

SHEEP & GOAT MEET



**GUIDELINE
TO FACILITATE INTRA-REGIONAL
TRADE IN THE CARIBBEAN**

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REGIONAL GUIDELINES FOR
SANITARY MEASURES

GUIDELINE TO FACILITATE INTRA-
REGIONAL TRADE IN
SHEEP & GOAT MEAT

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ADOPTION

This guideline was adopted by the Council of Trade and Economic Development (COTED) in June 2022.

APPLICATION

These SPS compliant guidelines may be used in providing the conditions necessary to allow for trade of sheep and goat meat within the region. These guidelines are intended for use by exporters, importers and to assist in the development of the national production systems for trade.

BACKGROUND/INTRODUCTION

The purpose of these guidelines is to ensure SPS compliancy, therefore, the stages from the farm to the table must be taken into consideration. These stages include:

- Conditions in which the sheep and goat are reared,
- Slaughter,
- Processing of meat,
- Storage of meat,
- Transportation of meat,

Product testing is also an important stage, because testing assesses the performance of an export registered establishment's food safety management system (approved arrangement) in producing SPS compliant sheep and goat meat. A regular program of product (meat) testing provides the importing governments with a level of assurance, which allows the exporting country to issue records (ie: Export Health Certificate) showing that the meat is free of contaminants.

SCOPE

These guidelines apply to sheep and goat meat and are in compliance with the SPS Agreement, of which the OIE is considered the standard setting body.

The importation of animal products involves a certain level of disease risk to the importing country. This risk may be represented by one or several diseases, infections or infestations. Therefore, the importing country may wish to perform their own risk analysis. According to OIE, the principal aim of an import risk analysis is to provide importing countries with an objective and defensible method of assessing the disease risks associated with the importation of animal products.

The risk analysis should be transparent, meaning the comprehensive documentation and communication of all data, information, assumptions, methods, results, discussion and conclusions used in the risk analysis. This is necessary so that the exporting country and all interested parties are provided with clear reasons for the imposition of import conditions or refusal to import. The components of risk analysis are hazard identification, risk assessment, risk management and risk communication.

An importing country may decide to permit the importation using the appropriate sanitary standards recommended in the OIE Terrestrial Animal Health Code, therefore, eliminating the need for a risk assessment.

This guideline provides details as to the appropriate standards recommended within the OIE Terrestrial Animal Health Code with respect to the production of sheep and goat meat.

PROCESS

1. Application: For sheep and goat meat to be imported from Country X, an application must be made to the Veterinary Authority of the importing country by the importer:
 - a. The general public, importers and custom brokers can apply for the permit.
 - b. The process to apply for an import permit varies from country to country but some common methods of application are via online government websites, via completion of government issued forms, via email, in person etc.
2. Import Risk Analysis (see Appendix): The Veterinary Authority of the importing country may carry out a risk analysis of sheep and goat production, slaughter and meat processing, storage and transportation within the exporting country (Country X)
3. If sheep and goat meat is produced, processed, stored and transported according to OIE Standards, then the risk should be low. Elements of these standards may be found under the section “**Error! Reference source not found.**”.
4. If testing for contaminants is done regularly at various points in the production process, these results should be easily accessed by the Veterinary Authority in the importing country, then the risk of importing may be considered low.
5. Import Permit: If risk is low an Import Permit may be issued by the Veterinary Authority. If the risk is high, the Veterinary Authority may refuse to issue an Import Permit.
6. Requirements of the Import Permit:

The importer provide an Official Sanitary Certificate issued by the Veterinary Authority of the exporting country prior to the importation of meat. This Official Sanitary Certificate shall certify that:

- The meat is derived from animals originating in Country X
- During the 12 months immediately prior to export, no outbreak of disease of export significance has occurred in Country X (e.g. Foot and Mouth Disease, Bovine Spongiform Encephalopathy, Contagious Bovine Pleuropneumonia, Vesicular Stomatitis etc). See OIE LISTED DISEASES OF IMPORTANCE RELATED TO INTERNATIONAL TRADE AND THE OIE RECOMMENDATIONS FOR TRADE.
- An antemortem inspection was performed by an official representative of the Veterinary Authority and no clinical evidence of disease was observed.
- A postmortem inspection was performed after slaughter by an official representative of the Veterinary Authority and the meat found fit for human consumption.
- Animals slaughtered and meat processed according to OIE and CODEX best practices and certified by a representative of the Veterinary Authority.
- Meat was produced, handled, stored and transported according to OIE and CODEX best practices and certified by a representative of the Veterinary Authority.
- Meat is acceptable for human consumption.

- The Veterinary Authority will conduct a Veterinary Inspection of the meat product once landed at the port of the importing country to determine if the meat is fit for human consumption.

CONTENTS

This section presents the general standards recommended within the OIE Terrestrial Animal Health Code and CODEX Alimentarius Code for Hygienic Practice of Meat with respect to the production of sheep and goat meat. This is followed by a list of plans, programmes, documentation and record keeping that should be in place. General contaminants of meat are also included. Finally, the OIE list of diseases important for trade along with recommendations for trade are provided.

MANAGEMENT OF SHEEP AND GOAT MEAT PRODUCTION FROM FARM TO TABLE

Commercial Sheep and Goat Meat Production Systems (Article 7.9.3, Chap 7.9 – OIE Terrestrial Animal Health Code)

Commercial sheep and goat meat production systems are intensive, extensive and semi-intensive. Within intensive systems, the cattle are in confinement and are dependent on a handler for daily food, shelter and water. In extensive systems, cattle are free to roam outdoors to obtain feed and water, with some access to shelter. Whereas, within semi-intensive systems the cattle are exposed to any combination of both.

Welfare Aspects of Sheep and Goat Meat Production (Article 7.9.4, Chap 7.9 – OIE Terrestrial Animal Health Code)

Animal welfare must be optimal for ideal sheep and goat meat production. The following animal-based criteria can be useful indicators of animal welfare.

- Behavior: decreased feed intake, increased respiratory rate, aggression, depression or other abnormal behaviors are indicators of poor animal welfare
- Morbidity rates: above recognized thresholds may be direct or indirect indicators of welfare
- Mortality rates: direct or indirect indicators of welfare status
- Changes in body weight and body condition – poor body condition and significant weight loss may be an indicator of compromised welfare
- Reproductive efficiency: poor reproductive performance can indicate welfare problems
- Physical appearance: the presence of ectoparasites, abnormal coat color or texture, dehydration, emaciation are indicators of animal welfare
- Handling responses: improper handling can result in fear and distress in
- Complications due to routine procedure management: common surgical and non-surgical procedures performed on sheep and goat, if not performed properly can contribute to deteriorating animal welfare.

Biosecurity and Disease Prevention (Article 7.9.5, Chap 7.9 – OIE Terrestrial Animal Health Code)

Biosecurity plans should be designed, implemented and maintained to ensure the best herd health status, with consideration of available resources and infrastructure and current disease risk. These plans should address the control of the major sources and pathways for spread of pathogenic agents which include: sheep and goats, other animals, people, equipment, vehicles, air, water supply, feed.

An Animal Health Management Programme should optimize the physical and behavioral health and welfare of the sheep and goat herd. Sheep and goats should be reared separately. The Animal Health Management Programme includes the prevention, treatment and control of diseases and conditions affecting the herd (recording of illnesses, injuries, mortalities and medical treatments) in consultation with a veterinarian, where appropriate. This programme should include the recording of production data, morbidities, mortalities, culling rate and medical treatments. These records should be kept up to date as they can quickly indicate problem areas that require immediate intervention. The Animal Health Management Programme should include ecto and endo parasite monitoring, control and treatment to manage parasitic burdens; monitoring of foot health to reduce the incidence of lameness; monitoring of early signs of disease or distress to reduce the overall incidence of illness; vaccination programmes where appropriate; and emergency plans for disease outbreaks.

Environmental Factors affecting Animal Welfare (Article 7.9.5, Chap 7.9 – OIE Terrestrial Animal Health Code)

Environmental factors that affect the welfare of sheep and goat include the following:

- Thermal Environment
 - Heat Stress: The risk of heat stress for sheep and goats is influenced by environmental factors including air temperature, relative humidity, wind speed, and animal factors including breed, age, body condition, metabolic rate, coat colour and density. If the risk of heat stress reaches very high levels the animal handlers should institute an emergency action plan that could include reduction of stocking density, provision of shade, free access to drinking water, and cooling by the use of sprinkled water that penetrates the hair coat.
- Lighting: Confined sheep and goats that do not have access to natural light should be provided with supplementary lighting which follow natural periodicity sufficient for their health and welfare, to facilitate natural behaviour patterns and to allow adequate inspection of the sheep and goats.
- Air Quality: Proper ventilation is important for effective heat dissipation and preventing the buildup of NH₃ and effluent gases in the confinement unit. Poor air quality and ventilation are risk factors for respiratory discomfort and diseases. The ammonia level in enclosed housing should not exceed 25 ppm.
- Noise: The exposure of sheep and goats to sudden or loud noises should be minimised where possible to prevent stress and fear reactions (e.g. stampede). Ventilation fans, feeding machinery or other indoor or outdoor equipment should be constructed, placed, operated and maintained in such a way that they cause the least possible amount of noise.
- Nutrition: The nutrient requirements of sheep and goat have been well defined. Energy, protein, mineral and vitamin contents of the diet are major factors determining the growth, feed efficiency, reproductive efficiency, and body composition.

- Flooring, bedding, resting surfaces and outdoor areas: In all production systems sheep and goats need a well-drained and comfortable place to rest. All sheep and goats in a group should have sufficient space to lie down and rest at the same time.
- Social Environment: Management of sheep and goats should consider their social environment as it relates to animal welfare, particularly in housed systems. Problem areas include: agonistic and mounting activity, mixing of animals at different reproductive stages, feeding animals of different sizes and ages in the same pens, high stocking density, insufficient space at the feeder, insufficient water access and mixing of does.
- Stocking Density - High stocking densities may increase the occurrence of injuries and have an adverse effect on growth rate, feed efficiency and behaviour, such as locomotion, resting, feeding and drinking.
- Protection from predators - sheep and goats should be protected as much as possible from predators.

Management Factors Affecting Animal Welfare (Article 7.9.5, Chap 7.9 – OIE Terrestrial Animal Health Code)

The management factors affecting the welfare of sheep and goats are as follows:

- Genetic selection: Welfare and health considerations, in addition to productivity, should be taken into account when choosing a breed or subspecies for a particular location or production system.
- Reproductive Management: Dystocia can be a welfare risk to sheep and goat. Yearlings should not be bred before they are physically mature enough to ensure the health and welfare of both mother and lamb/kid at birth. The sire has a highly heritable effect on final lamb/kid size and as such can have a significant impact on ease of the birthing process. Sire selection should therefore account for the maturity and size of the female. Ewes and does should not be implanted, inseminated or mated in such a way that the progeny results in increased risk to mother and lamb/kid welfare. Pregnant ewes and does should be managed during pregnancy so as not to become too fat or too thin. Excessive fatness increases the risk of dystocia, and both excessive condition gain and loss increase the risk of metabolic disorders during late pregnancy or after parturition. Where possible, ewes and does should be monitored when they are close to giving birth. Animals observed to be having difficulty during the birthing process should be assisted by a competent handler as soon as possible after they are detected.
- Colostrum: Receiving adequate immunity from colostrum generally depends on the volume and quality of colostrum ingested, and how soon after birth the lamb/kid receives it. Where possible, animal handlers should ensure that lambs/kids receive sufficient colostrum within 24 hours of birth.
- Weaning: Lambs/kids should be weaned only when their ruminant digestive system has developed sufficiently to enable them to maintain growth and welfare.
- Painful Husbandry Procedures: Husbandry practices (castration, dehorning, tail docking, identification) are routinely carried out in sheep and goats for reasons of management, animal welfare and human safety. Those practices that have the potential to cause pain should be performed in such a way as to minimise any pain and stress to the animal. Such procedures should be performed at as early an age as possible or using anaesthesia or analgesia under the recommendation or supervision of a veterinarian.

- Handling and inspection: Sheep and goats should be inspected at intervals appropriate to the production systems and the risks to the health and welfare of small ruminants. In intensive farming systems, sheep and goats should be inspected at least once a day.
- Personnel Training: All people responsible for sheep and goat should be competent in accordance with their responsibilities and should understand small ruminant husbandry, behaviour, biosecurity, general signs of disease, and indicators of poor animal welfare such as stress, pain and discomfort, and their alleviation.
- Location, construction and equipment: Farms for sheep and goats should be situated in an appropriate geographical location for the health, welfare and productivity of small ruminants.
- Humane killing: For sick and injured sheep and goats, a prompt diagnosis should be made to determine whether the animal should be treated or humanely killed. The decision to kill an animal humanely and the procedure itself should be undertaken by a competent person.
- Disaster Management: Plans should be in place to minimise and mitigate the effect of disasters (e.g. earthquake, fire, drought, flooding, blizzard, hurricane). Such plans may include evacuation procedures, identifying high ground, maintaining emergency feed and water stores, destocking (reducing numbers) and humane killing when necessary.

Principles of Meat hygiene applying to primary production (Codex Alimentarius Code of Hygienic Practice for Meat CAP/RCP 58-2005)

- i. Primary production should be managed in a way that reduces the likelihood of introduction of hazards and appropriately contributes to meat being safe and suitable for human consumption.
- ii. Whenever possible and practicable, systems should be established by the primary production sector and the competent authority, to collect, collate and make available, information on hazards and conditions that may be present in animal populations and that may affect the safety and suitability of meat.
- iii. Primary production should include official or officially-recognised programmes for the control and monitoring of zoonotic agents in animal populations and the environment as appropriate to the circumstances, and notifiable zoonotic diseases should be reported as required.
- iv. Good Hygienic Practice (GHP) at the level of primary production should involve for example the health and hygiene of animals, records of treatments, feed and feed ingredients and relevant environmental factors, and should include application of HACCP principles to the greatest extent practicable.
- v. Animal identification practices should allow trace-back to the place of origin to the extent practicable, to allow regulatory investigation where necessary.

Principles of Presentation of Animals for Slaughter (Codex Alimentarius Code of Hygienic Practice for Meat CAP/RCP 58-2005)

- i. Animals presented for slaughter should be sufficiently clean so that they do not compromise hygienic slaughter and dressing.
- ii. The conditions of holding of animals presented for slaughter should minimise cross-contamination with food-borne pathogens and facilitate efficient slaughter and dressing.
- iii. Animals for slaughter should be subjected to ante-mortem inspection, with the competent authority determining the procedures and tests to be used, how inspection is to be implemented, and the necessary training, knowledge, skills and ability of personnel involved.

- iv. Ante-mortem inspection should be science- and risk-based as appropriate to the circumstances, and should take into account all relevant information from the level of primary production.
- v. Relevant information from primary production where available and results of ante-mortem inspection should be utilised in process control.
- vi. Relevant information from ante-mortem inspection should be analysed and returned to the primary producer as appropriate.

Principles of Meat Hygiene Applying to Establishments: Design, Facilities and Equipment (Codex Alimentarius Code of Hygienic Practice for Meat CAP/RCP 58-2005)

- i. Establishments should be located, designed and constructed so that contamination of meat is minimised to the greatest extent practicable.
- ii. Facilities and equipment should be designed, constructed and maintained so that contamination of meat is minimised to the greatest extent practicable.
- iii. Establishments, facilities and equipment should be designed to allow personnel to carry out their activities in a hygienic manner.
- iv. Facilities and equipment that are in direct contact with edible parts of animals and meat, should be designed and constructed so that they can be effectively cleaned and routinely monitored for their hygiene status.
- v. Suitable equipment should be available for control of temperature, humidity and other factors as appropriate to the particular processing system for meat.
- vi. Water should be potable except where water of a different standard can be used without leading to contamination of meat.

Principles of Meat Hygiene Applying to Process Control (Codex Alimentarius Code of Hygienic Practice for Meat CAP/RCP 58-2005)

- i. Production of meat that is safe and suitable for human consumption requires that detailed attention be paid to the design, implementation, monitoring and review of process control.
- ii. The establishment operator has the primary responsibility for implementing systems for process control. Where such systems are applied, the competent authority should verify that they achieve all meat hygiene requirements.
- iii. Process control should limit microbiological contamination to the lowest level practicable, according to a risk-based approach.
- iv. HACCP should be applied wherever practicable as the system of choice for process control, and should be supported by prerequisite GHP that includes Sanitation Standard Operating Procedures (SSOPs).
- v. Process control should reflect an integrated strategy for control of hazards throughout the food chain, with information available from primary production and pre-slaughter being considered wherever possible and practicable.
- vi. All bodies of animals should be subjected to post-mortem inspection that is science- and risk based and tailored to the hazards and/or defects that are reasonably likely to be present in the bodies of animals presented for inspection.
- vii. The competent authority should determine the procedures and tests to be used in post-mortem inspection, how that inspection is to be implemented, and the necessary training, knowledge, skills and ability required of personnel involved (including the role of veterinarians, and personnel employed by the establishment operator).

- viii. Post-mortem inspection should take into account all relevant information from primary production, ante-mortem inspection, and from official or officially-recognized hazard control programmes.
- ix. Post-mortem judgements should be based on: food-borne risks to human health, other human health risks, (e.g: from occupational exposure or handling of meat in the home), food-borne risks to animal health as specified in relevant national legislation, and suitability characteristics.
- x. Performance objectives or performance criteria for the outcome of process control and postmortem inspection activities should be established by the competent authority wherever practicable and should be subject to verification by the competent authority.
- xi. Where appropriate, microbiological testing, for verification purposes, should be included in meat preparation and manufactured meat HACCP plans. Such testing should be relevant to the type of product and the likely risks to consumers, including vulnerable sub-populations.
- xii. Competent bodies or competent persons may be engaged by the establishment operator to undertake prescribed process control activities, including ante- and post-mortem inspection, as approved by the Veterinary Authority.
- xiii. Handling of Ready-to-Eat (RTE) products up until the point of sale to the consumer should ensure that there is no contact with non- Ready-to-Eat (RTE) products, and any other exposure to potential sources of microbiological contamination is minimized to the greatest extent practicable.
- xiv. Voluntary or officially recognised quality assurance (QA) systems may be implemented by the establishment operator where they enhance meat hygiene activities, and they may be taken into account in the verification of regulatory requirements by the competent authority.

Principles of Meat Hygiene Applying to Maintenance and Sanitation of Establishments, Facilities and Equipment (Codex Alimentarius Code of Hygienic Practice for Meat CAP/RCP 58-2005)

- i. Establishments, facilities and equipment should be maintained and sanitised in such a manner that contamination of meat is minimised to the greatest extent practicable.
- ii. Documented programmes for effective and appropriate maintenance and sanitation should be in place.
- iii. Monitoring of the effectiveness of maintenance and sanitation should be included as a basic component of meat hygiene programmes.
- iv. Special sanitation requirements should be applied to the slaughter and dressing of animals that are condemned or designated as “suspects”.

Personal Hygiene (Codex Alimentarius Code of Hygienic Practice for Meat CAP/RCP 58-2005)

Personal hygiene practices should prevent undue general contamination, and prevent cross-contamination with human pathogens that may cause food-borne disease. Persons moving from rooms or areas containing raw meat to rooms or areas used for meat preparations and manufactured meat (especially when these products are cooked) should thoroughly wash, change and/or sanitize their protective clothing as appropriate, and otherwise limit the possibility of cross-contamination.

Transportation (Codex Alimentarius Code of Hygienic Practice for Meat CAP/RCP 58-2005)

Due to the potential for growth of pathogenic and spoilage micro-organisms under conditions of inadequate temperature control, meat should be transported at temperatures that achieve safety and suitability objectives. Equipment for continuous monitoring and recording of temperatures should

accompany transport vehicles and bulk containers wherever appropriate. Additionally, the conditions of transport should provide adequate protection from exogenous contamination and damage, and should minimise growth of pathogenic and spoilage micro-organisms. If meat is inadvertently exposed to adverse temperature conditions or sources of contamination that may affect safety and suitability, an inspection should be carried out by a competent person before further transport or distribution is allowed.

Product Information and Consumer Awareness (Codex Alimentarius Code of Hygienic Practice for Meat CAP/RCP 58-2005)

Appropriate product information and adequate knowledge of food hygiene is necessary to prevent mishandling at later stages in the food chain. Pre-packaged foods should be labelled with clear instructions to enable the next person in the food chain to handle, display, store and use the product safely. The conditions of storage of meat preparations and manufactured meat should be clearly presented on the packaging. Meat preparations and manufactured meat should, where appropriate, be specifically labelled to provide safe handling, refrigeration and storage instructions for consumers. Foods containing meat that have not received an adequate biocidal treatment for pathogens (e.g: containing raw meat, partially cooked meat, or products with secondary inhibitors) should be labelled with handling, refrigeration, storage, cooking and preparation statements that have been validated as sufficiently biocidal.

Principles of Training in Meat Hygiene (Codex Alimentarius Code of Hygienic Practice for Meat CAP/RCP 58-2005)

Persons engaged in meat hygiene activities should be trained, and/or instructed to a required level of training, knowledge, skills, and ability. Training specified or recognised by the competent authority, should be:

- i. Appropriate to the activities and operations;
- ii. Proportional to the potential of the particular meat hygiene activity to impact on food-borne risks to human health;
- iii. Properly documented, including records of training programme delivery;
- iv. Verified as appropriate; and
- v. Subject to recognition by the competent authority where delivered by third parties.

Veterinary Services and Meat Inspection Programmes (Article 6.3.4, Chap 6.3 – OIE Terrestrial Animal Health Code)

Veterinary services are primarily responsible for the development of ante- and post-mortem meat inspection programmes. Wherever practicable, inspection procedures should be risk -based and management systems should reflect international norms and cover the significant hazards to both human and animal health in the livestock being slaughtered, as determined by the Veterinary Services. In respect of ante- and post-mortem inspection as a component of meat hygiene, responsibilities of Veterinary Services include: risk assessment and risk management; establishment of policies and standards; design and management of inspection programmes; assurance and certification of appropriate delivery of inspection and compliance activities and dissemination of information throughout the meat production chain.

Risk Assessment and Risk Management (Article 6.3.5, Chap 6.3 – OIE Terrestrial Animal Health Code)

Veterinary Services should utilise to the greatest extent practicable in the development of sanitary measures. Veterinary Services should give priority to addressing microbiological contamination, while not neglecting gross abnormalities detected at ante- and post-mortem inspection, as this has been found to be the most important source of hazards. Microbiological, serological or other testing at single-animal and herd or flock level as part of ante- and post-mortem inspection should be used to support surveillance, as well as risk assessment of prioritised foodborne hazards. The information gathered should be linked to human disease data to allow an assessment of the effectiveness of various management options, as well as a general evaluation of food sources of foodborne disease. Application of a generic framework should provide a systematic and consistent process for managing all biosecurity risks, while accommodating the different risk assessment methodologies used in animal and public health.

Establishment of Policies and Standards (Article 6.3.6, Chap 6.3 – OIE Terrestrial Animal Health Code)

The national competent authority(ies) should provide an appropriate institutional environment to allow Veterinary Services to develop the necessary policies and standards. As well as meeting public health objectives, policies and standards relating to ante- and post-mortem inspection should aim to detect and remove hazards of animal health significance from the meat production chain. This may be achieved by the removal of live animals at ante-mortem inspection or by the removal of specific tissues at post-mortem inspection. Veterinary Services should integrate their activities to the maximum extent practicable so as to prevent duplication of effort and unnecessary costs (eg: within the process of international certification).^{Draft}

Design and Management of Inspection Programmes (Article 6.3.7, Chap 6.3 – OIE Terrestrial Animal Health Code)

In meeting animal and public health objectives prescribed in national legislations or required by importing countries, Veterinary Services contribute through the direct performance of some veterinary tasks or through the auditing of animal and public health activities conducted by other agencies or the private sector. To this end, Veterinary Services provide assurances domestically and to trading partners that safety and suitability standards have been met. Veterinary Services should allow flexibility in meat inspection service delivery through an officially recognised competent body operating under its supervision and control. In recognition of the contribution of industry to food safety, quality assurance systems may be extended in the case of ante- and post-mortem inspection to systems that integrate industry and Veterinary Services activities. Nevertheless, Veterinary Services should take into account the fundamental principles of quality of Veterinary Services such as professional judgement; independence and objectivity; impartiality; integrity; transparency; scientific basis; and intersectoral collaboration (Article 3.2.2, Chapter 3.2 OIE Terrestrial Animal Health Code). For example, if personnel from the private sector are used to carry out ante- and post-mortem inspection activities under the overall supervision and responsibility of the Veterinary Services, the Veterinary Services should specify the competency requirements for all such persons and verify their performance.

Assurance and Certification (Article 6.3.8, Chap 6.3 – OIE Terrestrial Animal Health Code)

Assurance and certification of appropriate delivery of inspection and compliance activities is a vital function of Veterinary Services. International health certificates providing official assurances for trading of meat must engender full confidence to the country of importation.

Dissemination of Information (Article 6.3.9, Chap 6.3 – OIE Terrestrial Animal Health Code)

Organisation and dissemination of information throughout the meat production chain involves multidisciplinary inputs. To ensure the effective implementation of ante- and post-mortem inspection procedures, Veterinary Services should have systems in place for the monitoring of these procedures and the exchange of information gained. Further, there should be an ongoing programme for monitoring of hazards at appropriate points throughout the meat production chain so as to help evaluate the efficacy of controls. Animal identification and animal traceability systems should be integrated in order to be able to trace slaughtered animals back to their place of origin, and products derived from them forward through the meat production chain.

PLANS, PROGRAMMES, DOCUMENTATION AND RECORD KEEPING

Records should be kept, as necessary and where practicable to enhance the ability to verify the effectiveness of the control systems. Documentation of plans, programmes and procedures can enhance the credibility and effectiveness of the food safety control system.

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A summary of records as recommended under the section “MANAGEMENT OF SHEEP AND GOAT MEAT PRODUCTION FROM FARM TO TABLE” which are important for food safety are as follows:

- Evidence of a Biosecurity Plan in place. This plan should address the control of the major sources and pathways for spread of pathogenic agents. An application of Good Hygienic Practices (GHP) and Hazard Analysis Critical Control Points (HACCP) should also be included.
- Evidence of an Animal Health Management Programme in place. This programme should aim to optimize health and welfare of the sheep and goat herd. Within this programme, the following records should be kept:
 - illnesses, injuries, morbidities, mortalities;
 - medical treatments and evidence of adherence to withdrawal periods;
 - nature and source of feed, feed ingredients and water;
 - production data, culling rate;
 - ecto and endo parasite monitoring, control and treatment to manage parasitic burdens;
 - monitoring of foot health to reduce the incidence of lameness;
 - monitoring of early signs of disease/distress to reduce the overall incidence of illness;
 - vaccination programmes where appropriate; and
 - emergency plans for disease outbreaks

- Records of Animal identification practices to allow trace-back to place of origin
- Personnel (staff) hygiene records
- Transportation of meat records:
 - records of temperatures kept during transportation
 - records of conditions of transportation
 - evidence of mitigation practices in place if temperatures and conditions are adverse
- Records of meat storage:
 - records of temperatures kept during storage
 - records of storage conditions
 - evidence of mitigation practices in place if temperatures and conditions are adverse
- Records of training programmes for Staff in meat hygiene
- Records of Quality Assurance Systems in place
- Records of Meat Inspection Programme in place inclusive of:
 - Results of ante mortem inspection
 - Results of post mortem inspection
- Records of Risk Assessment and Risk Management
 - Results of microbiological, serological or other testing at single-animal and herd level as part of ante- and post-mortem inspection should be used to support surveillance, as well as risk assessment of prioritised foodborne hazards
 - Results of microbiological, pesticide, veterinary drug residue testing of meat products to ensure that these contaminants do not exceed levels that would present a risk to the consumer.

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CONTAMINANTS (PATHOGENS) GENERALLY ASSOCIATED WITH SHEEP AND GOAT MEAT

The most important foodborne bacterial pathogens associated with meat are *Salmonella* spp., *Staphylococcus aureus*, *Escherichia coli*, *Campylobacter jejuni*, *Listeria monocytogenes*, *Clostridium perfringens*, *Yersinia enterocolitica* and *Aeromonas hydrophila*. Among them, *Salmonella* species, *Campylobacter jejuni*, *Listeria monocytogenes* and verocytotoxin producing *E. coli* O157 are a major public health problem. Additionally, *Pseudomonas* species are associated with spoilage of meat causing off-odours, off-flavours, discolouration and gas production. Similarly, *Vibrio* species are the leading cause of gastroenteritis, wound infection and septicemia in humans. (<https://www.ncbi.nlm.nih.gov/pmc/articles/PMC6114039/>)

However, if the guidelines provided by OIE Terrestrial Animal Health Code and Codex Alimentarius Code of Hygienic Practice for Meat are adhered to through the entire process of meat production, slaughter and meat processing, storage and transport, the risk of toxic levels of foodborne bacterial pathogens on raw meat are significantly lowered.

OIE LISTED DISEASES OF IMPORTANCE RELATED TO INTERNATIONAL TRADE AND THE OIE RECOMMENDATIONS FOR TRADE

OIE Listed Diseases and other Diseases of importance to international trade 2021 and OIE Recommendations for Trade	
Sheep and Goat	
<p>Anthrax</p>	<p>Recommendations for the importation of fresh meat and meat products destined for human consumption – Article 8.1.4, Chapter 8.1, OIE Terrestrial Animal Health Code</p> <p>Veterinary Authorities of importing countries should require the presentation of an international veterinary certificate attesting that the products originate from animals that:</p> <ol style="list-style-type: none"> 1. Have shown no sign of anthrax during ante- and post-mortem inspections; and 2. Were not vaccinated against anthrax using live vaccine during the 14 days prior to slaughter or a longer period depending on the manufacturer's recommendations; and 3. Come from establishments that are not placed under movement restrictions for the control of anthrax and where there has been no case of anthrax during the 20 days prior to slaughter.
<p>Infection with Aujeszky's Disease Virus</p>	<p>Pigs are the natural host for Aujeszky's disease (AD) virus, although it can infect cattle, sheep, cats, dogs and rats causing fatal disease (Article 8.2.1, Chapter 8.2, OIE Terrestrial Animal Health Code).</p> <p>Safe commodities – Article 8.2.1, Chapter 8.2, OIE Terrestrial Animal Health Code</p> <p>When authorising import or transit of products of animal origin not containing offal (head, and thoracic and abdominal viscera) and any products made from these, Veterinary Authorities should not require any AD-related conditions, regardless of the AD status of the exporting country or zone.</p>
<p>Infection with Bluetongue Virus</p>	<p>OIE recommended safe commodities – Article 8.3.2, Chapter 8.3 OIE Terrestrial Animal Health Code</p> <p>When authorising the import or transit of meat and meat products, Veterinary Authorities should not require any bluetongue-related conditions regardless of the bluetongue status of the exporting country.</p>
<p>Brucellosis Infection with <i>B. abortus</i>; <i>B. melitensis</i></p>	<p>Recommendations for the importation of fresh meat and meat products other than skeletal muscle meat, brain and spinal cord, digestive tract, thymus, thyroid and parathyroid glands and derived products, cured hides and skins, gelatine, collagen, tallow and meat-</p>

OIE Listed Diseases and other Diseases of importance to international trade 2021 and OIE Recommendations for Trade	
Sheep and Goat	
	<p>and-bone meal. (Article 8.4.19, Chapter 8.4 OIE Terrestrial Animal Health Code)</p> <p>Veterinary Authorities of importing countries should require the presentation of an international veterinary certificate attesting that the meat and meat products come from animals:</p> <ol style="list-style-type: none"> 1. Which have been subjected to ante-and post-mortem inspections; 2. Which either : <ol style="list-style-type: none"> a. originate from a country or zone free from infection with <i>Brucella</i>, as relevant; OR b. originate from a herd or flock free from infection with <i>Brucella</i>; OR c. have not been culled as part of an eradication programme against infection with <i>Brucella</i>.
Caprine arthritis/encephalitis	No OIE provisions for trade of goat meat
Contagious agalactia	No OIE provisions for trade of sheep and goat meat
Contagious caprine pleuropneumonia	<p>OIE Recommendations for importation from countries considered infected with Contagious Caprine Pleuropneumonia (CCPP) (Article 14.3.12, Chapter 14, OIE Terrestrial Animal Health Code)</p> <p><i>For fresh meat of goats</i></p> <p>Veterinary Authorities should require the presentation of an international veterinary certificate attesting that the entire consignment of fresh meat comes from animals:</p> <ol style="list-style-type: none"> 1. Which originate from establishments free of CCPP; 2. Which have been slaughtered in an approved slaughterhouse/abattoir and have been subjected to an ante-mortem inspection for CCPP with favourable results: and 3. Which showed no lesions of CCPP at the post-mortem inspection.
Infection with <i>Chlamydia abortus</i> (Enzootic abortion of ewes, ovine chlamydiosis)	No OIE provisions for trade of sheep and goat meat
Infection with <i>Echinococcus granulosus</i>	<p>OIE Recommended Safe Commodities – Article 8.5.2, Chapter 8.5 OIE Terrestrial Animal Health Code</p> <p>When authorising import or transit of the skeletal muscle meat and skeletal muscle meat products of livestock, Veterinary Authorities should not require any <i>E. granulosus</i>-related conditions regardless of the status of the animal population of the exporting country or zone.</p>

OIE Listed Diseases and other Diseases of importance to international trade 2021 and OIE Recommendations for Trade	
Sheep and Goat	
Infection with Foot and Mouth Disease virus	<p>Recommendations for importation from FMD free countries or zones where vaccination is not practised or FMD free compartments – Article 8.8.20, Chapter 8.8 OIE Terrestrial Animal Health Code</p> <p>For fresh meat or meat products of FMD susceptible animals</p> <p>Veterinary Authorities should require the presentation of an International Veterinary Certificate attesting that the entire consignment of meat comes from animals which:</p> <ol style="list-style-type: none"> 1. Have been kept in a FMD free country or zone where vaccination is not practised or FMD free compartment, or which have been imported in accordance with: <ol style="list-style-type: none"> a. Recommendations for importation from FMD free countries or zones where vaccination is not practised or FMD free compartments (Article 8.8.10, Chapter 8.8 OIE Terrestrial Animal Health Code) – For FMD susceptible animals Veterinary Authorities should require the presentation of an international veterinary certificate attesting that the meat and meat products come from animals that: <ol style="list-style-type: none"> i. Showed no clinical sign of FMD on the day of shipment; ii. Were kept since birth or for at least the past three months in a FMD free country or zone where vaccination is not practised or a FMD free compartment; iii. If transiting an infected zone, were not exposed to any source of FMDV during transportation to the place of shipment. OR b. Recommendations for importation from FMD free countries or zones where vaccination is practised (Article 8.8.11, Chapter 8.8 OIE Terrestrial Animal Health Code) – For domestic ruminants Veterinary Authorities should require the presentation of an international veterinary certificate attesting that the meat and meat products come from animals that: <ol style="list-style-type: none"> i. Showed no clinical sign of FMD on the day of shipment; ii. Were kept since birth or for at least the past three months in a FMD free country or zone where vaccination is practised; iii. Were subjected to a test for FMD with negative results;

OIE Listed Diseases and other Diseases of importance to international trade 2021 and OIE Recommendations for Trade	
Sheep and Goat	
	<p>iv. If transiting an infected zone, were not exposed to any source of FMDV during transportation to the place of shipment.</p> <p>OR</p> <p>c. Recommendations for importation from FMD infected countries or zones where an official control programme exists –Article 8.8.12, Chapter 8.8 OIE Terrestrial Animal Health Code - For domestic ruminants</p> <p>Veterinary Authorities should require the presentation of an international veterinary certificate attesting that the meat and meat products come from animals that:</p> <ol style="list-style-type: none"> i. The animals showed no clinical sign of FMD on the day of shipment; ii. Prior to isolation, the animals were kept in the establishment of origin: <ol style="list-style-type: none"> 1. For 30 days, or since birth if younger than 30 days, if a stamping-out policy is applied to control FMD in the exporting country or zone, 2. For three months, or since birth if younger than three months if a stamping-out policy is not applied to control FMD in the exporting country or zone, iii. FMD has not occurred within the establishment of origin for the relevant period as defined in points 2(a) and 2(b) above; iv. The animals were isolated in an establishment for the 30 days prior to shipment, and all animals in isolation were subjected to diagnostic virological and serological tests for evidence of FMDV with negative results on samples collected at least 28 days after the start of isolation period, and that FMD did not occur within a 10 kilometre radius of the establishment during that period, or the establishment is a quarantine station; v. The animals were not exposed to any source of FMDV during their transportation from the establishment to the place of shipment. <p>2. Have been slaughtered in an approved slaughterhouse/abattoir and have been subjected to ante- and post-mortem inspections with favourable results.</p>

OIE Listed Diseases and other Diseases of importance to international trade 2021 and OIE Recommendations for Trade	
Sheep and Goat	
	<p>Recommendations for importation from FMD free countries or zones where vaccination is practised – Article 8.8.12, Chapter 8.8 OIE Terrestrial Animal Health Code</p> <p>For fresh meat and meat products of ruminants Veterinary Authorities should require the presentation of an international veterinary certificate attesting that the entire consignment of meat comes from animals which:</p> <ol style="list-style-type: none"> 1. have been kept in the FMD free country or zone where vaccination is practised, or which have been imported in accordance with: <ol style="list-style-type: none"> a. Recommendations for importation from FMD free countries or zones where vaccination is not practised or FMD free compartments (Article 8.8.10, Chapter 8.8 OIE Terrestrial Animal Health Code) – For FMD susceptible animals Veterinary Authorities should require the presentation of an international veterinary certificate attesting that the meat and meat products come from animals that: <ol style="list-style-type: none"> i. Showed no clinical sign of FMD on the day of shipment; ii. Were kept since birth or for at least the past three months in a FMD free country or zone where vaccination is not practised or a FMD free compartment; iii. If transiting an infected zone, were not exposed to any source of FMDV during transportation to the place of shipment. <p style="text-align: center;">OR</p> <ol style="list-style-type: none"> b. Recommendations for importation from FMD free countries or zones where vaccination is practised (Article 8.8.11, Chapter 8.8 OIE Terrestrial Animal Health Code) – For domestic ruminants Veterinary Authorities should require the presentation of an international veterinary certificate attesting that the meat and meat products come from animals that: <ol style="list-style-type: none"> i. showed no clinical sign of FMD on the day of shipment; ii. were kept since birth or for at least the past three months in a FMD free country or zone where vaccination is practised; iii. were subjected to a test for FMD with negative results; iv. if transiting an infected zone, were not exposed to any source of FMDV during transportation to the place of shipment.

OIE Listed Diseases and other Diseases of importance to international trade 2021 and OIE Recommendations for Trade	
Sheep and Goat	
	<p style="text-align: center;">OR</p> <p style="text-align: center;">c. Recommendations for importation from FMD infected countries or zones where an official control programme exists –Article 8.8.12, Chapter 8.8 OIE Terrestrial Animal Health Code - For domestic ruminants</p> <p>Veterinary Authorities should require the presentation of an international veterinary certificate attesting that the meat and meat products come from animals that:</p> <ol style="list-style-type: none"> i. The animals showed no clinical sign of FMD on the day of shipment; ii. Prior to isolation, the animals were kept in the establishment of origin: <ol style="list-style-type: none"> 1. for 30 days, or since birth if younger than 30 days, if a stamping-out policy is applied to control FMD in the exporting country or zone, 2. for three months, or since birth if younger than three months if a stamping-out policy is not applied to control FMD in the exporting country or zone, iii. FMD has not occurred within the establishment of origin for the relevant period as defined in points 2(a) and 2(b) above; iv. The animals were isolated in an establishment for the 30 days prior to shipment, and all animals in isolation were subjected to diagnostic virological and serological tests for evidence of FMDV with negative results on samples collected at least 28 days after the start of isolation period, and that FMD did not occur within a 10 kilometre radius of the establishment during that period, or the establishment is a quarantine station; v. The animals were not exposed to any source of FMDV during their transportation from the establishment to the place of shipment. <ol style="list-style-type: none"> 2. Have been slaughtered in an approved slaughterhouse/abattoir and have been subjected to ante- and post-mortem inspections for FMD with favourable results; 3. For ruminants the head, including the pharynx, tongue and associated lymph nodes, has been excluded from the shipment. <p>Recommendations for importation from FMD infected countries or zones – Article 8.8.23, Chapter 8.8 OIE Terrestrial Animal Health Code</p> <p>For meat products of FMD susceptible animals</p>

OIE Listed Diseases and other Diseases of importance to international trade 2021 and OIE Recommendations for Trade	
Sheep and Goat	
	<p>Veterinary Authorities should require the presentation of an international veterinary certificate attesting that:</p> <ol style="list-style-type: none"> 1. The entire consignment of meat products come from animals which have been slaughtered in an approved slaughterhouse/abattoir and have been subjected to ante- and post-mortem inspections for FMD with favourable results; 2. The meat products have been processed to ensure the destruction of FMDV in accordance with one of the procedures to inactivate FMDV in meat and meat products (Article 8.8.31, Chapter 8.8 OIE Terrestrial Animal Health Code) such as; <ol style="list-style-type: none"> a. Canning Meat and meat products are subjected to heat treatment in a hermetically sealed container to reach an internal core temperature of at least 70°C for a minimum of 30 minutes or to any equivalent treatment which has been demonstrated to inactivate FMDV. b. Thorough Cooking Meat, previously deboned and defatted, and meat products are subjected to a heat treatment that results in a core temperature of at least 70°C for a minimum of 30 minutes. After cooking, they should be packed and handled in such a way they are not exposed to a source of FMDV. c. Drying After Salting When <i>rigor mortis</i> is complete, the meat is deboned, treated with salt (NaCl) and 'completely dried'. It should not deteriorate at ambient temperature. 'Completely dried' is defined as a moisture protein ratio that is not greater than 2.25:1 or a water activity (<i>A_w</i>) that is not greater than 0.85. 3. The necessary precautions were taken after processing to avoid contact of the meat products with any potential source of FMDV.
Heartwater	OIE recommends prohibition of trade (Article 8.9.2, Chapter 8.9 OIE Terrestrial Animal Health Code)
Infection with <i>Mycobacterium tuberculosis</i>	OIE recommended Safe commodities - Article 8.11.2, Chapter 8.11 OIE Terrestrial Animal Health Code

OIE Listed Diseases and other Diseases of importance to international trade 2021 and OIE Recommendations for Trade	
Sheep and Goat	
	When authorising import or transit of fresh meat and meat products originating from animals that have been subjected to ante- and post-mortem inspections, Veterinary Authorities should not require any <i>M. tuberculosis</i> complex-related conditions, regardless of the <i>M. tuberculosis</i> complex infection status of the animal populations of the country, zone or herd of origin.
Maedi-visna	No OIE provisions for trade of sheep and goat meat
New world screwworm (<i>Cochliomyia hominivorax</i>) and Old world screwworm (<i>Chrysomya bezziana</i>)	No restrictions on trade of sheep and goat meat. (Article 8.12.4, Chapter 8.12 OIE Terrestrial Animal Health Code)
Ovine epididymitis (<i>Brucella ovis</i>)	No OIE provisions for trade of sheep meat
Paratuberculosis	No OIE provisions for trade of sheep and goat meat
Rabies	No OIE provisions for trade of sheep and goat meat
Infection with Peste des Petits Ruminants Virus	<p>OIE Recommendations for importation of fresh meat and meat products from sheep and goats – Article 14.7.17, Chapter 14.7 OIE Terrestrial Animal Health Code</p> <p>Veterinary Authorities should require the presentation of an international veterinary certificate attesting that the entire consignment of meat comes from animals which:</p> <ol style="list-style-type: none"> 1. Showed no clinical sign of Pest des Petits Ruminants (PPR) within 24 hours before slaughter, 2. Have been slaughtered in an approved slaughterhouse/abattoir and have been subjected to ante- and post-mortem inspections with favourable results.
Infection with Rinderpest	<p>Recommendations for international trade in livestock products – Article 8.16.4., Chapter 8.16 OIE Terrestrial Animal Health Code</p> <p>When authorising import or transit of livestock and their products, Veterinary Authorities should not require any rinderpest-related conditions.</p>

OIE Listed Diseases and other Diseases of importance to international trade 2021 and OIE Recommendations for Trade	
Sheep and Goat	
Scrapie	<p>OIE recommendations with respect to Scrapie, a neurodegenerative disease of sheep and goats - Article 14.8.1, Chapter 14.8, Terrestrial Animal Health Code</p> <p>Scrapie is not considered to pose a risk to human health. When authorising import or transit of meat (excluding materials such as brains, ganglia and eyes, vertebral column including ganglia and spinal cord, tonsils, thymus, spleen, intestine, adrenal gland, pancreas or liver and protein products derived therefrom, from sheep and goats Article 14.8.12, Chapter 14.8, OIE Terrestrial Animal Health Code) derived from sheep or goats and any products made from meat and containing no other tissues from sheep or goats, Veterinary Authorities should not require any scrapie-related conditions, regardless of the scrapie risk status of the sheep and goat populations of the exporting country, zone or compartment.</p>
Sheep Pox and Goat Pox	<p>OIE recommends prohibition of of trade (Article 14.9.4, Chapter 14.9, OIE Terrestrial Animal Health Code)</p>
Infection with <i>Trypanosoma brucei</i> , <i>T. congolense</i> , <i>T. simiae</i> and <i>T. vivax</i>	<p>OIE recommended Safe commodities – Article 8.18.2, Chapter 18 OIE Terrestrial Animal Health Code</p> <p>When authorising the import or transit of meat and meat products from animals that have been slaughtered in a slaughterhouse/abattoir and have been subjected to ante- and post-mortem inspections with favourable results, Veterinary Authorities should not require conditions related to infection with <i>T. brucei</i>, <i>T. congolense</i>, <i>T. simiae</i> and <i>T. vivax</i> regardless of the status of the exporting country or zone.</p>

KEY RELEVANT DOCUMENTS/REFERENCES

All references and sources of information consulted for the development of the guideline:

Antigua and Barbuda Import Requirements

<https://agriculture.gov.ag/index.php/live-stock/>

Australian Govt Guideline Trade Descriptions

<https://www.agriculture.gov.au/export/controlled-goods/meat/elmer-3/guideline-trade-descriptions>

Barbados Import Requirements

<https://agriculture.gov.bb/>

Belize Meat Import Requirements

<https://www.trade.gov/country-commercial-guides/belize-trade-barriers>

Bermuda Meat Import requirements

<https://www.gov.bm/business/importing-and-exporting>

British Virgin Islands Meat Import requirements

<https://bvi.gov.vg/services/importation-meat>_{Draft}

Codex Alimentarius Code of Hygienic Practice for Meat CAP/RCP 58-2005

https://www.fao.org/fao-who-codexalimentarius/sh-proxy/en/?lnk=1&url=https%253A%252F%252Fworkspace.fao.org%252Fsites%252Fcodex%252FStandards%252FCXC%2B58-2005%252FCXP_058e.pdf

Conditions Governing the Importation of Meat and Meat Products (*Excluding Game Meat*) into the Cayman Islands

<http://www.dlp.gov.ky/portal/pls/portal/docs/1/12702493.PDF>

Commonwealth of Dominica Meat Import Requirements

<https://dominica.gov.dm/forms/file/19-import-permit-beef?start=20>

Food-borne bacterial pathogens in marketed raw meat of Dharan, eastern Nepal

<https://www.ncbi.nlm.nih.gov/pmc/articles/PMC6114039/>

Grenada Meat Import Requirements

<https://gov.gd/moti/pre-arrival-permits-and-licenses>

Guyana Meat Import Requirements

<https://www.visahq.com/guyana/customs/>

Jamaica Meat Import Requirements

<https://moa.gov.jm/content/veterinary-services-division>

OIE Terrestrial Animal Health Code – Chapter 3.2 6.3, 7.9, 8, 11

<https://www.oie.int/en/what-we-do/standards/codes-and-manuals/terrestrial-code-online-access/>

St. Lucia Meat Import Requirements

<https://www.govt.lc/services/import-license-for-meat-commercial->

St. Kitts and Nevis Import Legislation

https://aglskn.info/wp-content/documents/Act17TOC/Ch-09_03-Animals-Ntl-and-Intl-Movement-and-Prescribed-Diseases-Prevent-Act.pdf

St. Vincent and the Grenadines Import requirements

http://www.foreign.gov.vc/foreign/index.php?option=com_content&view=article&id=46&Itemid=315

Turks and Caicos Meat Import Requirements

<https://gov.tc/pressoffice/962-the-department-of-agriculture-would-like-to-inform-the-public-of-travel-do-s-and-dont-s>

<https://www.fsis.usda.gov/inspection/import-export/import-export-library/turks-caicos-islands>

Trinidad and Tobago Meat Import Requirements

<https://www.ttconnect.gov.tt/gortt/portal/ttconnect>

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APPENDIX – OIE TERRESTRIAL CODE IMPORT RISK ANALYSIS

Section 2

CHAPTER 2.1

IMPORTANT RISK ANALYSIS

Article
2.1.1.

INTRO

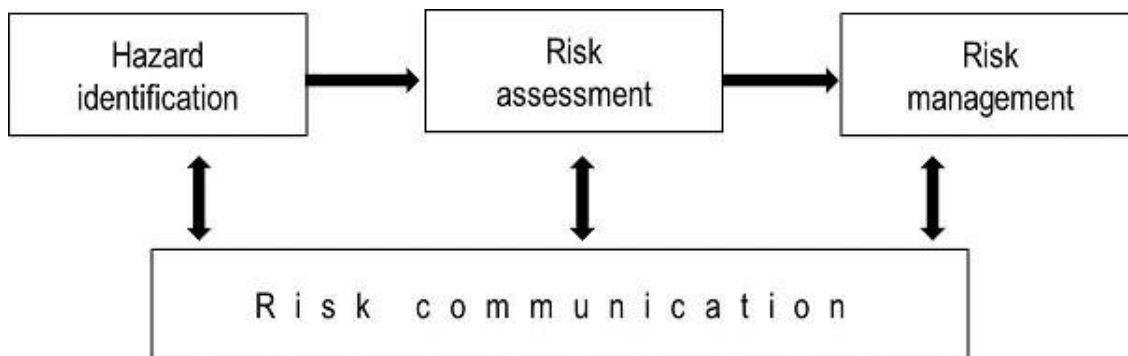
The importation of *animals* and animal products involves a certain level of disease *risk* to the *importing country*. This *risk* may be represented by one or several diseases, *infections* or *infestations*.

The principal aim of import *risk analysis* is to provide *importing countries* with an objective and defensible method of assessing the disease *risks* associated with the importation of *animals*, animal products, animal genetic material, feedstuffs, biological products and *pathological material*. The analysis should be transparent. Transparency means the comprehensive documentation and communication of all data, information, assumptions, methods, results, discussion and conclusions used in the *risk analysis*. This is necessary so that the *exporting country* and all interested parties are provided with clear reasons for the imposition of import conditions or refusal to import.

Transparency is also essential because data are often uncertain or incomplete and, without full documentation, the distinction between facts and the analyst's value judgements may blur.

This chapter provides recommendations and principles for conducting transparent, objective and defensible *risk analyses* for *international trade*. The components of *risk analysis* are *hazard identification*, *risk assessment*, *risk management* and *risk communication* (Figure 1).

Fig. 2. The four components of risk analysis



The *risk assessment* is the component of the analysis which estimates the *risks* associated with a *hazard*. *Risk assessments* may be qualitative or quantitative. For many diseases, particularly for those diseases listed in this *Terrestrial Code* where there are well developed internationally agreed standards, there is broad agreement concerning the likely *risks*. In such cases it is more likely that a qualitative assessment is all that is required. Qualitative assessment does not require mathematical modelling skills to carry out and so is often the type of assessment used for routine decision making. No single method of import *risk assessment* has proven applicable in all situations, and different methods may be appropriate in different circumstances.

The process of import *risk analysis* usually needs to take into consideration the results of an evaluation of *Veterinary Services*, zoning, compartmentalisation and *surveillance* systems in place for monitoring of animal health in the *exporting country*. These are described in separate chapters in the *Terrestrial Code*.

Article 2.1.2.

Hazard identification

The *hazard* identification involves identifying the pathogenic agents which could potentially produce adverse consequences associated with the importation of a *commodity*.

The *hazards* identified would be those appropriate to the species being imported, or from which the *commodity* is derived, and which may be present in the *exporting country*. It is then necessary to identify whether each *hazard* is already present in the *importing country*, and whether it is a *notifiable disease* or is subject to control or eradication in that country and to ensure that import measures are not more trade restrictive than those applied within the country.

Hazard identification is a categorisation step, identifying biological agents dichotomously as *hazards* or not. The *risk assessment* may be concluded if *hazard* identification fails to identify *hazards* associated with the importation.

The evaluation of the *Veterinary Services*, *surveillance* and control programmes and zoning and compartmentalisation systems are important inputs for assessing the likelihood of *hazards* being present in the animal population of the *exporting country*.

An *importing country* may decide to permit the importation using the appropriate sanitary standards recommended in the *Terrestrial Code*, thus eliminating the need for a *risk assessment*.

Article 2.1.3.

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Principles of risk assessment

- 1) *Risk assessment* should be flexible to deal with the complexity of real life situations. No single method is applicable in all cases. *Risk assessment* should be able to accommodate the variety of animal *commodities*, the multiple *hazards* that may be identified with an importation and the specificity of each disease, detection and *surveillance* systems, exposure scenarios and types and amounts of data and information.
- 2) Both *qualitative risk assessment* and *quantitative risk assessment* methods are valid.
- 3) The *risk assessment* should be based on the best available information that is in accord with current scientific thinking. The assessment should be well-documented and supported with references to the scientific literature and other sources, including expert opinion.
- 4) Consistency in *risk assessment* methods should be encouraged and transparency is essential in order to ensure fairness and rationality, consistency in decision making and ease of understanding by all the interested parties.
- 5) *Risk assessments* should document the uncertainties, the assumptions made, and the effect of these on the final *risk estimate*.
- 6) *Risk* increases with increasing volume of *commodity* imported.
- 7) The *risk assessment* should be amenable to updating when additional information becomes available.

Article 2.1.4.

Risk assessment steps

1. Entryassessment

Entry assessment consists of describing the biological pathways necessary for an importation activity to introduce pathogenic agents into a particular environment, and estimating the probability of that complete process occurring, either qualitatively (in words) or quantitatively (as a numerical estimate). The entry assessment describes the probability of the “entry” of each of the *hazards* (the pathogenic agents) under each specified set of conditions with respect to amounts and timing, and how these might change as a result of various actions, events or measures. Examples of the kind of inputs that may be required in the entry assessment are:

- a) Biological factors
 - species, age and breed of *animals*
 - agent predilection sites
 - *vaccination*, testing, treatment and quarantine. b)

Country factors

- incidence or prevalence
- evaluation of *Veterinary Services, surveillance* and control programmes and zoning and compartmentalisation systems of the *exporting country*.

c) Commodity factors

- quantity of *commodity* to be imported
- ease of contamination
- effect of processing
- effect of storage and transport.

If the entry assessment demonstrates no significant *risk*, the *risk assessment* does not need to continue.

2. Exposure assessment

Exposure assessment consists of describing the biological pathways necessary for exposure of *animals* and humans in the *importing country* to the *hazards* (in this case the pathogenic agents) from a given *risk* source, and estimating the probability of the exposures occurring, either qualitatively (in words) or quantitatively (as a numerical estimate).

The probability of exposure to the identified *hazards* is estimated for specified exposure conditions with respect to amounts, timing, frequency, duration of exposure, routes of exposure, such as ingestion, inhalation or insect bite, and the number, species and other characteristics of the animal and human populations exposed. Examples of the kind of inputs that may be required in the exposure assessment are:

- a) Biological factors
 - properties of the agent. b)

Country factors

- presence of potential *vectors*
- human and animal demographics
- customs and cultural practices
- geographical and environmental characteristics. c)

Commodity factors

- quantity of *commodity* to be imported
- intended use of the imported *animals* or products
- disposal practices.

If the exposure assessment demonstrates no significant *risk*, the *risk assessment* may conclude at this step.

3. Consequence assessment

Consequence assessment consists of describing the relationship between specified exposures to a biological agent and the consequences of those exposures. A causal process should exist by which exposures produce adverse health or environmental consequences, which may in turn lead to socio-economic consequences. The consequence assessment describes the potential consequences of a given exposure and estimates the probability of them occurring. This estimate may be either qualitative (in words) or quantitative (a numerical estimate). Examples of consequences include:

- a) Direct consequences

- animal *infection*, disease and production losses
- public health consequences. b)

Indirect consequences

- *surveillance* and control costs
- compensation cost
- potential trade losses
- adverse consequences to the environment.

4. Riskestimation

Risk estimation consists of integrating the results from the entry assessment, exposure assessment, and consequence assessment to produce overall measures of *risks* associated with the *hazards* identified at the outset. Thus *risk* estimation takes into account the whole of the *risk* pathway from *hazard* identified to unwanted outcome.

For a quantitative assessment, the final outputs may include:

- estimated numbers of *herds*, *flocks*, *animals* or people likely to experience health impacts of various degrees of severity over time;
- probability distributions, confidence intervals, and other means for expressing the uncertainties in these estimates;
- portrayal of the variance of all model inputs;
- a sensitivity analysis to rank the inputs as to their contribution to the variance of the *risk* estimation output;
- analysis of the dependence and correlation between model inputs.

Article 2.1.5.

Principles of risk management

- 1) *Risk management* is the process of deciding upon and implementing measures to address the *risks* identified in the *risk assessment*, whilst at the same time ensuring that negative effects on trade are minimised. The objective is to manage *risk* appropriately to ensure that a balance is achieved between a country's desire to minimise the likelihood or frequency of disease incursions and their consequences and its desire to import *commodities* and fulfil its obligations under *international trade* agreements.
- 2) The international standards of the OIE are the preferred choice of *sanitary measures* for *risk management*. The application of these *sanitary measures* should be in accordance with the intentions in the standards.

Article 2.1.6.

Risk management components

- 1) Risk evaluation - the process of comparing the *risk* estimated in the *risk assessment* with the reduction in *risk* expected from the proposed *risk management* measures.
- 2) Option evaluation - the process of identifying, evaluating the efficacy and feasibility of, and selecting measures to reduce the *risk* associated with an importation. The efficacy is the degree to which an option reduces the likelihood or magnitude of adverse health and economic consequences. Evaluating the efficacy of the options selected is an iterative process that involves their incorporation into the *risk assessment* and then comparing the resulting level of *risk* with that considered acceptable. The evaluation for feasibility normally focuses on technical, operational and economic factors affecting the implementation of the *risk management* options.
- 3) Implementation - the process of following through with the *risk management* decision and ensuring that the *risk management* measures are in place.
- 4) Monitoring and review - the ongoing process by which the *risk management* measures are continuously audited to ensure that they are achieving the results intended.

Article 2.1.7.

Principles of risk communication

- 1) *Risk communication* is the process by which information and opinions regarding *hazards* and *risks* are gathered from potentially affected and interested parties during a *risk analysis*, and by which the results of the *risk assessment* and proposed *risk management* measures are communicated to the decision-makers and interested parties in the *importing* and *exporting countries*. It is a multidimensional and iterative process and should ideally begin at the start of the *risk analysis* process and continue throughout.
- 2) A *risk communication* strategy should be put in place at the start of each *risk analysis*.
- 3) The *communication of the risk* should be an open, interactive, iterative and transparent exchange of information that may continue after the decision on importation.

- 4) The principal participants in *risk communication* include the authorities in the *exporting country* and other stakeholders such as domestic and foreign industry groups, domestic livestock producers and consumer groups.
- 5) The assumptions and uncertainty in the model, model inputs and the *risk* estimates of the *risk assessment* should be communicated.
- 6) Peer review is a component of *risk communication* in order to obtain scientific critique and to ensure that the data, information, methods and assumptions are the best available.

NB: FIRST ADOPTED IN 1998; MOST RECENT UPDATE ADOPTED IN 2018