ግብርና ሚኒስቴር
MINISTRY OF AGRICULTURE

Food and Agriculture Organization of the United Nations

Ministry of Agriculture

Quarantine Import Export Inspection and Certification Directorate

Operational Guidelines for Livestock Export and Post-Entry Quarantine Facilities

December, 2021

Addis Ababa

Table of Contents

Acronyms

ECTAD: Emergency Centre for Transboundary Animal Diseases

FAO: Food and Agriculture Organization of the United Nations

TADs: Transboundary diseases

FMD: Foot and Mouth Disease

CBPP: Contagious Bovine Pleuropneumonia

PPR: Peste des Petits Ruminants

^{o}C: Degree Celsius

hrs: hours

NaOH: Sodium hydroxide

LSD: Lumpy skin disease

cm: Centimeter

Acknowledgements

The first edition of this guidelines document, which served as the basis for the current revised version, was developed by Dr. Wondwosen Asfaw and Dr. Nega Tewolde while the current version was reviewed and updated by Dr. Amsalu Demissie. The contribution of Dr. Hassen Chaka (Coordinator, Improving Sanitary Capacity and Facilitating Export of Livestock and Livestock Products from Ethiopia Project of FAO-ECTAD Ethiopia), Dr. Ayalew Shumet (Director, Export Abattoirs Inspection and Certification Directorate, Ministry of Agriculture), Dr. Wondimagegn Dejene (Director, Quarantine Import Export Inspection and Certification Directorate inspectors, Ministry of Agriculture) and other technical experts of the Ministry of Agriculture including those from the Livestock Identification and Traceability Systems Directorate, for making this document to have its current form by providing insightful comments and suggestions at various stages of the review and revision process is highly appreciated.

Foreword

This technical document entitled “Operational Guidelines for Livestock Export and Post-Entry Quarantine Facilities” a combined, revised and updated version of “Quarantine stations operation guidelines; Pre-purchase inspection guidelines and Biosecurity guidelines” that were developed by the Ministry of Agriculture in collaboration with the FAO-ECTAD Ethiopia, “Improving Sanitary Capacity and Facilitating Export of Livestock and Livestock Products from Ethiopia Project”. The main goal of the project is to increase exports of meat and livestock to benefit Ethiopian livestock producers and exporters and to promote national economic development.

This guidelines document is intended to provide guidance for Quarantine Import Export Inspection and Certification Directorate inspectors, live animal exporters and livestock export quarantine services providers with standard operational procedures required to follow in providing export and post - entry livestock quarantine services at facilities established along the different stages of the national livestock quarantine, inspection and certification system.

At this point, the Quarantine Import Export Inspection and Certification Directorate of the Ministry of Agriculture would like to thank the FAO-ECTAD Ethiopia, Improving Sanitary Capacity and Facilitating Export of Livestock and Livestock Products from Ethiopia Project, for providing the necessary technical and financial support required for reviewing, updating and publishing this guidelines document.

Wondimagegn Dejene (DVM, MVSc)
Quarantine Import Export Inspection and Certification Directorate inspectors, Ministry of Agriculture Addis Ababa, Ethiopia

Part I: General

1. Introduction

A number of transboundary livestock disease outbreaks that caused huge economic, public health and trade losses had been caused due to transmission of disease agents across countries through international trade of livestock and livestock products. As a result, international sanitary and phytosanitary standards have been set to minimize disease transmission risks while facilitating livestock and livestock products trade. International livestock trade is therefore based on bilateral agreements reached between importing and exporting countries based on the principles of international animal health standards and guidelines.

Therefore, exporting countries are obliged to authorize the exportation of live animals and animal products from their territory only if they are to confirm the products they want to export meet the international and importing country(ies) livestock trade requirements.

As part of the national measures taken to meet these livestock trade requirements, the Ethiopian government has established a number of quarantine facilities where export animals are to be maintained in isolation to ensure that there is no transmission of specified pathogen(s) into or out of the establishment while the animals are undergoing vaccination, treatment, testing and observation for a specified length of time.

1.1 Objectives

The objectives of this operational guidelines document are:

- To outline the basic operational procedures that any regulatory animal health personnel stationed at different stages of the livestock export health certification system should give emphasis in his/her day to day activities.
- To serve as an animal health and welfare operational guide for those livestock exporters involved in live animal export trade and those private individuals or companies that deliver quarantine services.

2. Definition of terms

Quarantine: is an animal health measure applied on animals isolated and kept in a certain confined facility for a specified period of time for observing their health status as a preventive measure against the spread of infectious diseases.

Main (principal, export) quarantine station: an officially recognized facility where livestock coming from pre-quarantine facilities and feedlots are assembled for final health inspection before certified for export

Pre-quarantine facility: is an officially recognized facility located close to the export quarantine station where animals from holding grounds and feedlots are assemble for screening before entering to the export quarantine station

Border control post: is any airport or road check-point open to international trade of commodities, where import and export veterinary inspections can be performed.

Post-entry quarantine facility: refers to facilities constructed for keeping imported animals for specified period of time to observe their health status in order to prevent introduction and spread of disease-causing agents in to the country.

Biosecurity: means a set of management and physical measures designed to reduce the risk of introduction, establishment and spread of animal diseases, infections or infestations to, from and within an animal population.

Livestock resting pen: is a facility located within the premise of an international airport where animals coming from main quarantine stations for export via plane are allowed to rest until they are loaded to the plane.

Holding ground: It is a facility owned and managed by private company where animals purchased from nearby markets are assembled for a short period of time to enable the clients and the traders to complete the consignment

Stocking density: the average facility pen area in square meters allocated to each animal.

Export quarantine station: is a facility under the regulatory control of official veterinary authorities where animals are being held in isolation for a specified period of time for purposes of veterinary observation, and final certification as per the international livestock trade and importing country requirements

Sanitation: refers to all processes and principles which are applied to ensure that micro-organism count is kept at a safer or lower level.

Hygiene: refers to a condition that includes the concepts of “clean” and “safe” (in other words the absence of harmful organisms or substances).

Disinfection: The process or act of destroying pathogenic microorganisms.

Flight zone: is the distance within which a person can approach an animal before it moves away.

Animal welfare: means the physical and mental state of an animal in relation to the conditions in which it lives and dies.

Pre-purchase inspection: is an animal health screening process conducted at livestock markets by feedlot operator or live animal exporter employees to exclude diseased animals from entering in to the feedlot or pre-quarantine facilities

Pests: refers to insect and rodent population such as nuisance and disease-causing flies that affect the health and productivity status of feedlot animals.

Regulatory authority: refers to the federal authority in charge of regulating the establishment and operations of import-export livestock quarantine facilities of the country.

3. Animal welfare and handling

3.1 Welfare principles

Animal welfare is the physical and mental state of an animal in relation to the conditions in which it lives and dies. An animal experiences good welfare if the animal is healthy, comfortable, well nourished, safe, is not suffering from unpleasant states such as pain, fear and distress, and is able to express behaviors that are important for its physical and mental state. Good animal welfare requires, among other things, disease prevention and appropriate veterinary care, shelter, management and nutrition, safe environment, humane handling and humane slaughter or killing.

The general principles for the welfare of animals in livestock production systems include:

- Animals chosen for introduction into new environments should be suited to the local climate and able to adapt to local diseases, parasites and nutrition.
- The physical environment, including the walking surface, resting surface, etc., should be suited to the species so as to minimize risk of injury and transmission of diseases to animals.
- The physical environment should allow comfortable resting, safe and comfortable movement and the opportunity to perform types of natural behavior.

- Social grouping of animals should be managed to allow positive social behavior and minimize injury, distress and chronic fear.
- For housed animals, air quality, temperature and humidity should support good animal health.
- Animals should have access to sufficient feed and water, suited to the animals' age and needs.
- Diseases and parasites should be prevented and controlled as much as possible through good management practices. Animals with serious health problems should be isolated and treated promptly or killed humanely if treatment is not feasible or recovery is unlikely.
- The handling of animals should not cause injury, panic, lasting fear or avoidable stress.
- Owners and handlers should have sufficient skill and knowledge to ensure that animals are treated in accordance with these principles.

3.2 Livestock handling

Knowing how to handle livestock will minimize the impact of unnecessary stressful conditions to animals and prevent handlers from injuries. Handlers should understand the behavior and instincts of the animals so they can predict animal behavior and thus reduce stress on them. The behavior of individual animals or groups of animals will vary, depending on their breed, sex, temperament and age and the way in which they have been reared and handled.

Animal handlers should be experienced and competent in handling and moving farm livestock, and understand the behavior patterns of animals and the underlying principles necessary to carry out their tasks. Most domestic livestock are kept in groups and follow a leader by instinct. Animals which are likely to harm each other in a group situation should not be mixed. The desire of some animals to control their personal space should be taken into account in designing facilities.

Domestic animals will try to escape if any person approaches closer than a certain distance. This critical distance, which defines the flight zone, varies among species and individuals of the same species, and depends upon previous contact with humans. Animals reared in close proximity to humans i.e. tame have a smaller flight zone, whereas those kept in free range or extensive systems may have flight zones which may vary from one meter to many meters.

Animal handlers should avoid sudden penetration of the flight zone which may cause a panic reaction which could lead to aggression or attempted escape.

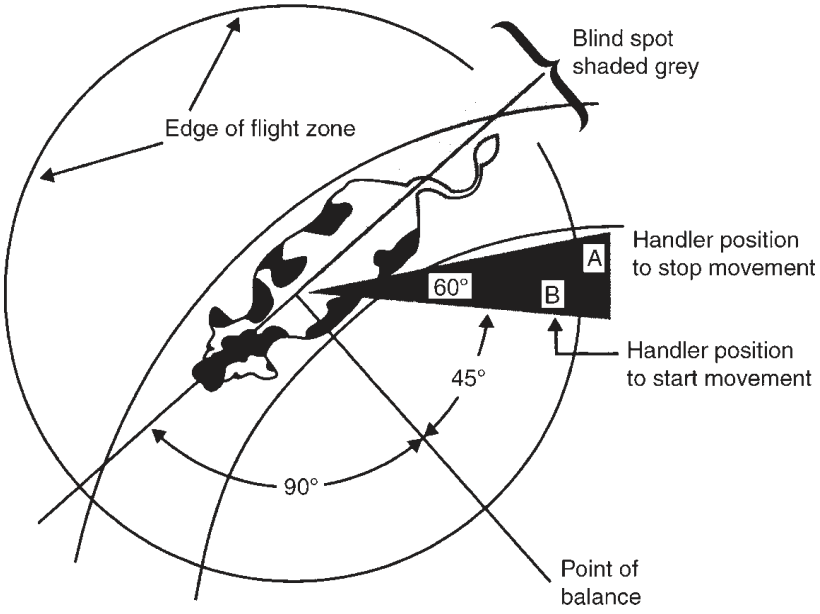

Fig. 1. An example of a flight zone for cattle

Animal handlers should use the point of balance at the animal's shoulder to move animals, adopting a position behind the point of balance to move an animal forward and in front of the point of balance to move it backward.

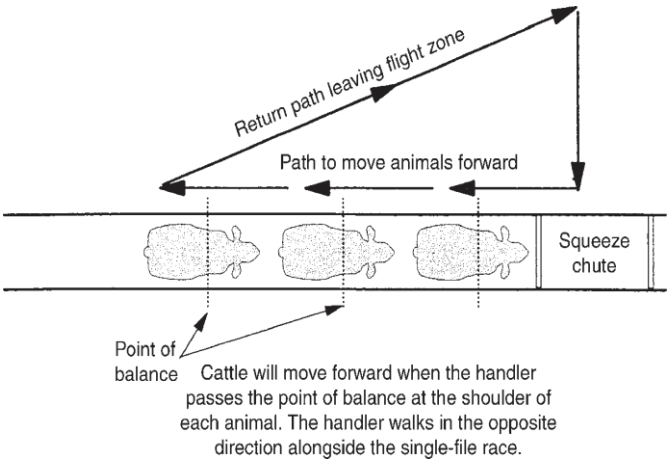

Fig. 2. Handler movement pattern to move cattle forward

Domestic animals have wide-angle vision but only have limited forward binocular vision and poor perception of depth. This means that they can detect objects and movements beside and behind them, but can only judge distances directly ahead. To prevent them from becoming afraid of distractions outside confines, the holding pens, crowd races, inspection crushes and

gates should have solid sides. Although most domestic animals have a highly sensitive sense of smell, they react in different ways smells. Strange smells, may cause animals to become unsettled and excited. This is noticeable in animals, which are strangers to each other or to surrounding conditions. Pre-mixing of these animals will reduce tension and fighting amongst strangers.

Animals which are unaccustomed to frequent contact with humans, such as ranched or extensively raised stock, will not allow people to approach or touch them easily. These animals will require more elaborate loading ramps, pens and handling races than tame ones. People loading extensively raised animals need to understand the psychology of the animal in order to prevent injury to either the animal or themselves. On the other hand, those animals raised intensively and animals living in close contact with humans are generally tamer and easier to handle.

Ruminant animals can discriminate between different colors. The ruminant eye is most sensitive to *yellow-green and blue light*. Livestock, particularly cattle are very sensitive to light contrast. This causes them to hesitate at and shy away from gates, and changes from wet to dry or concrete to metal floors. Therefore, lighting should be even and diffuse and harsh contrasts of light and dark should be avoided. Animals have a tendency to move from a darker to a lighter place. Extra, indirect lighting may help in moving animals in pens. Adding a light to illuminate a race entrance or removing a lamp to eliminate a sparkling reflection will often improve animal movement. Animals will shy at moving things, as well as darkness and they may refuse to enter a dark place.

All species of animals may hesitate and refuse to move when they see things in the race that scare them, such as sparkling reflections, dangling chains, moving people or equipment, shadows or water dripping. A calm animal will stop and look right at the distraction that scares it. If air is blowing towards the animal this should be changed. If animals hesitate, the distraction that causes this should be removed instead of increasing the force used to move them. Rapidly moving objects scare animals. Forcing them to quickly approach a vehicle, pen or building may cause them to panic.

Domestic animals can hear over a greater range of frequencies than humans and are more sensitive to higher frequencies. They tend to be alarmed by constant loud noise and by sudden noises, which may cause them to panic. Reducing noises from equipment and people will improve animal movement, reduce stress and the risk of injury. People should not yell,

whistle or make loud noises. Clanging and banging of equipment will unsettle animals and can be reduced by installing rubber stops. Hissing air is one of the worst noises that should be eliminated.

3.2.1 Relevance of humane livestock handling practices

Livestock handling during loading, transport to the market, quarantine stations or slaughterhouses, off-loading, holding and moving for slaughter involve recurrent operations that may lead to unnecessary suffering, injury and loss of production of animals. There are many advantages to improving conditions for livestock destined for export. These will have the benefit of improvements in livestock productivity, quality, welfare and personnel safety. Improving animal welfare is necessary to reduce suffering of animals there by satisfying the requirements of different governments and trading partners, who are becoming more concerned with welfare of food animals. Moreover, better conditions of livestock operations will also improve safety of personnel who work in the livestock and meat export value chain.

3.2.2 Principles for livestock handling

The following principles should be followed when loading, transporting, unloading, holding of livestock at the deferent stages of the livestock export inspection and certification system:

- Never beat animals with a stick, rods, pipe, whip or stone, and avoid painful procedures such as tail twisting, etc.
- Never throw or drop or drag animals by body parts such as their tail, head, horns, ears, limbs, etc.
- Animals should have adequate access to feed and water.
- Stock pens and other enclosures used for feeding, watering, and resting should have sufficient space for all animals to lie down at the same time.
- Prior to moving animals, inspect the fences, pens, and working facility to ensure proper care and ease of handling. Make all necessary repairs and remove protruding bolts, nails, etc.
- Look for all surfaces which have tufts of hair or shiny surfaces since they are bruise points and need to be avoided.
- Handle animals gently and humanely at all times to avoid injury or extra stress.
- Keep animals calm in the crowd areas, so that they will be calm coming into the facility. Move them slowly and quietly.
- Refrain from yelling, screaming, or making sudden movements near animals.

- Animal handling staffs should be trained on importance and methods of implementing humane handling practices for animals.
- Maintain a clean and dry environment and ensure sufficient ventilation to minimize exposure of animals to dust and toxic gasses e.g. ammonia etc.

3.2.3 Handling cattle

The most reliable technique for handling cattle is to make use of the animal's predictable instinctive behavior which occurs when cattle flight zones are penetrated. All cattle have a flight zone - the circle of safety around an animal. Understanding the underlying principles of the flight zone reduces stress on cattle and minimizes accidents to handlers. The rule of thumb when working in the flight zone is that the animals will move away if a person penetrates the zone. As such, handlers can approach the animal from different angles and positions to affect different movement in the cattle.

- **To move an animal forward** – the handler needs to approach the animal just behind its shoulder.

- **To move an animal backward** – the handler needs to approach the animal just in front of its shoulder.

- **To make an animal turn right or left** –the handler needs to approach the animal head-on. When the handler moves to the left of the animal, it will turn right. When the handler moves to the right of the animal, it will turn left.

Handlers must be careful not to get too close to the animal. If the flight zone is penetrated too deeply, some animals will panic and try to escape. Handlers also should avoid yelling while around the cattle as it can startle the animals. When cattle are moved together, a collective flight zone develops around the group.

When the handler penetrates the large zone, the herd moves together. Cattle like to see where they are going, so their heads are a good indicator of the direction in which they are going. When moving a herd, good handlers should watch the heads of the cattle closely to anticipate where the animals are moving, allowing handlers to take action before a problem occurs.

In general livestock handlers in quarantine facilities should give considerations to the following points while handling cattle:

- Prepare yards and equipment before you begin operations.

- Yards should be of adequate size and strength to match the animals being handled.
- Always keep equipment, fences, yards, gates and sheds in good repair.
- Handle cattle quietly but firmly and with adequate equipment.
- Never lose temper and needlessly upset an animal
- Animals separated from the group or placed in strange surroundings, may behave differently and be unpredictable. Consequently, extreme care must be taken when handling them.
- Be continually aware of the position of stock in a stockyard. Handlers should never turn their backs on cattle, and always be on alert for the possibility of large animals moving suddenly and crushing you against fences and other structures.
- When enlisting stock, stand to the side of the drafting gate. Animals may run you down in an attempt to get through.
- If attacked by a bull beyond the reach of safety, do not panic and run. Face the animal and move toward it. This way it is easier to out-maneuver and possibly frighten the animal.
- Animals requiring attention should be well secured before being treated. Injuries incurred as a result of struggling animals constitute the majority of accidents involving stock.
- When treating bulls in a crush, never stand too close to their head. The animal may throw itself around and cause serious injury to anyone standing in close proximity.
- When working with stock, safety footwear with specially reinforced toe-caps and soles should be worn to prevent crushed feet.
- Be sure to be either out of kicking range or hard up against the animal's body, never mid-way between. This way, should the animal contact you, it cannot do so with any force.
- What so ever an animal may appear submissive, constant care should be exercised in handling, so that control is maintained over its actions at all times.
- An animal exhibiting signs of aggression should be immediately left alone, or the necessary safety precautions implemented i.e. isolation.

3.2.4 Handling sheep

Sheep have a high level of herding instinct and handling techniques should use this behavior to handle with minimal stress. A person must handle sheep in a reasonable manner.

- A person handling sheep must not:
    - lift sheep off the ground by only one leg, or by the head, ears, horns, neck, tail or wool, unless in an emergency; or
    - throw or drop sheep, except to land on their feet from a height less than 1.5 meters; or
    - strike, punch or kick sheep in an unreasonable manner; or
    - drag sheep that are not standing by only one leg, except in an emergency to allow safe handling, lifting, treatment or humane killing; or
    - drag sheep by only the ears, or tail; or
    - drag sheep by mechanical means, except in an emergency, for the minimum distance to allow safe handling, lifting, treatment or humane killing.
- During assembling, sheep should be rested or allowed to slow if they show signs of labored breathing.
- Sheep should be returned to feed and water as soon as possible after handling.
- Sheep should be moved quietly through yards with the minimum forcing.
- Care should be taken with gates to avoid injury to sheep.

3.2.5 Handling goat

Goats should be handled to take advantage of their natural herding behavior when yarding and handling.

- A person in charge must take reasonable action, where goats have not adapted to confinement within a reasonable period of time.
- People handling goats should have an understanding of the flight zone and low stress stock handling methods.
- Drafting of goats into classes should be done as soon as possible.
- Goats should be grouped with others of the same class and where possible with others that they are already familiar with to minimize bullying and riding behavior.
- Goats should be caught and restrained with care.
- Goats should be picked up by supporting the whole body
- Horned goats may be restrained by holding the horn at its base, not at its tip, as this may cause the horn to break.
- Tails should not be twisted when moving goats.
- Goats should be returned to feed and water as soon as possible after handling.

- ❖ Goats should be restrained and isolated for the minimum time necessary. Goats isolated in a pen should be provided with a pen mate, unless isolated due to illness or quarantine, then they should be housed within sight and sound of other goats.
- ❖ The use of handling aids should be limited to the minimum needed to complete the task.
- ❖ After droving, goats should be provided with suitable conditions and given time to settle down before further handling takes place or before the onset of darkness.
- ❖ During droving, goats should be rested or allowed to walk slowly if they show signs of labored breathing.
- ❖ Overcrowding of goats in races, pens or yards should be avoided.
- ❖ A person handling goat must not:
    - o lift goats off the ground by only one leg, or by the head, ears, horns, neck, tail or fibre, unless in an emergency; or
    - o throw or drop goats, except to land on their feet from a height of less than 1.5 meters; or
    - o strike, punch or kick goats; or
    - o drag goats that are not standing by only one leg, except in an emergency to allow safe handling, lifting, treatment or humane killing; or
    - o drag goats by only the ears, horns, or tail; or
    - o drag goats by mechanical means, except in an emergency, for the minimum distance to allow safe handling, lifting, treatment or humane killing.

3.2.6 Handling camel

The following points need to be considered while handling camel:

- Although normally placid, when frightened or aggressive they will chest butt, spit or kick out sideways with back feet
- Walking with arms outstretched will normally suffice to guide their movements.
- To handle individual camels, put one hand around the base of the neck, while placing the other on the rump.
- Do not roughly handle the camel. They are generally regarded as having weak necks and thus prone to injury in that region.
- If halter led, do not jerk the halter with undue force.
- When traveling on vehicles, they will generally sit down once the vehicle starts to move.

Part II: Operations at livestock quarantine facilities

1. Stages of livestock export quarantine operations

International trade in livestock and livestock products continues to be seriously hindered by presence of trans-boundary animal diseases. To win and maintain a fair share of the Middle East live animal markets, appropriate animal health measures that may reduce the potential disease transmission risks to acceptable levels should be applied along the different stages of the live animal export operations. The live animal export quarantine procedures, in Ethiopia, involve six distinct operational stages as indicated below:

- Identification of low disease risk areas for livestock purchase
- Conduct pre-purchase inspection of animals at markets
- Assemble, identify (with ear tags or some other methods approved by the regulatory authority) and screen animals at holding grounds for limited number of days
- Transport animals to pre-quarantine or feedlot facilities to conduct further health screening, vaccination and treatment activities
- Transport animals to main export quarantine station to conduct final health inspection and export certification of livestock.
- Transporting animals certified at main quarantine facility to the port of exit for export.

Livestock to be exported live are expected to pass through two major alternative avenues to reach the port of exit as shown below:

A. Livestock market ⟶ Holding ground ⟶ Pre-quarantine facility ⟶ Main export quarantine station ⟶ Border control post ⟶ Port of exit
B. Livestock market ⟶ Holding ground ⟶ Feedlot facility ⟶ Main export quarantine station ⟶ Border control post ⟶ Port of exit

2. Sourcing healthy livestock

To minimize the risk of disease introduction in to the export quarantine facilities, identification of purchase areas and conducting pre-purchase inspection of animals at market places are two of the most important animal health measures that should be applied before any purchase. These activities are to be carried out primarily by animal health personnel employed or contracted by live animal exporters.

2.1 Identify livestock purchase areas

Endemic transboundary diseases such as FMD, CBPP, PPR, and others have serious economic consequences if introduced to export quarantine facilities. As much as practicable, the possibility of disease introduction through purchased animals should be minimized. For this to happen, livestock export operators/veterinarians should apply the following procedures:

- List down the administrative areas (zone, woreda) from which the exporter is interested to purchase animals
- Find out and map the seasonal livestock movement patterns of the identified livestock purchase areas
- Find out livestock trade routes and major markets located in the identified administrative units that are accessible for livestock purchase
- Maintain regular contact with public and private veterinarians working in each one of the identified woreda and zone animal health services for presence of trade sensitive disease(s) outbreaks
- Regularly review the disease outbreak data by the type of disease reported and analyze its potential level of risk for disease dissemination in to the export quarantine facilities
- Make decision as to which areas to avoid for livestock purchase and for how long
- Ensure the purchasing team is made aware of the decisions made before heading to the field

2.2 Pre-purchase inspection

Pre-purchase inspection will serve to identify and reject non-compliant animals from purchasing and moving them into holding grounds. Pre-purchase inspection will be conducted by an animal health personnel representing the private exporter. The pre-purchase inspector should be trained by federal animal health service on recognition of healthy and diseased animals.

Pre-purchase inspection involves visual and physical evaluation of the animal to identify any conditions that may indicate disease or any physical abnormalities that may compromise their export health status their body conditions. During pre-purchase inspections animals showing signs of diseases or visible physical injuries will be identified and excluded from purchase.

2.2.1 Signs of healthy animals

The pre-purchase inspector should know the following are signs that indicate healthy conditions in animals:

- They have good body condition and have a shiny appearance of their hair coats.
- They are well muscled and the ribs and pelvic bones are not prominent.
- The have clear, bright and moist eyes
- The muzzle is slightly moist and cool.
- The have a smooth and flexible skin free of any lumps, loose scabs, flakes or debris.
- The mucous membrane around the conjunctiva and inside the mouth is pink in color, smooth and it glistens.
- They walk in balanced rhythms with the head swaying or nodding slightly in time with the animal's movement.
- When standing, the animal is comfortable on all four feet.
- In the absence of a physical exertion, the movement of breathing in and out should be silent. However, the respiration rate can also increase following exercise or an increase in environmental temperature or humidity.

2.2.2 Major signs of disease

The inspector should look for the following general signs which indicate that an animal may have a condition or disease that renders it to be unfit purchase. In general, the signs of a disease or disease condition are grouped into the following broad categories, namely, body movement, body condition and signs on the body's surface.

A. **Abnormal body movement**

Some examples of the signs associated with body movement, action and position include:

- Lameness or limping
- Stiffness and pain
- The animal may appear extremely nervous or restless, excessively anxious or upset, or stagger or circle.
- Animals may have muscle tremors or shivering, hold their head to one side, or have any number of abnormal gaits.
- Animals may strain and assume abnormal body positions such as straining, arching of the back, tucking in of the abdomen (stomach), and extending the neck and tail.

B. Abnormal body condition

The inspector may also see animals with signs associated with abnormal body condition that may include:

- Animals that are extremely thin and weak: the inspector may see animals that are thin and weak due to chronic disease problems. Remember that thinness alone may not be an abnormal sign since some animals may be very thin as a result of underfeeding but remain bright, alert, have a good appetite, and show no other abnormal signs. These animals should not be rejected from being purchased.
- Respiratory distress such as labored or rapid breathing. These signs are commonly seen in animals with lung disorders such as pneumonia. Coughing and sneezing are other signs associated with pneumonia and other respiratory disorders.
- Animals may exhibit pain. Pain may be manifested by signs such as groaning, grunting, or grinding of teeth.
- Animals may have difficulty drinking and swallowing or appear to be blind.

C. Abnormal signs on the body's surface

- Injuries and fractures are included
- Abnormal growths, swellings, and enlargements such as hernias.
- A variety of skin lesions including a roughened, dry, or dehydrated hair coat.
- superficial ulcers, sores, blisters or vesicles, particularly around the feet or around the mouth. There are several diseases that may cause these signs, including Foot-and Mouth Disease
- The color of exposed membranes of the body, such as the gums or the eyes, may be an indication of a disease condition. The membranes may appear reddened, or very pale, or may have a yellowish color to them.
- Abnormal body discharges or abnormal odours. Abnormal discharges can include excessive salivation, discharge from the nostrils, diarrhea, blood.

2.3 Operations at holding grounds

Livestock holding ground is a facility owned and managed by a private company where animals purchased from nearby market places are assembled for a short period of time to enable the clients and the traders to complete the consignment. The following activities are to be conducted on holding grounds:

- Assemble animals purchased from nearby markets

- ❖ Provide sufficient fed and water to animals
- ❖ Provide identifications (by using ear tags or some other methods approved for use by the regulatory authority) for those animals that were not identified before
- ❖ Inspect animals for signs of disease and isolate them if found affected
- ❖ Provide necessary treatment to animals such as treatment for internal and external parasites.
- ❖ Record and maintain all animal health interventions
- ❖ Use standard livestock transport trucks and transport the animals to the feedlot or pre-quarantine facilities

3. Livestock quarantine health management practices

3.1 Operations at pre-quarantine facilities

A pre-quarantine facility is an officially recognized facility where animals from holding grounds are moved to conduct animal health interventions such as vaccination, treatment, testing and monitoring for presence of diseases. Regardless of ownership, all pre-quarantine facilities shall be under regulatory control of the federal regulatory authority. Time spent in a pre-quarantine facility may be considered as a component of the required total quarantine period.

The facility should be isolated and securely fenced for purposes of sufficient biosecurity and to avoid close contact with other animals outside the facility. Human contact with the animals should be limited to facility personnel only.

3.1.1 The regulatory authority

The regulatory authority should conduct the following:

- Provide the necessary guidance for private operators on requirements set for establishing and operation of pre-quarantine facilities
- Once the pre-quarantine facilities are constructed, ensure they have the necessary human resource, materials and know how to operate the facilities
- Assign competent inspectors that supervise and monitor implementation of animal health measures conducted at a pre-quarantine facility are in line with the procedures outlined in relevant national regulations and guidelines.

- Provide training for private operators and their employees on livestock health care, disease identification, welfare, biosecurity, record keeping and reporting issues
- Make sure that all drugs, vaccines, equipment and other materials required for vaccination and treatment are available and handled properly
- Monitor the delivery of vaccines and treatments for animals
- Ensure the livestock identification (by using ear tags or some other methods approved for use by the regulatory authority), vaccination and treatment procedures are conducted in accordance with the procedures outlined in relevant national guidelines and records maintained
- Provide technical guidance on daily health inspection of animals and management of disease problems occurring within the pre-quarantine facilities
- Inspect animals when ready to leave the facility and issue health and movement certificates required to accompany the lot to be transported to main quarantine facility

3.1.2 Pre-quarantine facility operators

Pre-quarantine facility operators should conduct the following:

- Ensure the facility is properly fenced and maintained to effectively prevent unauthorized access to the facility
- Ensure that loading and unloading facilities are appropriately constructed and maintained
- Ensure availability of adequate feed and water, including reserve water storage for emergency conditions, at all times;
- Avail appropriate personnel that ensure the health, welfare and safety of animals at all times;
- Handle animals in less stressful conditions and allocate them in pens based on age and species categories
- Provide sufficient shelter, feed and clean water
- Avoid mixing animals of different consignments and species;

- Give identification tags for those animals that were not previously identified or those that had lost their identification tags.
- Ensure animals are vaccinated with required vaccines in accordance with the national guidelines and maintain the records accordingly. The list of diseases for which export animals are required to be vaccinated before export may show variation depending on the changing disease statuses of the country and with it the changing requirements of the importing countries. At present, the following are the major list of diseases for which animals are required to be vaccinated before export:
    - For cattle: Anthrax, Blackleg, Lumpy Skin Disease, Foot and Mouth Disease, Contagious Bovine Pleuro-Pneumonia, Pasteurellosis;
    - For sheep and goat: Sheep and Goat Pox, Pasteurellosis; Peste des Petits Ruminants
    - For goats: Contagious Caprine Pleuro-Pneumonia;
    - For camel: Camel pox, Anthrax
- Ensure animals are treated for external and internal parasites in accordance with the national guidelines and maintain the records
- Conduct inspection of all animals daily before mid-day
- Identify and remove animals that are severely injured or appear affected with chronic disease conditions that may not respond well to treatments
- Isolate sick animals and provide the necessary care
- Administer any other medication or health care measures when authorized by the veterinarian in charge of the operation and maintain the records
- Report any disease incidence or outbreak to the regulatory inspector and the veterinarian in charge of the operation
- The cause of any deaths shall be investigated and appropriate sampling and testing should be undertaken in consultation with the veterinarian in charge
- Conduct regular cleaning, disinfection and safe disposal of waste materials
- Keep animal health and production related records

- In case of suspected TADs outbreak, report to the federal disease prevention and control authority for further investigation
- After completing the pre-quarantine phase, request the regulatory authority to issue the livestock movement permit and health certificate before animals are to be transported to the main export quarantine facility
- Before transporting animals, notify the main export quarantine station to make a reservation and preparation to receive the animals
- Pay the necessary reservation fees to the quarantine station
- If feed is not to be provided by the quarantine station operator, transport the amount of feed sufficient for the expected quarantine period
- Ensure the space required for housing the animals to be quarantined is secured, cleaned and made ready before transporting animals
- Receive livestock movement permit, health certificate and any other relevant travel documents required to accompany the livestock lot from the regulatory veterinarian in charge of the pre-quarantine station
- Maintain all animal health and welfare related records properly
- Arrange clean and standard livestock transport trucks and transport the animals following the provisions indicated in the national livestock transport guidelines

3.2 Procedures at main export quarantine station

Different actors, including livestock exporters; quarantine operator (private or public) and employees and quarantine inspectors have roles to play in different aspects of the activities conducted in the export quarantine station.

3.2.1 Role and responsibilities

3.2.1.1 Role of livestock exporters

The following are among the major activities that livestock exporters should do:

- On arrival to the quarantine station, notify the designated reception personnel; finalize entry formalities and move the animals to designated quarantine pens
- Assign a person who will stay in the quarantine station for the whole quarantine period and is accessible to the quarantine station inspector and operator if any problem arises

- Maintain regular contact with the quarantine inspector, quarantine operator, other relevant personnel and the assigned livestock attendant for any new developments on the health and nutritional status of the quarantine animals
- Upon finishing the quarantine period, pay the necessary fees and get the required health certificate and movement permits form the regulatory veterinary inspector to transport animals to the port of exit
- Arrange dedicated trucks and transport animals to the port of exit

3.2.1.2 Role of main export quarantine operator (private or public)

The following are among the major activities that the export quarantine operator should accomplish:

- Get approval from the regulatory authority on the type of services that the quarantine operators should provide to animals to be kept in the quarantine station; the amount of payments to be paid by exporters per service to be offered and the payment modalities before making them known to the general public and relevant stakeholders
- Develop annual and quarterly activity plan, that includes livestock reception, and implement accordingly
- Keep the quarantine facility secure and clean at all times
- Available all human resources necessary for the conduct, supervision and assistance with all aspects of operations directly related to the quarantine requirements in the facility all the time.
- Make sure the quarantine personnel get training and understand the standard operational procedures and are implementing accordingly
- Ensure the amount and type of feed resources required for all species of animals to be quarantined are collected and properly stored within the quarantine facility
- Make sure the feed to be provided is prepared with the composition required for the targeted classes and species of animals
- Make sure sufficient amount of water, including for emergency conditions, required for drinking and sanitation is available all the time
- Make sure all animals received in the quarantine station are handled, cared and managed following standard procedures set by the regulatory authority

- Make sure all required work clothing, cleaning and disinfecting materials, etc required for implementing the day to day activities are well planned, purchased and made available in advance
- Make sure all employees know what they are expected to do and how to do it correctly
- Make sure no animal or visitor is to be allowed to enter the quarantine facility or no animal is allowed to leave the quarantine station without the prior knowledge and approval of the veterinary inspector

3.2.1.3 Role of main export quarantine inspector

The following are among the major activities that the regulatory export quarantine inspector should accomplish:

A. General

- Ensure the quarantine station has developed its annual and quarterly activity plan, that includes livestock reception plan
- Make sure the quarantine facility is secure and clean at all times
- Make sure that the human resource necessary for the execution, supervision and assistance with all aspects of animal health and husbandry practices are available all the time.
- Make sure that the quarantine operator and his/her personnel are trained and understood the standard quarantine operational procedures and are implementing accordingly
- Make sure that the necessary amount and type of feed resources required for all species of animals to be quarantined are identified, collected and properly stored within the quarantine facility
- Make sure that the feed is prepared and made available based on the composition required for the different classes and species of animals in advance
- Make sure that sufficient amount of water, including for emergency conditions, required for drinking and sanitation is made available in the quarantine station at all time

B. Preparing to receive animals

- ❖ Ensure the necessary prior arrangements including cleaning and repair, are made for the incoming animals that got reservation in the quarantine station
- ❖ Schedule receiving animals early in the morning and plan to finish before mid-day
- ❖ Make sure feed and other required supplies are ready before the animals arrive

- Make sure everyone who will be working with the new arrivals is trained in proper handling, feeding and care of animals and is motivated to do the job

C. Receiving animals:

- On arrival of animals to the quarantine station, check the validity and completeness of the health and travel documents accompanying the lot and make the necessary health inspections at the quarantine gate while they are on truck and while unloading
- Ensure different consignments of animals and species are not mixed;
- Ensure animals that show disease symptoms or injuries are identified, isolated and care is provided
- Ensure each set of animal gets a lot number and pen assignment based on its species and source as feedlot animals or range lands (cattle, sheep, goat and camels).
- Make sure the animals received are moved to the appropriate pens prepared to house them during their stay in the quarantine station
- Ensure all animals in the pen are provided with sufficient feed and water

3.2.2 Specific main export quarantine procedures

3.2.2.1 Activities while animals are in the quarantine station

Each animal must undergo quarantine procedures before export in an approved animal quarantine station for a specified number of days depending the species of animal and the importing country requirements. However, for those animals coming from pre-quarantine facilities, the number of days spent in those facilities will be considered in calculating the total quarantine period they should stay in the export quarantine station.

The following activities need to be conducted:

- Ensure animals in the lot are with their identification ear tags given at holding grounds. If there are animals that lost their ear tags, give them replacement tags
- Ensure the animals in the lot have been vaccinated while in pre-quarantine or feedlot facilities for all diseases for which the importing country required to be vaccinated
- Inspect the animals for signs of disease that may require treatments (eg. presence of external parasites)
- Place animals coming from feedlots on a high energy feed (if feed is to be provided by the quarantine station) and for those animals coming outside feedlot areas, start on a moderate energy, total mixed, dry ration.

- Ensure presence of continual supply of water to all animals
- Vaccinate animals if animals were not vaccinated in pre-quarantine or feedlot facilities for identified diseases such as:
    - ***for cattle:*** anthrax, blackleg, lumpy skin disease, foot and mouth disease, contagious bovine pleuropneumonia, pasteurellosis;
    - ***for sheep and goat:*** Sheep and Goat Pox, Pasteurolosis; Peste des Petits Ruminants
    - ***for goats:*** Contagious caprine pleuro-pneumonia;
    - ***for camel:*** Camel pox, Anthrax,
- Treat animals for internal and external parasites (if not treated in pre-quarantine facilities and feedlots or if diseases are detected in the quarantine)
- Use appropriate medical equipment that are clean and disinfected properly for administering vaccines and drugs, always use the smallest needle possible that is appropriate for the age and species of animals concerned.
- Never use the same needle for more than 10 animals without cleaning and disinfection.
- Be alert for damage to or contamination of the needle and change the needle immediately.
- Ensure no direct contact between sick and healthy animals at any time throughout the quarantine period. Where any direct contact occurs (outside of normal operational practices) this must be recorded in a specific register for reference in case of a disease outbreak.
- Conduct regular inspection of animals daily, before noon
- Identify those animals that show disease symptoms or injuries and keep them in isolation pen
- Any health problems seen on animals must be immediately reported to the quarantine inspector for further investigation and treatment.
- Any clinical signs suggestive of TADs should be reported by the quarantine inspector to the relevant federal disease prevention and control authority for urgent interventions
- Unless Anthrax is suspected, the veterinary inspector should make postmortem inspection to all animals found dead and the cause of death be established,
- Staff attending and caring for animals must were protective clothes, shoes while they remain on the quarantine station.
- Staffs assigned to work in these facilities should avoid contact with other animals for a minimum of 5 days after exiting and prior to return in to the quarantine facility.

- Conduct cleaning, disinfection and safe disposal of waste materials regularly
- Visitors should not be allowed to enter in to the quarantine premise unless authorized by the regulatory veterinary inspector
- Those visitors authorized to enter must wear overalls and boots provided by the quarantine station and be accompanied by the inspector.
- The quarantine pens should be cleaned regularly and thoroughly on completion of the quarantine period.
- The water troughs should be checked daily and cleaned once a week or more frequent if required.
- The feeders are to be cleaned every second day and topped up with fresh hay and if animals are being fed grain the grain troughs should be cleaned daily.
- Any equipment that has been in direct contact with animals must be thoroughly cleaned and disinfected after use and before being removed from the premises.
- Based on the requirements of importing countries, samples for laboratory tests should be collected, tested or sent to the national reference laboratory under the supervision of the quarantine inspector
- If any animal shows signs of a transboundary disease or the laboratory test shows presence of infection, that animal and other animals in the group may be detained in quarantine for further testing and/or observation
- At the end of the specified quarantine period, if the quarantine inspector believes that a consignment of animals still presents an unacceptable risk of disease spread, the consignment may be held in quarantine for further investigation, observation, treatment, testing or for any other purpose appropriate to the circumstances.
- If the risk of disease transmission cannot be effectively managed, other appropriate health measures that may include denying export permit etc may be ordered.
- No animal is allowed to leave the quarantine station unless authorized by the quarantine inspector
- Before taking animals out of the quarantine facility, payments should be made by the exporter for costs associated with testing, feed (if provided by the quarantine) and any other quarantine services including any extension to the quarantine period.
- Before the international veterinary certificate is issued, the official veterinary inspector should inspect animals and review the quarantine management report and laboratory results. The final animal health examination should be held within 24 hours before shipment to the port of exit

3.2.2.2 Activities while preparing for departure

Before animals depart from the quarantine station to the port of exit the following measure should be taken:

- ❖ Observe animals 24 hours before leaving the quarantine station
- ❖ Make sure that animals are correctly identified and their health status meet the requirements of the importing country.
- ❖ Notify in advance the border control inspector(s) on the probable time and date of the export consignment reaching the border control post
- ❖ Issue an international veterinary certificate that attest that the animals have been found to be clinically healthy and of the health status agreed by the importing country and exporting country and worded in the languages agreed upon between the exporting country and the importing country, and, where necessary, with the transit countries.
- ❖ Make sure the animals are to be transported to the place of shipment in specially constructed vehicles, cleansed and, if required, disinfected.
- ❖ Ensure animals are loaded without coming into contact with other susceptible animals.

3.2.2.3 Activities at border control post

Border control posts are parts of the national facilities located at major airport terminals and on crossing points of international borders in which animal health checks are conducted for animals and animal products arriving from third countries or exiting from Ethiopia. These facilities are to be manned and regulated by inspectors assigned by the federal regulatory authority.

A. Activities at land crossing border control points

The boarder post inspectors should accomplish the following major activities:

- Keep the border control post always clean and ready to receive any consignment of live animals or animal products intended for export or import purposes
- Always keep any communication lines (telephone etc) in working conditions to receive any notifications with regard to animal and animal products intended to arrive to the control post

- Make the necessary preparations for arrival and inspection of any consignments of livestock or livestock products at the border control post
- On arrival of livestock, start the inspection process immediately while animals are on trucks
- Make sure, other animals do not come close to the boarder control post or the export animals that are under inspection
- Check the authenticity and completeness of the international health certificates and other travel documents accompanying the lot
- Inspect the welfare status of animals while they are on trucks, and presence of identification tags attached to them
- Allow crossing of the border for lots that have valid international certificates and no visible signs of disease abnormalities
- For those animals to be imported in to the country, allow them to be transported to designated post-entry quarantine facilities after checking the authenticity and completeness of the international animal health certificates and conducting physical inspection of the animals

B. Activities at international airport terminals

Border control post inspectors assigned at major international airports, where live animal export through cargo planes is conducted, should also ensure the following:

- ❖ Livestock resting pens and loading and unloading ramps are maintained clean and secure
- ❖ Check the animals entering the airport terminal are accompanied with relevant travel documents including international animal health certificates
- ❖ Check the authenticity and completeness of the travel documents
- ❖ Check the health and welfare condition of animals while on truck and offloading
- ❖ Ensure animals are offloaded quietly and moved to the allocated resting pen
- ❖ Ensure animals are provided with water and feed while waiting for export
- ❖ Where possible, sheep and goats should be acclimatized to the type and size of pen, crate or box in which they will be transported. Animals of both species should be accustomed to being handled before shipment. If mixing of social groups is unavoidable, this should be carried out at least twenty-four hours prior to transport
- ❖ Any part of the transport unit which has been or will be in contact with animals, including any receptacle, equipment or fitting, be cleaned and, if necessary, disinfected before loading

- Give advice and require the off-loading of some animals if the inspector considers that there is overcrowding. He/she should also be prepared to advise on penning if the animals are too loosely packed and might be thrown about by the motion of the transport unit.
- Loading should take place from a properly constructed ramp, lift or loading bay, though appropriate manual lifting is permissible if the animals are small enough
- The interior of the transport unit should be well lit at loading so that the sheep and goats can see where they are going.
- Containers, receptacles and pens must be so secured as to prevent their being displaced by the movement of the transport
- Each sheep or goat shall have sufficient space to stand and lie down in its natural position. Under-stocking can result in injury if the animals are thrown about by the motion of the transport and in these circumstances extra partitions should be provided for support
- The supply of fresh air must be checked regularly and adjusted when necessary, but the animals should not be placed in excessive draughts.
- Animals being carried together should be of approximately equal size and weight. Animals belonging to different species should always be separated from each other during the transport.
- Adjustable partition boards should be mounted to help the animals keep their balance. Such partition boards must be appropriate for the size of the animals and be fixed in a way which prevents the animals from being injured
- Ensure the resting pen and related facilities are cleaned after each lot of animals are loaded to the plane

3.3 Activities while animals are on transit (at port of exit)

International guidelines state that any country through which the transit of animals is required, and which normally conducts commercial transactions with the exporting country, should not refuse transit on condition that advance notice is given of the proposed transit to the veterinary authority in charge of border posts and port of exit. Export animals transport to the nearest ports of exit (such as Djibouti or some other ports), should therefore be handled following international rules for live animals on transit.

- The quarantine inspector in charge of issuing international health certificate should make sure that:

- ❖ Advance notice is given to the relevant veterinary authority of the transit country on the species and number of animals, the methods of transport and the border control post of entry and port of exit in accordance with a previously agreed arrangements made between the exporting and transit countries.
- ❖ Make sure that animals will be downloaded at the port of exit in the transit country and be provided with adequate feed, water, and shade as appropriate with no contact with any other animals
- ❖ Communicate with the relevant veterinary authority of the transit country and take required corrective measures upon receipt of information that animals passage in transit country is refused due to disease or inaccurate international health certificate.
- ❖ In the event that diagnosis of an epizootic disease is confirmed, or if the certificate cannot be corrected, the animal or consignment of animals in transit should be requested to be returned back

Part III: Post - entry quarantine station

Countries should take actions that are necessary to ensure post-entry quarantine stations, with the ability to accommodate mammals and birds etc, be established in their territory. The quarantine facility should be provided with adequate organization and sufficient equipment capable of quarantining animals imported in to their territories. This should ensure the presence of disease or infection in imported animals in a post-entry quarantine station may not spread and affect the animal health status of the country.

1. Before and on arrival activities

The livestock and livestock products import control inspector should ensure that:

- the list of countries or geographic areas and type of animals or animal products that should not be allowed to enter in to the country's territory (on animal and public health grounds) be published, regularly updated and made known by all import inspection staff and stakeholders
- detail information on the type, species and number of animals required to be imported, the date of importation and port of entry is received prior to granting any import permit
- on arrival, the accuracy and completeness of the international veterinary certificate is checked and the health status of imported animals inspected by quarantine inspector in charge

- during inspection, if animals are found to be affected by, suspected of being affected by or infected with a disease capable of being transmitted to the animals in its territory, make the final decision that may include denying entry in to the country or place the animals immediately in quarantine facility in order to carry out clinical observation and biological examinations
- shipments granted entry should be moved to the post entry quarantine facility without any contact with other animals and placed there in specific pens designated for the species concerned

2. Post-entry procedures

2.1 General

The following procedures should be conducted in handling animals in post entry quarantine facilities:

- The quarantine facility must be available for the required period of time
- Only one quarantine group is to be housed at one time (this can be interpreted to include several shipments of the same species, of the same health status, arriving at approximately the same time; the quarantine period will be the same for all the animals with it being released for all the animals at the same time)
- Mature males and females are to be kept separately
- Make sure cleaned and disinfected vehicle is arranged to transport animals to the post entry quarantine facility
- A keeper should be designated to care for quarantined animals
- Animals should have access to appropriate feeding and water
- Animals quarantined should be under the supervision of a veterinarian for the whole number of days specified for each species
- The quarantine period should begin over again if additional mammals or birds of the same order are introduced into a designated quarantine facility during the specified quarantine period. However, the addition of mammals or birds of a different order to those already in quarantine will not have an adverse impact on the originally quarantined animals.

- Vaccinations should be updated as appropriate for each species. If the animal arrives without a vaccination history, it should be treated as an immunologically naive animal and given an appropriate series of vaccinations.
- Individual fecal samples or representative samples from large numbers of individuals housed in a limited area (e.g., birds of the same species) should be collected at twice and examined for gastrointestinal parasites.
- All animals should be evaluated for ectoparasites and treated accordingly
- Whenever possible, blood samples should be collected and sera banked that could provide an important resource for retrospective disease evaluation.
- Conduct regular inspection on the health status of animals
- Make clinical examinations and obtaining specimens of material for diagnostic purposes from live animals or carcasses of animals affected or suspected of being affected by an epizootic disease
- Isolate and treat identified sick animals
- Equipment used to feed and clean animals in quarantine should be used only with these animals
- Take precautions to minimize the risk of exposure of animal care personnel to zoonotic diseases by using disinfectant foot baths, wearing of appropriate protective clothing and masks
- Animals that die during quarantine should have a necropsy performed under the supervision of a quarantine inspector veterinarian and representative tissues submitted for histopathologic examination

For avian species, the following additional measures should be taken:

- ❖ Quarantines for avian species must be all in/all out. If birds are added after the beginning of a quarantine, all birds must remain in quarantine until the end of the quarantine period for the added birds.
- ❖ Quarantines should be restricted to birds from only one country.
- ❖ A dedicated attendant is required with strict biosecurity measures be in place
- ❖ Outdoor pens should not be approved as a quarantine premises.
- ❖ There should be no avian species within 400 meters of the quarantine premises

2.2 Specific measures

2.2.1 Sanitation

To ensure that proper animal health and biological security measures are observed, the quarantine facility must provide the following:

- Separately maintained sanitation and pest control equipment and supplies for each lot-holding area
- A supply of potable water adequate to meet cleaning needs, with water faucets for hoses located throughout the facility.
- A stock of disinfectant approved by the veterinary authority that is sufficient to disinfect the entire facility.
- All persons granted access to the quarantine area must:
    - Wear clean protective work clothing and footwear upon entering the quarantine area.
    - Wear disposable gloves when handling sick animals and then wash hands after removing gloves.
    - Change protective clothing, footwear, and gloves when they become soiled or contaminated.
    - clothing and footwear worn by people coming into contact with the quarantined animals should be dedicated to the facility and should be cleaned and disinfected prior to contact with animals
    - Be prohibited, if determined necessary by the overseeing regulatory veterinarian, from having contact with any susceptible animals outside the facility for at least 5 days after the last contact with ruminants in quarantine, or for a longer period of time determined necessary to prevent the transmission of livestock diseases.
    - Hands should be thoroughly washed after handling the quarantined animals

- All equipment should:
    - Be cleaned and disinfected prior to being used in the quarantine area of the facility with a disinfectant that is approved by the veterinary authority.
    - Remain dedicated to the facility for the entire quarantine period.
    - Any equipment used with quarantined ruminants must remain dedicated to that particular lot of ruminants for the duration of the quarantine period or be cleaned and disinfected before coming in contact with ruminants from another lot.
    - Prior to its use on another lot of ruminants or its removal from the quarantine area, such equipment must be cleaned and disinfected to the satisfaction the inspector in charge of the quarantine facility.
- Any vehicle in the facility:
    - Should be immediately cleaned and disinfected under the oversight of the veterinary inspector in charge with a disinfectant that is approved by the regulatory authority before entering or leaving the quarantine area
    - The loading dock must be immediately cleaned and disinfected after each use under the oversight of the veterinarian in charge with a disinfectant that is approved by the regulatory authority.

- That area of the facility in which a lot of ruminants had been held or had access must be thoroughly cleaned and disinfected before a new lot of ruminants is placed in that area of the facility.

- All persons granted access to the quarantine area, must shower when leaving the quarantine area or when leaving the necropsy area if a necropsy is in the process of being performed or has just been completed, or if all or portions of the examined animal remain exposed.

- The operator is responsible for providing a sufficient supply of clothing and footwear to ensure that workers and others provided access to the quarantine area of the facility have clean, protective clothing and footwear before entering the facility.

- The operator is responsible for the proper handling, washing, and disposal of soiled and contaminated clothing worn in the quarantine area to preclude the transmission of disease within and from the facility.

- At the end of each workday, work clothing worn into each lot-holding area and elsewhere in the quarantine area must be collected and kept in bags until the clothing is washed.

- Used footwear must be cleaned with hot water, minimum of 65^{o}C, and detergent and disinfected.

2.2.2 Security of the facility:

- the quarantine facility and premises must be kept locked and secure at all times

- The facility and premises must be kept locked and secure at all times while the ruminants are in quarantine.

- The facility and premises must have signs indicating that the facility is a quarantine area and no visitors are allowed.

- The operator must furnish a telephone number at which the operator or his or her agent can be reached at all times.

2.2.3 **Waste disposal:**

- manure from the quarantined animals must be either stored in a manner that prevents access by susceptible species or is disposed of at a site not accessed by susceptible species

- carcasses of animals that die during the quarantine must be disposed burial or burning

2.2.4 Access to the facility:

- Access to the facility premises as well as inside the quarantine area will be granted only to the regulatory veterinary inspectors and other persons specifically authorized to work at the facility.

- All other persons are prohibited from the premises unless specifically granted access by the regulatory veterinarian in charge of the facility.

- Any visitors granted access by the regulatory veterinarian must be accompanied at all times by the veterinarian in charge while on the premises.

2.2.5 Recordkeeping:

- Clinical records must be kept on animals by the quarantine inspector
- A record must be kept of any people entering the quarantine facility other than the authorized attendant(s).
- The operator must maintain a current daily log, to record the entry and exit of all persons entering and leaving the facility.
- Retain daily log for at least 2 years following the date of release of the ruminants from quarantine and must make such logs available to the veterinary authority representatives upon request.

Part IV: Quarantine station biosecurity

1. **What is biosecurity?**

Biosecurity is those practices that prevent or mitigate disease from entering, spreading within or being released from operations that may contain livestock. The goal of biosecurity is to stop transmission of disease-causing agents by preventing, minimizing or controlling cross-contamination of body fluids 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 onto and within your operation.

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.

Infectious diseases can be spread between operations through:

- introduction of diseased or animals incubating disease;
- introduction of healthy animals who have recovered from disease but became 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 animals that have not been disposed of properly;
- feedstuffs, especially high-risk feedstuff which could be contaminated with feces,
- impure water (surface drainage water, etc.);
- manure handling and aerosolized manure and dust; and
- contact with other animals including wildlife, rodents, birds and insects

2. Development and implementation of a bio-security plan

Implementation of a bio-security plan in an export quarantine facility is a process that requires commitment at all levels (exporters, management, veterinary staff and all workers) in the facility. The quarantine facility should prepare a bio-security plan taking in to account the disease risk assessment findings and recommended guidelines. The quarantine station needs to conduct the following activities:

- ❖ assign a person responsible for monitoring the bio-security levels in the facility and regularly train its employees on bio-security.
- ❖ take corrective measures to address identified bio-security gaps
- ❖ regularly reviews and update the written plan on annual basis

3. Major biosecurity focus areas

3.1 Manage commingling of animals

Commingling can take place in livestock markets where animals coming from different localities are comingled. It can also happen while purchased animals are transported to the pre-quarantine holding grounds and main export quarantine station. The following measures are recommended to reduce chances of comingling and minimizing the disease risks associated with it:

- Keep purchased animals away from other herds while being transported and during their stay in holding grounds
- Keep new coming groups of purchased animals from different markets or different days in the same market place, in pens separate from the groups that have arrived earlier.

- Identify, vaccinate and treat new coming animals without mixing with the rest of the groups
- Use effective physical barriers such as double fenced perimeters to minimize the chances of commingling of animals
- Ensure animals leaving the holding facility are transported in clean transport vehicles without mixing them with other animals

3.2 Minimize contact with other species of animals

Animals of other species that are not being managed within the quarantine facility may present disease risks. A disease that is latent or not expressed in another species could be expressed with animals kept in the quarantine station. Perimeter fences that can effectively exclude other animals should be erected based on the relevant guidelines.

3.3 Manage the movement of people, vehicles, equipment, and tools

People and vehicles, equipment, veterinary or other tools and items such as clothing and shoes are all capable of carrying disease into and within the quarantine station. The people who are capable of carrying disease include export livestock owners, staff and service personnel including animal health personnel, and visitors.

Movements involving entry to the quarantine station and within the production area including pens where livestock are kept require managing more than others. Managing the movements of people, vehicles, equipment, and tools in the production area is therefore important to minimize disease incidence and the spread of disease.

3.4 Apply sanitation practices

It is important for the quarantine station to develop sanitation protocols to manage the disease risks posed by the degree to which a person's clothing, footwear, skin, or objects is/are contaminated with a disease and the production area in which to apply sanitation practices. Accordingly, certain sanitation practices should be applied at the quarantine station: at entry, within, and/or on exit.

To apply the required sanitation practices, the quarantine station should do the following:

- ❖ All employees should be trained on the bio-security plan of the facility and be updated regularly.

- Employees should apply and enforce the bio-security plan. Compliance must be monitored by the quarantine inspectors on a regular basis.
- Dedicated clothing and footwear should be allocated for each quarantine personnel that should be cleaned and changed on daily basis
- Quarantine personnel should take care while visiting different pens of quarantined animals by wearing clean working clothes and boots intended for such purposes.
- Clean, and in some instances, disinfect, equipment and tools that are used for isolated animals prior to their use with other animals.
- Transport vehicles used to deliver animals to quarantine stations or taking animals out of the quarantine station must be clean and free of gross contamination.
- At the quarantine station after unloading arriving animals, all gross material should be removed from the transport chamber, the chamber washed out and then disinfected
- Drinkers and feeders should be cleaned.
- At completion of quarantine, the facilities that have been used should be left tidy and clean
- All soil-based pens where animals have been held, should be returned to a reasonably clean and useable state.
- The crush and associated concrete pens should be kept clean at all times.

3.5 Minimize the use of the same equipment for both "clean" and "dirty" tasks

Clean tasks are those in which equipment surfaces come into contact with feed, water, and new bedding. Dirty tasks are those in which equipment surfaces come into contact with deadstock, manure, used bedding, and garbage. Having certain equipment dedicated for clean tasks only, such as handling feed, water, and bedding, and different equipment dedicated for dirty tasks, such as handling deadstock, manure, and garbage, helps prevent disease spread.

If there is shortage of separate equipment for different tasks, the following alternative approaches should be followed:

- Clean, and in some cases, disinfect, the contact surfaces on equipment used for dirty tasks prior to using that equipment for clean tasks.
- Use dedicated equipment and, if possible, single-use needles to administer treatments for isolated and sick animals.

3.6 Security of facility and animals

Perimeters such as fences are used to keep some livestock in and other livestock out. They minimize the potential contact with animals of in the surrounding or wildlife. Natural and fenced perimeters help to minimize what might otherwise be an uninhibited commingling of animals and introduction of disease. The following guidelines should be followed:

- 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.
- 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 pens should be locked when not attended.
- 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.
- All visitors entering the internal quarantine area must sign a visitor 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.
- A record of any internal and external security breaches is to be kept.

3.7 Biosecurity signs posts

Biosecurity signs can assist producers in controlling the traffic flow of people and equipment on, off and within the quarantine station. These signs may also be used to inform the public,

visitors and/or personnel that they should not enter, or to indicate where and to whom they should report. Biosecurity signs should be posted at:

- gates or entries to the quarantine area where livestock are kept,
- the areas where the office is located and equipment is maintained.
- at key points along the perimeters between access points.

3.8 Isolate and manage sick animals

Sick animals with infectious diseases contaminate livestock facilities by air and by their discharges (e.g. urine, manure, saliva, pus, etc). Such animals are important source of disease agents and require a special management regime which should allow prevention and control of the introduced disease. The following measures need to be applied:

- Isolate sick animals, in a designated isolation pen, at first sign of illness and check all the other animals in the group.
- Provide the necessary care for sick and isolated animals
- Conduct detail investigation on the cause of disease
- Avoid movement of persons, equipment and feed between isolation pen and healthy pens.
- Animals isolated for disease conditions should leave the isolation pen when the quarantine inspector permits to do so
- Organic materials such as soil, plant debris, milk, blood, pus, and manure often minimize the effectiveness of some disinfectants by inactivating them or protecting germs being exposed to the disinfectant's active ingredients. Chlorine-based disinfectants are especially subject to this problem. Therefore, collect such infected materials and dispose them by burning or by burying in a separate dedicated area.
- If the pen has a soil floor, exposure to direct sunlight may facilitate killing of non-spore forming germs or leave the pens open for a week to allow desiccation.
- If the pen floor is concrete, expose the contaminated area to 2% NaOH for several hours (3-5 hrs).
- All equipment in contact with infected animal including building used to isolate must be disinfected properly.

3.9 Deadstock and waste disposal

Preventing direct and indirect contact between deadstock or accumulated manure with livestock or wildlife is an important means of controlling disease. This helps to minimize

disease spread from where it may exist to other livestock or wildlife from which it can spread further.

Dead animals must be disposed of immediately upon discovery. Post mortems should be performed in designated areas before carcass disposal. To minimize disease transfer carcasses should be removed from the pens using a front-end loader rather than dragging the carcasses as this may release body fluids along the drag path. The most common methods used for carcass disposal are burial and burning. Burning should only be used where burial is not possible.

Dead stock burial: If burial is undertaken the minimum requirements are listed below:

- Burial pits should be established in low permeability soils on a site well removed from surface waters, drainage lines or gullies.
- The pit must be located so that all water runoff is directed away from the pit.
- Pits should be deep but relatively narrow, and are best dug using an excavator.
- The bottom of the pit must be at least 2 meters above the highest ground water level at the site.
- Avoid rocky areas.
- If the pit is in lighter soils the pit should be lined with at least 600 millimeters of clay.
- The carcass should be immediately covered by at least 500 mm of soil to reduce odour and exclude flies and vermin.
- The pit can be progressively filled with carcasses until sufficient pit capacity remains for the pit to be sealed with clay and compacted to a minimum depth of 1 meter.
- The site where mortalities are buried should be recorded for future reference.

Waste disposal: Manure disposal by burying, burning, and rendering are recommended measures. The following are some suggested manure and deadstock management practices for biosecurity purposes:

- Use dedicated equipment, or clean and disinfect prior to alternate uses.
- Regularly remove manure accumulations from key production areas
- Inactivate potential disease agents in manure through composting and weathering.
- Maintain manure-free roads and tracks for use by service vehicles accessing critical locations within the farmyard and possibly the production area.

- 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.

3.10 Minimize pests

Minimizing direct or indirect contact between certain types of pests and livestock can reduce some disease risks. Within the quarantine environment, accumulated manure under fence lines and in drains, spilt feed around feed troughs, manure piles, silage pits and the edges of sedimentation basins and holding ponds provide ideal locations for fly breeding. If manure management is inadequate there is considerable potential for fly breeding. Uncontrolled fly populations may lead to reduced production from flies 'worrying' the animals. When a pest population is a factor in the disease risk, quarantine stations should apply alternate disease risk management practices:

- ❖ 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.
- ❖ Grass in core quarantine areas of the station should he kept short at all times.
- ❖ 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.

For reducing nuisance fly population, the following measures should be applied:

- Sanitize barns and confinement areas for reducing fly numbers
- Reducing fly breeding sites through proper management of manure, spilled feed, silage, carcasses
- Conduct regular facility maintenance to minimize breeding sites
- Use insecticides selectively through rotating chemical groups
- Apply targeted insecticide use on fly hot spot areas
- spray fly resting sites but not manure

3.11 Ensure facilities are maintained and clean

Keeping facilities, including buildings, barns, chutes, fences, and pens, clean helps reduce the possible transfer of disease within a herd. To keep facilities maintained and clean, quarantine personnel should do the following:

- Maintain their condition to ensure animals are contained and can be handled safely.
- Avoid contamination of compound by using a foot bath (0.5 x 1.5 m) made of 10 cm thick mass concrete and filled with freshly prepared 2% NaOH solution or others as recommended by relevant guidelines.
- Regularly clean and disinfect e.g. all equipment including those in contact with sick animals and isolation pens.
- Clean and disinfect all equipment and pens after any disease outbreak.
- Clean and disinfect pens after use by livestock.
- Insist all workers/visitors use foot dip which is changed regularly.
- Wash hands with soap before and after handling sick animals.
- Remove dead animals and dispose carcasses by burial or burning.
- Boot bottoms must be cleaned mechanically to remove soil or manure before rolling in the disinfectant bath.
- Clean regularly animal premises, feeding and watering equipment and facility compound.
- Ensure that garbage is stored in a manner that prevents contact with live animals and that it is removed regularly.

3.12 Manage movement of visitors

Facilities should be secured to deny unauthorized access to visitors.

- Signs should be posted to direct visitors to report to a main office.
- Find out where they have been in the past two weeks.

- Determine if visitors have been on other facilities prior to visiting the facility.
- Keep accurate and current records of these visits including dates.
- Provide boots and clean or disposable coveralls for visitors, record where they go in the operation.
- Attempt to minimize the number of access routes to facilities. Consider locking gates or otherwise obstructing alternative entry sites.
- The office area frequented by visitors or by outsiders must be separated by lockable gate from the rest of the facilities where animal premises, stores, isolation pen etc. are established.
- Allocate a parking area outside the facility compound for visitors' vehicles.
- All persons entering quarantine facilities must be briefed for awareness on the biosecurity plan.
- If visitors must get in to animal premises they have to change foot wear and put on aprons.

3.13 Management of vehicles

- Provide facilities for washing and disinfecting tires, mud flaps, etc.
- Ensure truckers have cleaned and disinfected their truck or trailer before transporting animals.
- Avoid unnecessary entry of vehicles (private vehicles) in to the quarantine facility compound
- Specify designated parking places for authorized visitors.

3.14 Manage water, feed, medications, and other inputs supply

All inputs are a possible means of introducing disease to livestock. Inputs, in general, play an important role in managing the health of livestock. To minimize disease risks, the quarantine station should:

- Wells and water sources should be protected from intentional tampering and accidental contamination by wastewater and manure.
- Where possible, watercourses and stagnant ponds should be fenced off.
- Water troughs should be cleaned regularly.
- Ensure feed materials bought by the quarantine station or by exporters should be from reliable sources or areas that minimize the risk of contamination with pathogens
- Store feed in clean, dry and well-ventilated areas with no direct access to strangers.

- ❖ Arrange a separate feeding/watering area for isolated and sick animals.
- ❖ Clean all feed storage areas before adding new batches of feed materials.
- ❖ When there are signs of mold growth and spoilage problems, the design and feed out procedures should be re-evaluated and corrected accordingly.
- ❖ Feed troughs should be cleaned out daily.
- ❖ Feed refusals should not be stored more than 24 hours to prevent spoilage.
- ❖ Fecal and urine contamination of feed and water should be prevented.
- ❖ Feed should be kept dry and clean to avoid growth of fungus and bacteria.
- ❖ Feed bins and troughs should be regularly cleaned and washed.
- ❖ Discard all waste feed in a manner which will not attract pests.
- ❖ Feed and water troughs should be smooth sided and their edges should be a minimum of 90 cm for cattle and camel and 30 cm for sheep and goats off the ground.
- ❖ Protect feed and supplements from contamination by wildlife with fencing or tarps.
- ❖ Protect harvested feed and supplements from weathering, contamination with manure, and/or deadstock.
- ❖ Purchase medications and other supplies from reliable sources
- ❖ Store medications according to manufacturer's recommendations.
- ❖ All chemicals and pesticides should be properly labelled and stored separately

3.15 Education, planning, and record-keeping for biosecurity

When live animal exporters and quarantine personnel are aware of the importance of biosecurity and the potential disease risks, they can take appropriate actions to enhance biosecurity within their operation. Planning and record-keeping are two important activities that enhance quarantine biosecurity. Planning assists quarantine personnel in responding to the range of risks that potentially exist. Record-keeping helps quarantine management evaluate and improve their plans and is critical in controlling an outbreak. The following actions support effective training, planning and record-keeping practices:

- ***Ensure personnel understand how and why biosecurity is applied in the quarantine station:*** Personnel, namely live animal exporters and quarantine staff should receive training on biosecurity measures that apply to the operation as a whole, and their respective roles. Additional training should be provided when new procedures are introduced or roles change. Quarantine managers should also review the application of biosecurity practices with personnel and visitors to identify changes where necessary.

- ***Develop, document, and maintain a biosecurity plan specific to the needs of the operation:*** Quarantine stations have to document a biosecurity plan for their operation. A biosecurity plan should address the following key areas, with current practices documented in simple written protocols:
    - sanitation;
    - incoming animals, inputs and materials;
    - deadstock and manure disposal;
    - initial disease response and high-risk biosecurity.

There is significant value in thinking through present biosecurity practices, evaluating for effectiveness in minimizing or preventing known or potential disease risks, documenting for training and consistent application by all personnel within the operation, and evaluating regularly to identify necessary changes or improvements.

- ***Ensure personnel know how to respond to the range of animal health situations:*** Identify the typical animal health situations for the operation by considering those that have already occurred within the quarantine station and in the area, together with those that might occur. These would include the range of diseases such as FMD, CBPP, LSD, etc that may be present in the environment periodically. Standardized approaches that have been prepared for specific situations can be effectively communicated, consistently applied, and evaluated over time to determine their effectiveness. Such approaches need not be highly detailed and should identify those indicators of common situations, the outcomes desired for each, and suggested response measures.
- ***Ensure personnel know how to respond to unusual animal health situations***: Unusual animal health situations are infrequent or low-probability events, though they may have significant consequences to the export trade at large. High rates of disease or death signals an unusual animal health situation. Personnel throughout the quarantine operation must know how to distinguish unusually high levels of disease or death, and be aware of their own roles and appropriate responses. The situation could involve an endemic disease, an emerging or re-emerging disease, or an exotic disease. An appropriate response to an unusual animal health situation includes these elements:
    - define triggers – events that signify an unusual animal health situation (e.g. high rate of disease);
    - indicate initial responses – the limited number of key actions or decisions to undertake initially (e.g. telephone the operation's veterinarian); and

- develop a high-risk biosecurity plan – the practices that are appropriate to the conditions of unusually high levels of disease or death

❖ ***Maintain ongoing records for animal health management:*** The benefits derived from the time and effort taken to ensure effective record keeping include the following:

- more consistent control throughout the operation by ensuring that practices, medications, etc. are managed as desired and according to a plan that is intended to minimize disease; and
- the ability to conduct regular and/or "after the fact" reviews that can assist in identifying important disease control information, such as the potential cause of disease or additional "at risk" operations or animals.

Certain records that should be maintained on an ongoing basis on quarantine operations include:

- Records of all animals that enter and exit the quarantine facility
- Records of all treatments of individual animals and vaccinations, given
- Records of disease incidences, diagnoses made and measures taken
- Records of international certificates issued and final destinations of export animals
- Records of feed purchases and dispositions or use.
- Records of all visitors accessing the quarantine station
- Records of security breaches and other incidences

These records can provide information about the order of events and the possible changes over time that may be critical in identifying either a typical or an unusual animal health situation, and in effectively managing the response. If a typical animal health situation were to occur, these records might assist the quarantine station in identifying a mode of entry and transmission and in recommending adjusted practices to avoid similar circumstances in the future.

References

4. AHA (2016): Australian Animal Welfare Standards and Guidelines for Sheep, Edition One, Version One.

5. AHA (2020): Australian industry welfare standards and guidelines for goats

6. AHA (2016): Australian Animal Welfare Standards and Guidelines for Sheep, Edition One, Version One.

7. Meat and livestock Australia (2004): Management of Nuisance Fly Populations of Cattle Feedlots.

8. AU-IBAR (2004): Standard Methods and Procedures (SMPs) for Export Quarantines in the Greater Horn of Africa.
9. AZA (2007): Recommended Quarantine Procedures; Guide to Accreditation of Zoological Parks and Aquariums pp 16-22,
10. Canadian Food Inspection Agency (2013): Canadian Beef Cattle On-Farm Biosecurity Standard Implementation Manual

11. Council of Europe Committee of Ministers (1990): Recommendation No. R (90) 5 of the Committee of Ministers to Member States on the Transport of Sheep and Goats.

12. Government of India, Ministry of Agriculture Department of animal husbandry, dairies and fisheries. Standard operating procedures for animal quarantine and certification services.

13. Common wealth Australia (2006): Model code of practice for the welfare of animals, the camel, 2nd edition.
14. USDA (2000): Health Management and Biosecurity in U.S. Feedlots, 1999.

15. OIE (2018): Trade measures, import/export procedures and veterinary certification, Terrestrial Animal Health Code, Section 5.

16. OIE (2021): Animal welfare, Terrestrial Animal Health Code, Section 7.

Annex I. Disinfection and standard operational procedures

1. Disinfection in livestock facility

Important points about disinfection should be made before choosing a disinfectant for use:

Disinfectants won't work if the surface to be disinfected isn't clean before applying the disinfectant. Organic materials such as soil, plant debris, blood, pus, and manure often inactivate some disinfectants or protect germs from the disinfectant's active ingredients. Chlorine-based disinfectants are especially subject to this problem. Chlorine, the active ingredient in bleach, is relatively quickly inactivated by organic debris such as manure, and even milk, at the concentrations usually used on clean surfaces.

Even "hard" water can reduce or destroy the activity of some disinfectants. Some disinfectant solutions are only active for a few days after mixing or preparing. Failure to make a fresh solution of disinfectant after it has been prepared longer than a few days, or after it has become visibly contaminated by organic material like manure, may result in using a product that doesn't really work.

It is true that sufficient concentration and contact time can overcome some of these problems with certain classes of disinfectants, but often increasing the concentration or contact time makes use of the product impractical, costly, or caustic.

Disinfectants also vary considerably in their activity against the assorted germs bacteria, viruses, fungi, and protozoa about which livestock producers are concerned. For example, plain vinegar (4% acetic acid) will readily kill the foot-and-mouth disease virus, but it won't do much to Mycobacterium paratuberculosis. Most commonly used disinfectants are not active against bacterial spores, the environmentally hardy life form taken by the germs that cause tetanus, blackleg, botulism, and anthrax. Yes, formaldehyde is effective against most spores, but it is not really a practical disinfectant and is now considered a potential cancer-causing compound.

It is important to select a disinfectant that will be active across a wide spectrum of germs under the conditions in which it will usually be used. These conditions include hard water, contamination with organic material, and potential for toxicity or damage to environmental surfaces or skin and clothing. It is also important to keep solutions clean and freshly made as directed by the manufacturer.

Disinfectants must have sufficient contact time with the surfaces to which they are applied in order to allow them to kill the germs with which we are concerned. Contact time needed

varies with the product and the germ. A quick splash of a dirty boot in a foot bath is not likely to accomplish anything except to give a false sense of security.

2. Standard operational procedures for 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 or 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 downwords. All doors, windows, equipments 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, to 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.

3. Standard operational procedures for postmortem inspection

- The designated staff should inspect the postmortem room before inspection begins.
- Availability of water and sufficient light must be checked
- Waste (left over) transport bags must be arranged in advance.
- The disposal site and method of disposal must be identified in advance.

- ❖ Arrangement of disinfectant must be done in advance so that the room and dis posal site must be disinfected after post mortem.
- ❖ The carcass, waste and other material should be disposed following standard procedures.
- ❖ After post mortem and its disposal, complete area including post mortem room and disposal site must be properly cleaned, disinfected as per the direction of inspector

4. Standard operational procedures for livestock entry

- ❖ The livestock exporter should notify the quarantine station in advance to make reservation for animals the designated quarantine staff should maintain proper liaison with the exporter regarding the actual arrival of the livestock at the quarantine station
- ❖ The quarantine inspector should inspect and ensure adequate preparations are made to receive animals
- ❖ The animal pens, feed area, laboratory , toilets, approach roads, must be properly cleaned and disinfected before the arrival of the animal.
- ❖ The animal pens and related area must be properly cleaned, disinfected as per the direction of inspector in charge before the arrival of the animal.
- ❖ Water and feed supply must be checked thoroughly.
- ❖ Entry protocol for vehicle and personnel must be followed strictly.
- ❖ The livestock attenders designated by the exporter should be introduced with security staff and quarantine officials and telephone numbers must be exchanged for emergency situation

5. Standard operational procedures for livestock exit

- ❖ The concerned staff must complete the file and ensure that all charges, vaccination and treatments given and when required, test results are available.
- ❖ The concerned staff must obtain the permission of the quarantine inspector in charge before starting the procedure for exit of animals.
- ❖ The quarantine inspector should sign and issue the international health certificate and movement permit
- ❖ Vehicles arranged for transport should be inspected and approved for transporting animals by the quarantine inspector

- It should be ensured that the vehicle floor is having proper bedding, along with proper arrangement of water and feed during journey.
- The animals should be brought carefully with the help of attenders and loaded carefully in the vehicle.
- The attenders must accompany the animals during journey.
- The concerned quarantine operator's staff must ensure that the respective animal pens are properly cleaned soon after the departure of the animals.
- The vehicle carrying the livestock must be checked by the concerned staff and security person finally at the quarantine exit point along with the confirmation of final quarantine clearance

5. Standard operational procedures for visitors

Concerned quarantine inspector and security person must ensure the following:

- Entry should be granted for those visitors that have compelling reason to enter in to the quarantine facility
- No person should be allowed to enter without the knowledge and permission of the quarantine inspector in charge
- All visitors permitted to enter should be wear appropriate protective clothing
- Visitors should be accompanied by quarantine staff
- Veterinarian and other personnel who have direct contact with animals should not enter or exit the quarantine without taking shower and change of dress.
- Animal owners, veterinarian and other attendants should not have contact with animals outside the quarantine station for at least 24 hours before and after their exit from the quarantine.