental contamination

Pest control programs are to be in place on quarantine stations so as to minimize the chance of pests transferring infections between animals on the station, or to environments outside the station.

- A regular rodent baiting program is to be maintained around the perimeter of the core quarantine area, in all buildings/areas of potential harbor for rodents, and in all used/occupied animal facilities.

- Internal bait stations in animal occupied areas are to be of design/location so that the risk of animals accidentally obtaining baits is minimized.
- A register of bait locations is to be maintained along with a service schedule.
- Regular changing of proprietary bait types should be undertaken to minimize bait in-effectiveness.
- Spillage of feed is to be minimized to discourage ready access of pests to feed sources, and any spilt feed is to be cleaned up promptly.
- Drainage systems (particularly in the core area) should be such that ponding of water does not occur so that breeding areas for mosquitoes etc are minimized.
- Wild birds should also be prevented from accessing animal feed areas.
- Security fences are to be maintained so as to provide a deterrent at station perimeters, and prevent access at internal core perimeters for outside animals etc.
- Should pests become a problem, it may be necessary to seek assistance from commercial pest operators to advise/carry out suitable control program
- The premises (sheds, stables, and kennels) and pastures should be prevented from contamination.
- Elimination of parasites from the host at the most appropriate time by use of antiparasitics thereby preventing pasture contamination.
- Destruction of adult parasites in hosts prevents expulsion of eggs or the larvae and the associated contamination of the environment.
- Ovicidal drugs should preferably be used to destroy the eggs, thereby preventing environmental contamination.
- Anthelmintic treatments prior to rainy seasons using larvicidal drugs will prevent contamination of pastures at a time when conditions are becoming favorable for egg and larval development.
- Proper faeces disposal will give satisfactory control of faecally transmitted monoxenous parasites of animals.
- Faeces or litter may be heaped to destroy the eggs/oocysts of parasites.
- Pens and pastures should not be overstocked.

Pest or parasite infestation may include vertebrate and invertebrate pests, wild birds in sheds or housing, dogs, cats, feral animals, wildlife, parasites of honeybees, or feral or managed bees carrying parasites.

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Reducing the stocking rate can significantly reduce the parasite burden in animals and the associated problem of contamination in sheds and pastures.

2.3.2. Control of Intermediate host, vectors and reservoirs

- Limiting the contact between intermediate and final hosts by improvements in management.
- Direct action may be taken to reduce or eliminate intermediate host populations.
- Reduction in the number of snail intermediate host by chemical (molluscides) or biological control (ducks, Maris species of snails).
- Reduction in the number of snail intermediate hosts by drainage, fencing and other management practices.
- Reduction in the number of insect and tick vectors by chemical (insecticides/acaricides), biological control (hymenopterous insects, entomopathogenic fungi and *Bacillus thuringiensis*) and genetic control (sterile male technique, chromosomal translocation).
- Use of vaccines (Tickgard) at appropriate times may control the vector population.

Destruction of reservoir hosts is important in controlling certain parasites, e.g., rodents for *Leishmania* and antelopes for African trypanosomes.

2.3.3. Control of internal parasites

- Ridding the animal of internal parasites by periodical deworming,
- Preventing infestation of animals by keeping premises free from infective forms of parasite – disinfestations, and Elimination of intermediate hosts.

2.3.4. Control of arthropod pests

- Manure, filth, damp and dark corners, stagnant water etc. are all favorite breeding places of insects and these places should be concentrated for removal and cleaning periodically.
- Eggs of ticks and mites deposited in cracks and crevices in the walls, floors and wood work of the animal houses should be removed periodically.
- Periodical (once in April-June and once in July-September) dipping or spraying of animals with suitable insecticides to prevent lice, flies, fleas, mites and ticks on skin of animals.
- Inside of animal sheds should be scrubbed and cleaned daily to remove all filth.
- Areas around animal sheds should also be kept dry and clean.

- Interior of animal sheds (roofs, walls and corners) should be cleared regularly of cobwebs and spider webs and sprayed with insecticides at least once in a month.
- Dusting of animals with DDT, lorexane, gammexane or with some patent preparations available in the market can be tried to control cattle warble flies, etc.
- If the herd is small, individual animals can be dusted by hand.
- For larger herds a gunny bag (or any other bag having sufficiently large pores through which dusting powder can escape out) filled with dusting powder can be hung at a convenient place and at a convenient place and at a convenient height. As the animals pass under the bag they rub their backs against the bag, getting a dusting in the process. Such convenient places for hanging the bags are the entrances to stanchion barn, hay or straw feeding bunk, gates leading out on to the pasture etc.
- Organophosphate insecticides like Malathion, Parathion, and Neguvon etc. are available which are very destructive to insects but are quite toxic to animals as well.
- Newer generation synthetic pyrethroids like Deltamethrin (Butox™), Cypermethrin (Cyprol, Tikkil) etc. are available in the market.

Great care should be taken while using these chemicals and manufacturer's instructions regarding their usage should be scrupulously followed.

2.4. Identifying OHS hazards and taking appropriate action

2.4.1. Hazards and action in the quarantine site

- Feed should be placed in troughs that cannot be contaminated by faeces and waterer should be kept clean and free of contaminants.
- Good grazing management will control pasture or grassland borne helminthic infections.
- Use of clean or safe pastures (not grazed for 6 to 12 months) will help to control helminth problems.
- Rotational grazing of livestock species should be followed to minimize or limit the infection from pasture.
- All new arrivals to the farm should be isolated for at least 30 days and dewormed.
- Young animals are generally more susceptible to parasites than adults. Therefore young animals should be housed separately from adult animals.

- Infected/Infested animals should be removed from the flock or herd and housed separately.
- Treatment should be followed by chemoprophylaxis to prevent reinfection.
- Vaccines may be used to prevent infection, if suitable vaccines are available.
- Prompt and proper disposal of manure and other filth from the farm premises.
- Regular scrubbing and cleaning of feed and water troughs as well as whitewashing their interior at least once in a week.
- Leveling up all ditches, low marshy areas, pits etc. in and around animal houses so that water may not stagnate in them.
- Filling up or fencing of all stagnant water pools, ponds etc. around the farm and on pastures so that animals may not get access to them. It is always better to have piped water supply to farm animals.
- Housing animals in clean houses with paved floors.
- Animals of different ages should be housed separately.
- Younger animals should never be mixed with older ones.
- Proper deworming of all such animals before putting them in a shed or bringing them into the farm.
- If grazing is practiced-division of pasture into several blocks and practicing rotational grazing in these blocks.
- Feeding of cultivated fodders is more helpful in checking pasture-borne infections.
- Preventing humans from defecating on pastures or around the farm, as this may cause contamination with tape worm eggs.
- Care should be taken to see that dogs (intermediate hosts), crows and other birds (mechanical carriers) do not gain access to the animal farm.
- Control of snail population may result in control of liver fluke infestation to some extent.
- It is worthwhile trying reduction of snail population by treating infected pastures, ponds, streams, etc. with copper sulphate.
- A concentration of one part of copper sulphate in one million parts of water is generally recommended but stronger solution may be necessary when large quantities of decaying organic matter are present

2.4.2. Control hazards

Traffic control within the operation should be designed to stop or minimize contamination of animals, feed, feed handling equipment and equipment used on cattle. Pit silos should not be accessible from non-feed handling equipment such as loaders used outside the feeding area or vehicles that travel outside the feed mixing and handling facility. No one (manager, nutritionist, veterinarian, and banker - **no one**) should be allowed to drive onto the surface of a trench silo. The only equipment allowed should be the loader used for handling the feedstuff. In large pits, it may be acceptable to allow feed trucks to enter, provided they are loaded at least 100 feet away from the working face of the stored feed. If possible, separate equipment should be used for handling feedstuffs and manure.

When an investigator imports animals from another institution, there is a risk of exposing the colonies to pathogens. Quarantine and testing of animals before they are introduced into the current populations as well as pre-screening of the health status and surveillance reports from the institution providing the animals (allowing for the ability to reject animals' capable of introducing disease) can help prevent the introduction of pathogens.

The hazards described here are commonly encountered in workplaces where animals are housed and/or treated: these include veterinary practices, wildlife sanctuaries and parks, zoos, animal shelters, stables, boarding facilities, pet shops.

Table 1: Hazards and Preventative Action

Hazard	Possible Harmful Effects	Possible Employer Action to Prevent Injury / Illness	Preventative Action Students Can Take
Animals Even usually placid animals may inflict injury if under stress or in pain. Animal behaviour is difficult to predict and may change without warning	Bites, mauling, scratches (smaller animals) And Impact injuries such as fractures, crushing, bruising (larger animals)	<ul style="list-style-type: none"> • Allow only experienced and trained staff to handle or restrain animals • Instruct staff in safe animal handling, including recognizing ‘warning’ signs • Label cages where an animal’s behaviour gives reason for concern • Provide personal protective clothing 	<ul style="list-style-type: none"> • Students must NOT handle animals unless the animal and the task have been assessed by their supervisor • Don’t approach any animal unless assured by your supervisor that it’s safe
Autoclaves / Sterilisers	Burns, scalding from steam	<ul style="list-style-type: none"> • Ensure that only trained and experienced staff operate autoclaves • Ensure regular plant maintenance 	<ul style="list-style-type: none"> • Students must NOT be exposed to any dangerous plant or equipment
Animal enclosures, stalls and cages	Cuts from metal edges, manual handling injury, risk of infection and disease if areas housing animals are not frequently cleaned and disinfected	<ul style="list-style-type: none"> • Ensure regular cleaning and maintenance • Assess manual handling and redesign cages to minimise risk • Provide wash-up facilities, instruct staff in personal hygiene 	<ul style="list-style-type: none"> • Don’t open enclosures, stalls or cages for any purpose unless the task (and the animal) has been assessed by your supervisor • Wear gloves when cleaning

Hazardous waste (soiled towels, swabs, syringes etc.)	Infectious diseases, cuts or 'needle stick' injuries; irritation to skin, eyes, nose or throat	<ul style="list-style-type: none"> • Treat all waste as hazardous • Arrange for safe disposal into labelled containers • Provide gloves where needed 	<ul style="list-style-type: none"> • Wear rubber gloves when handling soiled material • Don't handle syringes • Adopt good hygiene practices
Housekeeping	Slips, trips and falls as a result of slippery surfaces or things left on the floor or on the ground	<ul style="list-style-type: none"> • Ensure that spills are cleaned immediately • Keep work areas clear of items that could present impact hazards 	<ul style="list-style-type: none"> • Follow procedures for cleaning up spills • Report any spills or obstacles
Manual handling	Musculoskeletal injuries (sprains and strains)	<ul style="list-style-type: none"> • Assess every manual handling task • Use mechanical aids or team lifts • Train workers in manual handling 	<ul style="list-style-type: none"> • Don't attempt any task if you think it may be difficult to do safely – ask for help!
Zoonoses (diseases caught from animals)	Diseases including hydatid disease, ringworm, Q fever	<ul style="list-style-type: none"> • Minimize potential for zoonotic infections – training, safe work practices, vaccination 	<ul style="list-style-type: none"> • Always wash up after contact with animals • Students must NOT enter any workplace where Q- fever has been reported
Cuts	Infection	<ul style="list-style-type: none"> • Ensure tasks with potential risk of cuts are assessed • Provide protective gloves • Provide appropriate washing facilities 	<ul style="list-style-type: none"> • Wear protective gloves • Wash hands immediately • Seek first aid immediately if needed

2.5. Disposing waste products

2.5.1. Waste management

Waste products are feed spills, unused/expired vaccine, and biological matter, such as semen, embryos, tissue samples, plant cuttings, dead birds, manures, used beekeeping equipment, dead bees, and used chemicals and pest strips. Other items may include beehives, materials and hive products.

a) Animal's waste product

Animal faeces and hay from the larger animals is stored in the refuse pit or other suitable areas until the completion of the quarantine period for that consignment of animals. Once completed, the manure may be disposed of in appropriate way.

b) Water Waste

The water treatment plants at the animal quarantine stations treat all water waste as per guideline requirements prior to disposal.

c) Dispose needles and syringes

Needles, syringes and other sharps are to be temporarily stored in designated sharps bins. When the bins are full they are to be destroyed at an approved facility.

d) Disposal animal wastes

Dispose animal wastes properly to control diseases and to prevent air and water pollution. Apply livestock and poultry manure as fertilizer for crops and grasses.

Animal waste has several benefits:

- Nutrients are added to the soil.
- Soil cultivation is improved.
- The water-holding capacity of the soil is improved.
- Soil erosion through wind and water is lessened.

e) Disposed animal waste product

Animal faeces and hay from the larger animals is stored in the refuse pit or other suitable areas until the completion of the quarantine period for that consignment of animals.

Once completed, the manure may be disposed of in appropriate way.

The water treatment plants at the animal quarantine stations treat all water waste as per the Ethiopian environment protection law prior to disposal.

Needles and syringes and other disposable items are to be temporarily stored in designated bins. When the bins are full they are to be destroyed at an approved facility.

2.5.2. Burial of Biological materials

- The concerned staff handling the biological material must follow the proper guidelines of burial.
- A pit should be dug about 2 meters deep/as the case may be. It should be half filled with waste/other material, and then covered with lime within 50 cm of the surface, before filling the rest of the pit with soil.
- It must be ensured that animals do not have any access to burial sites, to avoid this; covers of galvanized iron/wire meshes may be used.
- On each occasion when wastes are added to the pit, layer of 10 cm of soil shall be added to cover the wastes.
- Burial must be performed under close and dedicated supervision.
- The deep burial site should be relatively impermeable and no shallow well should be close to the site.
- The pits should be distant from habitation, and sited so as to ensure that no contamination occurs of any surface water or ground water. The area should not be prone to flooding or erosion.
- The location of the deep burial site will be authorized by the prescribed authority.
- The concerned official shall maintain a record of all pits for deep burial.

2.5.3. Disposal of carcasses

Dispose of animal carcasses properly to prevent the spread of infections and diseases.

Suggested precautions

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- Cover dead animals immediately, so insects and other animals will not feed on them prior to proper disposal.
- Never deposit carcasses on or near streams.
- Dig a hole 6 feet deep, right beside the carcass. Roll the dead animal into the hole.
- Sprinkle large amounts of lime, wood ash or kerosene over the carcass then fill in the hole with soil.
- Protect the area from stray dogs which might carry away parts of the carcass and spread disease. Cover with stones or logs to prevent dogs from digging up the carcass.

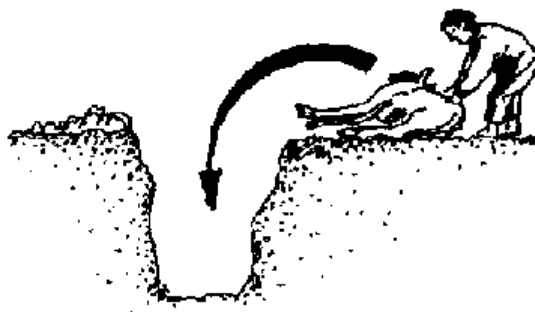


Figure 2.2: Disposing dead animals

While disposing of any animal, products of animal origin or livestock product materials pursuant to be burnt or engulfed by digging up the three-feet-deep hole of disposed of in accordance with the procedures set forth by the Department.

In the event of death of an animal during the course of transport, the dead body of the animal shall be disposed so as not to causing spread of disease. The transport vehicle transporting such an animal shall also have to be disinfected.

2.5.4. Disinfection of pen and equipment

Disinfect pen and equipment after use to kill germs. Disinfectants help prevent animals from dying and improve animal production.

When to disinfect

- ✓ 2-3 times a week during a disease outbreak.
- ✓ If the number of animals getting sick rises.
- ✓ If the number of animals dying rises.

a) Commonly used disinfectants

- **Lye**

Soak 1 kg of wood ash in 1 can (kerosene) of water overnight. Use the water extract (lye) to disinfect the pen. Avoid getting in contact with lye for it could cause a burning sensation on the skin and the eyes.

- **Creoline**

Mix 1 teaspoon of creoline with 1 liter of water using a stick. Use the solution to disinfect the pen.

- **Lysol**

Mix 1 teaspoon of Lysol with 1 liter of water. Use the solution to disinfect the pen.

b) Tips about disinfectants

- They are harmless to humans and animals when applied in the right amount.
- If possible, use gloves when handling.
- Do not expose disinfectants to sunlight.
- Close the bottles tightly.

c) Ways of disinfecting

- i. Clean the pen or house. Clean the ceiling first, then the wall and lastly the floor. Thoroughly dry the area.
- ii. Remove drinkers and feeders (if possible).
- iii. Use a detergent to loosen dirt and organic matter sticking to all surfaces. Warm or hot water increases the cleaning performance of the solution.
- iv. After using the detergent, rinse the pen with clean water.
- v. Disinfect with any of the above examples of disinfectants.



Figure 2.3: Ways of disinfecting house

Dispose animal wastes properly to control diseases and to prevent air and water pollution. Apply livestock and poultry manure as fertilizer for crops and grasses.

Animal waste has several benefits:

- Nutrients are added to the soil.
- Soil cultivation is improved.
- The water-holding capacity of the soil is improved.
- Soil erosion through wind and water is lessened.

Among animal manure, poultry droppings have the highest commercial and nutritive value because of their high nitrogen content, needed by plants.

Another use of chicken manure is farmers apply chicken manure around newly sown seeds and planted seedlings to ward off field mice. The manure of other animals can also fertilize the soil; but only chicken manure can prevent mice from destroying seeds and seedlings.



Figure 2.4: Applying chicken manure to field to prevent mice

The following sections offer general safety guidelines and procedures for disposing of biological waste.

Segregation

- Segregation is necessary when working with hazardous biological agents.
- Any waste that could cause a laceration or puncture must be disposed of as "Sharps." Sharps must be segregated from other waste.
- Do not mix waste that requires incineration with glass or plastics.
- Do not mix biological waste with chemical waste or other laboratory trash.
- Segregate hazardous biological waste from nonhazardous biological waste.

Disposal Methods

Different materials require different disposal methods to ensure safety. Follow these guidelines for physically disposing of biological waste.

- Animal Carcasses and Body Parts:** Incinerate the materials or send them to a commercial rendering plant for disposal.
- Solid Animal Waste:** All animal waste and bedding that is infectious or harmful to human, animals, or the environment should be treated by incineration, thermal disinfection, or chemical disinfection.
- Liquid Waste:** Liquid waste, including bulk blood and blood products, cultures and stocks of etiological agents and viruses, cell culture material, and rDNA products should be disinfected by thermal or chemical treatment and then discharged into the sanitary sewer system.
- Metal Sharps:** All materials that could cause cuts or punctures must be contained, encapsulated, and disposed of in a manner that does not endanger other workers. Needles, blades, etc. are considered biohazardous even if they are sterile, capped, and in the original container.
- Plastic Waste:** Contaminated materials must be thermally or chemically treated and placed in a properly labeled, leak-proof container for disposition in the dumpster. Materials that are not contaminated may be placed directly in the dumpster.
- Microbiological Waste:** Solids must be thermally or chemically treated and placed in a properly labeled, leak-proof container for disposition in the dumpster. Liquids must be thermally or chemically treated and then discharged into the sanitary sewer system.

g) **Animal Pathological Waste:** Animal cadavers and recognizable body parts must be cremated or buried. Other pathological waste from humans and primates must be incinerated.

Most biological waste that is not infectious or otherwise hazardous to humans, animals, plants, or the environment may be discarded as regular waste or sewage. The only exceptions are animal carcasses and body parts. These wastes must be incinerated or sent to a commercial rendering plant for treatment.

Non-hazardous Biological Waste

There are no record-keeping requirements for nonhazardous biological waste.

Follow these guidelines for nonhazardous biological waste:

- It is recommended to autoclave or disinfect all microbial products, even if they are not biohazardous.
- Avoid disposing of waste in a manner that could cause visual or odorous problems.
- Do not label nonhazardous biological waste as hazardous (e.g., do not use the Biohazard Symbol, red bags, etc.). Instead, it is recommended to label the container as "NONHAZARDOUS BIOLOGICAL WASTE."
- Use nonhazardous animal bedding and manure for compost or fertilizer when possible.

2.6. Designing and implementing animal quarantine plans

2.6.1. Layout and Design of Premises

The premises must be designed, constructed and operated so that:

- It has a minimum of five units
- Units should be constructed in self-contained groups so as to minimise the risk of disease spread and to aid security at the premises
- Prominent signs are displayed at each entrance through the perimeter to indicate that the premises are approved quarantine premises and that un authorised entry is prohibited
- No animal has contact with another animal (unless licensed to share a unit)
- Every animal has direct access to an individual exercise run from the sleeping compartment or alternatively, in the case of cats, a sleeping compartment and exercise run combined. The use of common exercise runs is prohibited

- It is not possible for anybody to gain access to animals without the knowledge of kennel staff
- All unit doors required for the security of animals are fitted with devices of a type which make them escape-proof to animals. Doors and locks must be such that:
 - ✓ The animal cannot escape when the door is closed
 - ✓ The door can be secured from the inside as well as from the outside, and
 - ✓ If visitors are locked in they cannot unlock the door themselves.
- All entrances to a block or section of units have an outer door and an inner door forming a trap to prevent an animal escaping. The distance between these doors must be such that anything normally used in that block may be taken through the trap in such a way that there is always one door shut. The inner door, if solid, must have an escape-proof viewing panel in it. Both doors must open inwards and be completely self-closing and latching self-closing. The use of an office or other room as a trap is prohibited. Run end gates, if provided, must open into a trapped safety corridor. Whatever the design of the accommodation, there must be three doors between the animal in its unit and the area between the buildings and the perimeter fence. UN trapped fire exits, for use solely as escape routes in an emergency, are permitted. Such fire exits must be of a type approved by the Fire Prevention Officer and must be marked to indicate that they are fire exits for emergency use only and secured in such a manner that the door can only be opened in an emergency.
 - Wash hand basins with a supply of hot and cold running water are provided within the perimeter fence for the use of staff
 - There is a veterinary examination and treatment room within the perimeter fence for use only for the treatment of animals in quarantine
 - Animal units provide a means of lighting sufficient to allow the proper disinfection and cleansing of units and the safe-handling and examination of animals at all times
 - All parts of the premises are served by an efficient covered drainage system subject to the minimum requirements of local by-laws. It must be impossible for drainage, including surface drainage, to contaminate adjoining units or passageways. Drains must be rodent proof.

2.6.2. Quarantine facility infrastructure design and equipment

- a) The construction or location, and the operation of the quarantine facility should provide for strict segregation and isolation of quarantined animals from other animals and from personnel not essential to the operation of the quarantine.
- b) Methods to attain this isolation include:
 - The use of security measures such as physical barriers and procedural access control systems.
 - As part of the security system, a hazard warning sign should be posted at the entrance to the quarantine stating that exposure to infectious diseases may occur in the quarantine. The names and telephone numbers of contact persons responsible for the quarantine area should be provided, and all special requirements for entering the quarantine area should be listed.
 - The implementation of an effective rodent, feral animal and insect control program, which does not pose a health risk to the quarantined animals.
 - The complete physical separation of groups of quarantined animals from other groups of quarantined animals to prevent exposure to and the introduction of infectious agents from one group to another during the quarantine period. As a rule, only animals arriving in one shipment from the same exporter should be grouped together. Animals may not be exchanged between groups or groups mixed during the quarantine period, unless the newly formed group restarts the entire quarantine process.
- c) The quarantine facility should be designed to allow for the secure holding of quarantined animals and to allow for the safe, easy and efficient cleaning and decontamination of the animal holding area and the access area during and after use.
 - A quarantine facility should consist of a minimum of two discrete areas physically separated from the outside and from each other, including an access area where clothes, footwear and protective articles are changed, and where locker, hand-washing and, if possible, showering facilities are provided. Procedures should be in place to prevent the cross-contamination of clothes and footwear worn outside the quarantine facility from potentially contaminated protective clothing worn inside the animal holding area.

- Animal holding room wall, floor, and ceiling surfaces should be water resistant to facilitate cleaning and disinfecting. Any holes or penetrations in these surfaces should be sealed or be capable of being sealed to facilitate fumigation or space decontamination. Doors to animal rooms should open inward, and should always be kept closed when *animals* are present. Any windows should be closed and sealed, unless the facility is sufficiently separated (distance, fences, other means of separation) from non-quarantined area.
- In facilities that are operated with the windows closed and sealed, a ventilation system should be operated and monitored in such a manner to assure the provision of an optimal isolation of these animals, while also providing for their health and comfort. The direction of the airflow in the quarantine facility should be inward from the outside of the quarantine facility, to quarantine access areas, to animal holding rooms. Air exhausted or re-circulated within the facility must be filtered. In addition, exhaust air should be dispersed away from the building and other occupied areas. Heating, ventilating, and air-conditioning systems should be designed so that their operation can be continued, even at reduced capacity in the event of electrical or other support system failure.
- If floor drains are present, their drain traps should always be filled with water or a suitable disinfectant.
- A hand washing sink should be available in the animal holding room for personnel usage.
- Adequate equipment and space should be available both in the animal holding area and in the quarantine facility in general for the adequate decontamination and the proper disposal or processing and storing of all supplies and equipment used in the quarantine.

2.7. Recording observations

2.7.1. Record keeping for internal review and auditing

- The station manager must ensure that the procedures according to “Quarantine Station Operational Guideline” by all quarantine station staff.

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- All incidents to do with export animals should be reported to the station manager/quarantine inspector and other station staff at weekly/fortnightly staff meetings, and recorded on the animal's history sheet.
- Daily observations are to be recorded on animal history sheets/cards.
- The quarantine management should give high priority to auditing and reviewing its activities. Audit and review are essential elements of effective quarantine management.
- The animal quarantine stations must keep copies of all relevant information pertaining to exported animals. Copies should be made of all vaccination records and kept with the history sheets and other relevant export information.
- The original animal health certificate should be given to the owner or exporter.
- After animals have been released from quarantine, their history sheets and associated documentation should be archived and be easily accessible for auditing and information purposes.

Records must be kept of the animals in the quarantine station and made available to the Veterinary Authority to enable monitoring

2.7.2. Record information

The person in charge of the isolation unit must keep the following records,

- The date, number and identification of animals entering and leaving the isolation facility
- Copies of the export health certificates and border crossing certificates accompanying imported animals
- Significant health observations, cases of illness and deaths on a daily basis
- Dates and results of testing
- Dates and types of treatment
- Dates and names and addresses of persons entering the isolation unit

2.8. Taking measures on sick or exposed animals

- **Removing infected and potentially infected animals**

Susceptible species on infected farms or in designated infected areas are immediately slaughtered on site and their carcasses disposed of safely, usually by burial or burning. It is often combined with cleaning and disinfection procedures for the infected premises. Because

of the rapid spread of epidemic diseases, all susceptible animals are slaughtered, whether obviously infected or not. For some infectious disease control program, such as for brucellosis and tuberculosis, it is possible only to slaughter animals that have been tested positive, but this is not appropriate for rapidly contagious epidemic diseases.

A component of an eradication policy may also be selective reduction of susceptible wild and/or feral animal populations in infected areas, but before embarking on such a program a careful evaluation should be made.

A keeper should be designated to care only for quarantined animals or a keeper should attend quarantined animals only after fulfilling responsibilities for resident species.

Equipment used to feed and clean animals in quarantine should be used only with these animals. If this is not possible, then equipment must be cleaned with an appropriate disinfectant (as designated by the veterinarian supervising quarantine) before use with post-quarantine animals.

Many disease agents can survive for extended periods of time in soil or other organic material like bedding, old feed, etc. Animals or humans can then acquire the disease agent as discussed in previous sections: from the environment through inhalation of aerosolized microbes, via oral consumption, or from direct contact with an animal or with fomites. Therefore, environmental contamination should not be ignored but studied. The routes the disease agent uses to get into the animal can be controlled if the animal's environment is controlled.

Self-check-2	Written test
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Name..... ID..... Date.....

Directions: Answer all the questions listed below.

Test I: Multiple choices

- Which of the following is not included in the quarantine construction (3pts)
A. Heating B. ventilating C. air-conditioning D. River
- One is not record information in quarantine station? (5pts)
A. Dates and results of testing. C. Dates and types of treatment.
B. Potential contaminants D. Date, number and identification of animals

Test II: Short Answer Questions

- How Chemical disinfectants are stored? (3pts)
- Where is many disease agents can survive for extended periods of time? (5pts)
- How to reduce in the number of anthropoid pest? (3pts)
- List organophosphate insecticides used to spray on insects (5pts)
- What are the benefits of animal waste? (5pts)
- How much deep will be dug a pit for waste/other material? (2pts)
- Why animal carcasses dispose properly (5pts)

Note: Satisfactory rating -18 points Unsatisfactory - below 18 points

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

Operation Sheet -2

Techniques in disposing of carcasses

A. Tools and equipment's

- Lime
- Meter
- Stone
- Rope
- Shovel
- Axe

B. Procedures/Steps/Techniques

- Cover dead animals immediately, so insects and other animals will not feed on them prior to proper disposal.
- Never deposit carcasses on or near streams.
- Dig a hole 6 feet deep, right beside the carcass. Roll the dead animal into the hole.
- Sprinkle large amounts of lime, wood ash or kerosene over the carcass then fill in the hole with soil.
- Protect the area from stray dogs which might carry away parts of the carcass and spread disease. Cover with stones or logs to prevent dogs from digging up the carcass.

LAP TEST-2	Performance Test
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Name..... ID.....

Date.....

Time started: _____ Time finished: _____

Instructions: Given necessary templates, tools and materials you are required to perform the following tasks within **1 hour**. The project is expected from each student to do it.

Task: Perform disposing carcass

LG # 46	LO #3- Follow quarantine site procedures
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Instruction sheet

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

- Informing visitors for quarantine procedures and providing visitors with appropriate clothing and footwear
- keeping gates and doors locked
- Maintaining security fencing
- Checking deliveries to site for vehicle decontamination

This guide will also assist you to attain the learning outcomes stated in the cover page. Specifically, upon completion of this learning guide, you will be able to:

- Inform Quarantine procedures for visitors and provide visitors with appropriate clothing and footwear
- keep gates and doors locked
- Maintain security fencing
- Check deliveries to site for vehicle decontamination

Learning Instructions:

1. Read the specific objectives of this Learning Guide.
2. Follow the instructions described below.
3. Read the information written in the information Sheets
4. Accomplish the Self-checks
5. Perform Operation Sheets
6. Do the “LAP test”

Information Sheet – 3

3.1. Informing visitors for quarantine procedures and providing visitors with appropriate clothing and footwear

3.1.1. Informing visitors for quarantine procedures

All new staff/visitors should be advised by the station manager about their safety responsibilities.

They should be provided with information about:

- evacuation procedures
- fire safety procedures and the location and use of fire extinguishers and hydrants
- location of first aid equipment
- when to have an accident form completed by the station manager
- the need to complete hazard report forms

New staff should familiarize themselves with the Department's safety policy and to be informed of matters which relate to their work area. They will need to be made aware of the general principles of good management and machinery care and specific safety hazards, which are relevant to the station.

- Security fences are to be located on all station external boundaries, and additionally around the internal core quarantine area. These fences are to be human/animal deterrent fences, with the internal fence offering even greater protection from access by outside animals.
- As a further deterrent to unauthorized personnel entry "No Entry Quarantine Area" signs are to be located at regular intervals on external station fences.
- Stations must be equipped with a foot and tyre bathes at the gate through which all traffic entering the station are disinfected.
- Opening of the gate must be controlled by the guards of the quarantine station.
- Staff and other authorized personnel may be provided with gate passes.
- Vehicle entry to the internal quarantine area should be minimized; vehicles should stay on the roadways.
- Security lights are to be maintained for night use in the internal quarantine area.
- Persons living on site are expected to passively monitor security of premises after hours..
- A regular maintenance program must be in place to ensure the continued integrity of these systems.

- All visitors entering the internal quarantine area must sign a visitors book giving date, name, address and purpose of the visit.
- Visitors entering the internal quarantine area should normally be accompanied or supervised by a quarantine officer.
- As a general rule visitors should not remain on the station when there is no quarantine officer on the station.
- A record of any internal and external security breaches is to be kept.
- All buildings and compounds on the station must be capable of being locked. All internal security fence gates must be locked outside normal business hours. All occupied animal houses must be locked when not attended by a quarantine officer. All kennels/pens should be locked when not attended.
- Door/gate fastening used to lock animals are to be such that it is not possible for animals to be able to open the doors/gates.
- In the event that an animal escapes from its holding area there must be other further internal security systems in place to prevent the animal from being able to get out of the station's internal quarantine area.
- A regular maintenance program must be in place to ensure the continued integrity of these systems

Before Visiting a quarantine Premises

- a) Visitor's vehicle has been cleaned and disinfected including the undercarriage.
- b) Establish a time and date for the visit with the owner or manager.
- c) Call the company veterinarian informing him/her of the visit.
- d) Biosecurity protocols (clothing and wearing footwear properly)
- e) Guests will visit the site with the guidance of enterprise's/site's veterinarian.
- f) After accomplish they visit the site should wash their hands properly using antiseptic.

Information for visitors

- a) Use of eating, drinking, smoking and storing of food for visitors should not be permitted in the quarantine facility.
- b) All staff entering the quarantine should wear (preferably disposable) protective clothing and devices.

- c) Protective clothing, gloves, and mucus membrane protection should not be used in more than one quarantine animal holding room. This may require the changing of protective clothing by staff as they go between rooms in the performance of their duties.
- d) Foot or shoe baths should be provided and used at the exits of the animal holding area and of each animal holding room. They should be changed often enough to remain fresh and free of organic matter.
- e) Showering after contact with non-human primates, their body waste or secretions or at a minimum before leaving the quarantine facility is highly recommended.
- f) Intermittent and frequent hand washing while working in the quarantine facility is highly recommended. This is especially important as protective gloves may become inadvertently torn or ruptured.
- g) Baseline serum samples from quarantine personnel should be collected and stored. Additional serum samples may be collected periodically, as an aid to epidemiological investigations.

3.1.2. Providing appropriate clothing and footwear for visitors

Since the visitors should be understand about the site principle and procedure to cleared unnecessary bias.

Provide PPE for visitors are used to:

- To promote and secure the health, safety and welfare of persons at quarantine site
- To protect persons at site against hazards
- To assist in securing safe and hygienic work environments
- To reduce, eliminate and control the hazards to which persons are exposed at the site
- To foster co-operation and consultation between, and provide for, the employees in the formulation and implementation of health and safety standards to current levels of technical knowledge and development
- To provide for formulation of policies and for the co-ordination of the administration of laws relating to occupational health, safety and welfare
- To promote education and community awareness on matters relating to occupational health, safety and welfare.

Working in an animal facility and the specific protective measures to reduce the risk, with an emphasis on personnel protective equipment (PPE). Two principles serve as the basis for selecting appropriate protective measures:

- a. Protection of personnel from such hazards as allergens, infectious/zoonotic disease, and physical hazards (e.g., bites, noise, burns, chemical hazards, etc.),
- b. Protection of animals from the introduction of disease. It is essential to recognize that a variety of factors (e.g., personnel/animal disease status, immune-competence, procedure/activity, use of hazardous agents, chemicals/radiation, physical factors such as facility design and function, etc.) influence the selection of appropriate PPE. For that reason definitive guidelines are not provided and this guideline outlines basic best practices to which exceptions may be warranted.

3.2. keeping gates and doors locked

The quarantine station must be securely fenced with livestock-proof fencing and with controlled entry, restricted to people authorized by the veterinary authority.

It is not possible for anybody to gain access to animals without the knowledge of kennel staff. All unit doors required for the security of animals are fitted with devices of a type which make them escape-proof to animals. Doors and locks must be such that:

- a) The animal cannot escape when the door is closed
- b) The door can be secured from the inside as well as from the outside
- c) If visitors are locked in they cannot unlock the door themselves

All entrances to a block or section of units have an outer door and an inner door forming a trap to prevent an animal escaping. The distance between these doors must be such that anything normally used in that block may be taken through the trap in such a way that there is always one door shut. The inner door, if solid, must have an escape-proof viewing panel in it. Both doors must open inwards and be completely self-closing and latching self-closing. The use of an office or other room as a trap is prohibited. Run end gates, if provided, must open into a trapped safety corridor. Whatever the design of the accommodation, there must be three doors between the animal in its unit and the area between the buildings and the perimeter fence. Untrapped fire exits, for use solely as escape routes in an emergency, are permitted. Such fire exits must be of a type approved by the Fire Prevention Officer and must be marked to indicate that they are fire

exits for emergency use only and secured in such a manner that the door can only be opened in an emergency.

3.3. Maintaining security fencing

- The perimeter fence or wall must be designed and constructed to prevent:
 - ✓ The escape of animals in quarantine
 - ✓ The entry of non-quarantine animals into the premises
 - ✓ The unauthorised entry of persons.
- To achieve this the perimeter fence or wall:
 - ✓ Must be at least 1.8m (6ft high)
 - ✓ Where it is less than 3m (10ft), must have securely fixed along the top a guard 0.6m (2ft) wide set at an inward and upward angle of 45°. As an alternative to the angled guard, the entire area between the perimeter fence and all buildings within the perimeter fence can be covered with escape-proof wire mesh.
- Chain link may be used for the construction of the perimeter fence, including any angled guard, and wiring over to buildings or units within the perimeter.
- Wire used in the construction of the perimeter fence must have a diameter not less than 2mm excluding any covering and a mesh size no greater than 5cm (2 inches).
- There must be no more than two entrances through the perimeter fence. One must be large enough to allow the entry of a carrying agent's vehicle to unload animals within the perimeter fence behind locked gates. If there is a gate for pedestrian access only, it must be self-closing, self-locking and require a key to gain access from outside the perimeter.

3.4. Checking deliveries to site for vehicle decontamination

Precautions to minimize contaminating equipment in quarantine deliver. These precautions include the following:

- Take care to limit the amount of contamination that comes into contact with heavy equipment and vehicles.
- If contaminated tools are to be placed on non-contaminated equipment or vehicles for transport to the decontamination pad, use plastic to keep the equipment or vehicles clean.

- If samples must be taken from a site, bag the sample containers before removing them from the site.

Service delivery involves the inspection of cargoes, containers, baggages, etc. at all the seaports, airports and land borders to ensure compliance with the Act. All imports/exports of animals, animal products etc. can only be done under a permit issued by the Quarantine Service which will state in which form these animals and their products can be exported or imported into foreign.

The service delivery has interest in the source of the animals, their products and by-products which most times are used as raw materials for food products like, cheese, milk, corned beef and others like toilet soaps

- The designated staff/case staff should maintain proper liaison with the importer and the airlines regarding the actual arrival of the livestock at the port of entry and accordingly arrange all necessary documents under intimation of officer in charge.
- The animal sheds, vehicle wash, foot baths, change room, unloading platform, attender rooms should be inspected well in advance and any lacking in respect of cleaning, disinfection, maintenance etc. must be informed to the officer in charge immediately so that necessary action can be taken.
- The animal shed, attender rooms, feed area/rooms, change rooms, laboratory block, bathrooms, toilets, approach roads, platform etc. must be properly cleaned and disinfected before the arrival of the animal.
- The animal sheds and related area including systems must be properly cleaned, disinfected and fumigated as per the direction of Officer in charge before the arrival of the animal.
- All water and electrical systems including fans and lights must be checked thoroughly.
- Doors, windows and drainage system must be kept clean, disinfected and any damage must be repaired immediately.
- The attender of concerned animal must be trained as per the SOPs/rules and regulations of Quarantine including the information regarding exercise area for animal, feed, fodder, bedding storage site and waste disposal system.
- The attenders must have proper identification and authorization from the owner and identity passes must be issued.

Self-Check - 3	Written test
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Name..... ID..... Date.....

Directions: Answer all the questions listed below.

Test I: Multiple choices

- Which of the following is **not** purpose of PPE? (3pts)
 - To secure the health, safety and welfare of persons
 - To protect persons against hazards
 - To reduce, eliminate and control the hazards
 - To expose to diseases

Test II: Short Answer Questions

- Using of eating, drinking, smoking and storing of food for visitors should not be permitted why? (5pts)
- All unit doors should be securely fitted with a device. Why? (5pts)
- Why the perimeter fence or wall must be designed and constructed? (5pts)
- How much mm in diameters wire used in the construction of the perimeter fence (5pts)
- What will be inspected in service deliveries? (5pts)

Note: Satisfactory rating - 14 points Unsatisfactory - below 14 points

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

LG # 47	LO #4 - Respond to quarantine site breach or problem
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Instruction sheet

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

- Identifying and reporting the specific problem and its location
- Cleaning and disinfecting quarantine site and location of breach
- Isolating and monitoring livestock, plant stock and other items
- Recording information about the breach or problem

This guide will also assist you to attain the learning outcomes stated in the cover page.

Specifically, upon completion of this learning guide, you will be able to:

- Identify and report the specific problem and its location
- Clean and disinfect quarantine site and location of breach
- Isolate and monitor livestock, plant stock and other items
- Record information about the breach or problem

Learning Instructions:

1. Read the specific objectives of this Learning Guide.
2. Follow the instructions described below.
3. Read the information written in the information Sheets
4. Accomplish the Self-checks
5. Perform Operation Sheets
6. Do the “LAP test”

Information Sheet-4

4.1 Identifying and reporting the specific problem and its location

Any disease out breaks in a farm/village area should be immediately reported to the concerned bodies of the vicinity. The two main issues to address in a successful insecurity management program are isolation, and sanitation.

a) Isolation

- The most important step in disease control is limiting contact, and movement of livestock. This issue is of special importance for new animals arriving on the farm/ranch, including replacement animals, breeding animals, or animals returning from livestock shows. Even co-mingling between established groups of livestock on the farm/ranch should be minimized by isolation.

b) Sanitation

- The sanitation component of biosecurity addresses the issue of the disinfection of people, equipment, animals, and material entering the ranch/farm and maintained cleanliness of people and equipment. Avoid using common syringes and needles for vaccination, blood testing, or administering animal health product.
- Cleaning of facilities and equipment between groups of livestock during processing is a good management practice to reduce pathogen transmission

Checklist for Sanitation

- Attempt to prevent manure contamination of feed and equipment used orally.
- Always clean equipment used orally between animals.
- Attempt to prevent cross contamination between healthy and sick/dead cattle.
- Regularly evaluate activities on my operation to assess the potential for contaminating cattle.
- If manure accidentally contaminates feed or water, an immediate remedy is provided.
- Use different equipment to feed and to clean pens, or completely clean between use.
- Sometimes leave manure-hauling equipment in pens with different groups of animals.
- Clean contaminated vehicles and equipment before use around healthy cattle.
- Routinely clean and disinfect feeding equipment and cattle handling equipment.
- Routinely clean and disinfect equipment used to medicate cattle.

c) Fences and foot baths at the quarantine site

- Footbaths should be available not only at the entrance/exit of the quarantine premises, but also between individual holding rooms within the premises.
- Personnel should use the footbaths as they pass from one room to another.
- After use all equipment including work surfaces should be effectively cleaned and disinfected.
- Because of the aerosol risk power hoses should not be used, except with the agreement of the approved veterinarian
- The quarantine site must be fenced to prevent the entrance of wildlife and stray persons and to prevent the escape of quarantined animals from the quarantine facility
- the fencing should be of construction (material, mesh type and size) sufficient to prevent susceptible species passing through
- should have gates that is lockable
- for those animals permitted to be outside, fencing and paddock / field selection must be adequate to prevent contact between the quarantined animals and other animals of the susceptible species
- this can be accomplished either by double fencing of the paddocks or by preventing concurrent presence of susceptible species in the neighboring fenced fields / paddocks



Figure 4.1: Fences at the quarantine site

d) Fencing

- the site must be fenced to prevent the entrance of wildlife and stray persons and contain the quarantined animals should they escape from the quarantine facility

- the fencing should be of construction (material, mesh type and size) sufficient to prevent susceptible species passing through any gates in the fencing to be lockable
- for those animals permitted to be outside, fencing and paddock / field selection must be adequate to prevent contact between the quarantined animals and other animals of the susceptible species
- this can be accomplished either by double fencing of the paddocks or by preventing concurrent presence of susceptible species in the neighboring fenced fields / paddocks

When the quarantine inspector receives animals, she/he should know the following points and make the required arrangements.

- It is important to check all the papers that accompany each load, but it is equally important to establish a checklist of observations about the animals that should be noted.
- Inspect the following information: date and time of shipment, animal health certificates (if available), look for comments regarding vaccines or medications, etc. It is also reasonable to inspect the trucker's log etc.
- Weigh all animals on arrival.
- Look at shrink and condition, handling and transportation of animals on arrival
- Establish a check list for inspection that includes a rating scale for each item. The check list should include a rating for temperament (tired, alert, active), outer condition (wet, dirty, clean), breed, frame and finish description, lameness, swelling, and number and location of previous or existing tags (if available).
- Set a minimum standard for acceptance and be willing to refuse delivery. Feed and water should be available to animals when they are unloaded.
- Cattle coming from feedlots should be placed on a high energy feed.
- For cattle coming from the range, the first feed offered should be excellent quality dry hay. Six to eight hours after arrival, change the feed to a low medium energy totally mixed feed such as one-third corn and two-thirds ground alfalfa hay. Within 24 hours, animals can be placed on a medium energy feed such as a 50/50 mix of corn and alfalfa.
- Bunk management is an important key to minimizing problems with new cattle. The inspector should get assistance from the nutritionist to develop a cost effective ration and a proper monitoring system for feed delivery.

- The best location for water troughs for all animals is directly behind the bunk pad apron. Flow-through water troughs are the best type to use for new animals.

4.2 Cleaning and disinfecting quarantine site and location of breach

4.2.1. Cleaning and sanitizing material

Cleaning refers to removal of matter from a surface on which it is not acceptable. Soil surface should be contact with a cleaning agent for adequate time and sufficient pressure should be applied, if required, to remove the soil. Cleaning involves two steps: wash step and rinse step. Equipment should be carefully selected and, washed, and maintained before they can be sanitized.

Sanitizing is the processes of destruction of micro-organisms on surface after washing and rinsing. The purpose of sanitizing is to reduce the microbial count to a safe level. It is achieved through heat and application of chemical compounds.

Both cleaning and sanitizing from the basis of livestock production service sanitation and their purposes are:

- a) Reduce health hazards by avoiding contamination
- b) Prevent the spread of diseases, and food & water contamination,
- c) Control abnormal odors, and
- d) Create conducive environmental conditions.

Wash: Mechanical elimination of gross soiling containing pathogen

Clean: Eliminate remaining organic matter of soiling adhering to the surface

Rinse: Remove traces of soaps or detergents

Disinfect: Destroy target pathogen

Rinse: Remove traces of chemical disinfectants

4.2.2. Facilities for cleaning and disinfection

- Hoses or pressure washers
- Brushes and buckets
- Disinfectant supplies with clear instructions for use
- Disinfectant footbaths, where appropriate

Depending upon the disease status of your animals, you may have to provide

- Showers
- Clean overalls and boots
- Disinfectant footbaths placed at the entrance to your site

Procedures of cleaning and disinfection

- The staff undertaking the disinfection work should be fit, healthy and should not work alone.
- The concerned staff must ensure that all traces of material used in cleaning/pre disinfection process are flushed away with water. The cleaning process must be adequate and there must be no presence of residual cleaning liquid.
- The user must read the label instructions including dilution instructions to ensure safety, accuracy and effectiveness.
- The disinfectant should be applied to every surface starting at the highest point and working downwards. All doors, windows, equipment and utensils should also be cleaned.
- The disinfectant must be left on surfaces as long as possible/as indicated in the instructions. The area must then be thoroughly rinsed and left vacant for as long as possible before allowing the animals.
- The sheds should not be disinfected or fumigated in the presence of animals and if required must be done during down time.
- The foot bath and wheel bath area must be cleaned and filled every alternate day, do ensure that soil, manure, bedding material should not come into the foot bath.
- The common disinfectant which can be used for disinfection and fumigation are 5.25 % Sodium Hypochlorite (3%), Virkons (as per the label), Sodium Hydroxide (2%), Formalin (5-10%) etc. The label must be read carefully before using the disinfectant under consultation of the Officer in charge.

4.2.3. Disinfection of the area

The Quarantine Zone must be disinfected regularly:

a) In presence of animals

- Disinfection will be done by fumigating machine three times a week
- Liming of the area will be carried out on monthly basis

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- Brooming of the area and sheds will be done regularly on day to day basis.

b) In absence of animals

- Disinfection will be done by fumigating machine two times in a month
- Liming of the area will be carried out on monthly basis
- Brooming of the area and sheds will be done regularly on day to day basis.

4.2.4. Person who clean

- The worker should be health and physically fit to carry out day to day cleaning and housekeeping work.
- the worker suffering with common cold not enter quarantine zone
- The worker should change the cloths and follow disinfecting protocol as directing the quarantined zone and vice versa
- The worker should not touch any animal under quarantine
- The worker should not interact with the animal attenders.

4.2.5. Disinfection of pen and equipment

Disinfect pen and equipment after use to kill germs. Disinfectants help prevent animals from dying and improve animal production.

When to disinfect

- ✓ 2-3 times a week during a disease outbreak.
- ✓ If the number of animals getting sick rises.
- ✓ If the number of animals dying rises.

4.3. Isolating and monitoring livestock, plant stock and other items

When effectively managed/measured these components meet the principle biosecurity objective of preventing or minimizing cross-contamination of body fluids (feces, urine, saliva, respiratory secretions, etc.) between animals, animals to feed and animals to equipment.

Isolation is Preventing contact between animals within a controlled environment. The most important step in disease control is to minimize commingling and movement of cattle.

This includes all new purchases as well as commingling between established groups of cattle. Even in operations that have high cattle turnover, such as feedlots, keeping feeding groups from mixing is an import biosecurity measure. Isolate feedlot hospital cattle and return them to their home pen as soon as possible. Long acting therapies have improved our ability to minimize movement of infectious organisms

When managing animals that are in quarantine and isolation day-to-day

- Make all farm staff fully aware of recommended separation procedures
- Best practice is for separate staff to take responsibility for tending animals in quarantine or isolation, using separate Personal Protective Equipment
- Where it is not possible to use separate staff:
 - ✓ Use separate Personal Protective Equipment
 - ✓ Tend to these animals last, after healthy animals
- Always disinfect or change Personal Protective Equipment after the tending routine is complete
- Inspect animals in quarantine regularly and look closely for signs of disease
- If you identify signs of disease contact your vet immediately regarding diagnosis, treatment and future management
- Inspect animals in isolation regularly, monitor closely and report progress to your vet
- Take care when handling and disposing of contaminated bedding, waste and feed

Veterinary advice is required on specific aspects of quarantine and isolation

- The length of quarantine required – this must cover incubation periods of most acute infectious diseases, so may be 6 weeks or longer, or the time for test results to be received
- Import permits for imported animals – check with Animal and Plant Health Agency
- Release of animals from quarantine – formal notices may be required

4.4. Recording information about breach or problem

Records of the health of newly imported simians should be kept and the National Veterinary Service should be consulted if clinical signs of disease are seen, or if any animal is found dead. Complete medical records should be maintained and available for all animals during the quarantine period. Animals that die during quarantine should have a necropsy performed under

the supervision of a veterinarian and representative tissues submitted for histo-pathologic examination. Individual animal health records will be maintained to document test results and all other relevant health information (i.e. vaccines, flock health maintenance, experimental interventions).

The risk of transmission of the disease to humans places a high priority on authorities to protect public health. Effective surveillance and monitoring of illegal or inappropriate use of veterinary drugs requires rapid access to information on animal ownership, their location and drug records. Such information enables regulatory agencies to take measures quickly to protect public health from the risk of exposure to hazardous residues.

Self-Check – 4	Written test
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Name..... ID..... Date.....

Directions: Answer all the questions listed below.

Test I: Short Answer Questions

1. What is the most important step in disease control? (5pts)
2. Where is the area of footbaths should be set/available in the quarantine site (5pts)
3. What are facilities for cleaning and disinfection? (5pts)
4. When you disinfect the quarantine site? (5pts)
5. What kind of measure will take for newly imported animals that expose clinical signs of disease and if any animal are found dead? (5pts)

Note: Satisfactory rating – 13 points

Unsatisfactory - below 13 points

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

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ACKNOWLEDGEMENT

Ministry of Labor and Skills wish to extend thanks and appreciation to the many representatives of TVET instructors and respective industry experts who donated their time and expertise to the development of this Teaching, Training and Learning Materials (TTLM).

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