



Original: English  
April 2004

## **REPORT OF THE THIRD MEETING OF THE OIE WORKING GROUP ON ANIMAL PRODUCTION FOOD SAFETY**

*Paris, 1-2 April 2004*

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The OIE Working Group on Animal Production Food Safety held its third meeting at the OIE Headquarters in Paris from 1 to 2 April 2004.

The members of the OIE Working Group and other participants are listed in [Appendix A](#); apologies were received from Dr A. Randell. As Dr J. Schlundt (World Health Organization [WHO]) was unavailable, Dr P. Ben Embarek participated in his place. The Agenda adopted is given in [Appendix B](#). The report of the previous meeting was adopted unchanged.

### **Introduction**

Dr Bernard Vallat, Director General of the OIE, welcomed the members of the Working Group and the other participants to the OIE Headquarters. The Director General noted that one of the major responsibilities of the Working Group was coordination of the OIE's work on food safety with that of the Codex Alimentarius. He indicated that he was aware of the challenges facing both organisations in this joint work, partly due to their different cultures and procedures in adopting standards. Working efficiently with the WHO was also critical. As a result, the OIE had decided to enlarge the Working Group and, in this regard, it had invited to the meeting experts from Codex Alimentarius and the Food Safety Department of the WHO; their membership of the Working Group will be presented for formal endorsement by the OIE International Committee in May 2004. Furthermore, to assist the output of the Working Group, the OIE had increased the Headquarters resources working on food safety.

The Director General pointed to traceability and antibiotic resistance as two areas where coordination was important to achieve the necessary progress to enable Member Countries to set up national regulations. The presence of guidelines would minimise differences among the regulations of Member Countries. He also noted the two draft papers developed by members of the Working Group and considered as a useful exercise the proposed revision of the bovine tuberculosis chapter of the OIE *Terrestrial Animal Health Code* (hereafter referred to as the *Terrestrial Code*).

### **Cooperation with Codex and WHO**

Dr S. Slorach indicated that his intention was to continue the current high level of Codex cooperation with the OIE to ensure appropriate input into the standards of each organisation.

Both Dr Slorach and Dr Vallat agreed that the two organisations needed to ensure that their work together was transparent to their members, and that the members were encouraged to circulate information as broadly as possible within their countries. Dr Vallat indicated that the OIE was fully open to a formal agreement with Codex; he noted that revised agreements with the parent organisations were in the process of being adopted the following month. He also indicated the importance of the decisions to be taken by the Codex Committee on General Principles on guidelines for cooperation with other intergovernmental organisations. The Working Group recognised that a different approach was warranted in the case of the OIE, in comparison to other international organizations, in order to emphasize the unique relationship between Codex and the OIE in the standard setting process under the WTO Agreement on the Application of Sanitary and Phytosanitary Measures.

Dr Slorach and the Chair reported on the most recent Codex meetings – Codex Committee on Meat Hygiene, Codex Committee on Food Import and Export Inspection and Certification Systems, and the Executive Committee of Codex. They noted agenda items listed for upcoming Codex meetings relevant to the work of the Working Group, including principles of risk analysis, antibiotic resistance, traceability, and guidelines for cooperation with other intergovernmental organisations. The outcomes of Codex Committees on Meat Hygiene, on Milk and Milk Products and the Codex task force on Animal Feeding have both included OIE input. There was general agreement that the greater level of OIE input into Codex standards had resulted from better tracking of Codex activities by the OIE.

Dr Ben Embarek informed the Working Group that the WHO was developing a database of national food safety authorities (for which comment from the OIE and Codex had been sought) and of the upcoming Global Forum for Food Safety Regulators (October 2004).

#### **Revision of the *Terrestrial Code* chapters on bovine tuberculosis and bovine spongiform encephalopathy**

The Chair updated the Working Group on the history of the revision of the tuberculosis chapter. He noted that a risk-based approach to the food safety aspects had been introduced, that there had been an attempt to differentiate animal health and public health objectives, and the concept of ‘competent authority’ had been introduced into the certification articles to address situations where responsibility for public health was not within Veterinary Administrations of the exporting country. There was discussion on the importance of a risk-based approach to standards development, but agreement that the measures recommended must be practicable and be able to be applied in Member Countries as a basis for international trade.

The President of the Code Commission explained that comments from Member Countries on the revised tuberculosis chapter would be reviewed just prior to the OIE General Session and, if comments were minor and positive, the revised chapter may be put for adoption. If not, it would be returned to the Code Commission for further work. He advised that the Code Commission was, for all disease chapters, trying to identify the risks (both animal and public health) presented by a commodity and to compose specific measures to address those risks. Where the risks are common to animal and public health, a reference would be made to the fact that the particular measure serves both animal and public health objectives.

The Working Group recommended that the OIE adopt a broader view of ‘competent authority’ in the *Terrestrial Code* to incorporate veterinary administrations and other authorities with the relevant responsibilities. There was also a need to cross reference Codex texts on certification. This would assist an integrated approach to animal health and public health risks. The Working Group noted that these comments on ‘competent authorities’ were also relevant to the BSE Chapter of the *Terrestrial Code*.

#### **Coordination of OIE and Codex standards development**

The Working Group noted the proposal from the Joint FAO/OIE/WHO Workshop on Non-human Antimicrobial Resistance (held in Oslo in March 2004) to establish an OIE/Codex Task Force to develop risk management options in this area. The matter will be discussed at the next session of the Codex Alimentarius Commission to be held at the end of June 2004.

The Working Group recommended that the OIE and Codex collaborate closely while separately developing guidelines on traceability dealing with animals (OIE) and animal products (Codex).

The Working Group recommended that the OIE Aquatic Animal Health Standards Commission be mindful of food safety issues in developing or revising its standards.

In view of the value of cross-referencing the standards of the two organisations, the Working Group recommended that, in their future work, the OIE and Codex continue to introduce visible linkages between standards, especially those addressing horizontal issues.

The Working Group considered that it may be useful for Codex and OIE regional officials to be involved in the work of the other organisation, to improve understanding and encourage a greater level of understanding both at national and regional level.

#### **Paper on 'Role and functionality of veterinary services in food safety through the food chain'**

The Chair noted that the paper had been written primarily to provide Veterinary Services with a bridge between the work of OIE and Codex where there was a need to meet both animal and public health objectives and was to serve as a background paper for the Director General of the OIE. The Working Group discussed several issues in the development of subordinate papers, including the inclusion of risk analysis in standards development and the inclusion of references to other disciplines.

The Chair indicated that he would take into account comments from Member Countries in finalising the document, and send it to the Director General of the OIE to serve as a guide for OIE work on food safety.

#### **Development of principles on traceability/traceback as a precursor to guidelines/standards**

The Working Group noted that 'animal identification' was an agenda item at the OIE General Session and that a draft resolution identified traceability as an OIE priority. It also noted that a draft paper was due to be discussed at the Codex Committee on General Principles. The Working Group acknowledged the importance of the issue and encouraged both organisations to coordinate closely to ensure consistency in developing systems to facilitate traceback to farms, animals and animal feed for public and/or animal health reasons. At least, there should be agreement on the principles and basic definitions.

The Working Group noted that there may be problems of cost and feasibility (regardless of need) associated with the implementation of traceability systems in developing countries and considered that it would be useful to involve Regional Commissions to help achieve the widest possible application.

Adopting a risk based approach would determine the need and extent of trace back systems required in specific Member Countries. Countries should be able to implement trace back systems according to their own situation.

#### **Good farming practices**

Dr Isabelle Chmitelin submitted the paper and indicated that this paper was designed as guidelines and adopted a farm-level animal production approach to address public health risks at the farm, at this stage generically, with the opportunity to add specific references later to address particular issues or situations in specific regions or countries. The paper was directed at veterinary administrations and other competent authorities to promote and implement good farming practices (as appropriate) within their countries as a component of the overall animal health system and, as such, would cover all farm activities but would refer to relevant documents from other organisations.

The Working Group acknowledged that the 'guidelines' described what might be ideal in specific farming situations but might not necessarily be seen as applying to all situations in all Member Countries where risks might be different and animal husbandry practices varied.

The Working Group discussed whether the paper should be published as a joint FAO/WHO/OIE publication or as an OIE document with FAO and WHO input. It was decided that the OIE would continue with the development of this paper, but would invite WHO, FAO and the Codex to contribute. The Group felt that this approach presented fewer difficulties and that other organizations would later be encouraged to cross-reference this document, as the Codex Committee on Meat Hygiene had done with other OIE documents.

The Working Group agreed that a revised version of the paper would be reviewed by the Bureau of the Code Commission in July, before circulation to Member Countries for comment. Letters would be sent to WHO and FAO seeking input. The paper is at [Appendix C](#).

#### **Framework document on 'Control of hazards of public health and animal health importance through ante- and post-mortem meat inspection'**

The Chair presented the paper and explained that the paper addressed one of the priorities identified by the Working Group arising from the paper on the role and functionality of veterinary services in food safety. The paper was intended as a framework covering this important area where Veterinary Services serve both animal and public health needs, and would need further development.

The Working Group discussed various aspects of the paper (including whether it could serve as a stand alone document with some modification) and agreed that the Chair would revise the paper for confirmation by Working Group members before review by the Bureau of the Code Commission in July. The Working Group recommended that the OIE then progress the development of specific guidelines, through an *ad hoc* Group. The paper is at [Appendix D](#).

#### **Work programme for 2004**

The Working Group discussed issues identified at the previous meeting and which still needed to be addressed at some stage in the work programme. The following priorities for 2004 were agreed:

- 1) Horizontal issues
  - a) Traceability
  - b) Testing, inspection and certification – the Working Group recommended that the OIE work with Codex (especially CCFICS) and other relevant international organisations (such as the IDF) to review international standards with a view to maximising harmonisation
- 2) OIE texts
  - a) *Terrestrial Code* chapter on bovine tuberculosis – underway
  - b) *Terrestrial Code* chapter on bovine brucellosis – the Working Group recommended that the OIE commence scientific review, pending International Committee approval of the approach adopted for bovine tuberculosis
  - c) Salmonellosis – take into account Codex and WHO work
- 3) OIE input into Codex texts
  - a) Upcoming Codex meetings on animal feeding, veterinary drugs and milk and milk products

- b) Improvement of the current level of OIE input into Codex texts and development of a method for the most effective utilisation of Codex expertise in the work of OIE *ad hoc* Groups
- 4) Antimicrobial resistance
  - 5) Development of other documents
    - a) good farming practices
    - b) framework document on 'Control of hazards of public health and animal health importance through ante- and post-mortem meat inspection'.

**Resolutions and recommendations for the 72<sup>nd</sup> General Session (2004)**

These would be developed from the presentation of the Chair to the OIE International Committee.

**Next meeting**

The Working Group agreed that its next meeting should be held at a time to enable review of Member Countries' comments on the outcomes of the current meeting and prior to the Code Commission's January 2005 meeting.

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.../Appendices



**THIRD MEETING OF THE OIE WORKING GROUP ON  
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Appendix A (contd)**OIE HEADQUARTERS**

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**Agenda**

- 1) Update from the Director General of the OIE and the Chair of the CAC
  - 2) Report of the previous Working Group meeting
  - 3) Reports from recent relevant CAC meetings
  - 4) Revised chapters on bovine tuberculosis and BSE proposed by the Terrestrial Animal Health Standards Commission
  - 5) Discussion
    - a) Coordination of OIE and Codex standards development
    - b) 'Role and functionality of Veterinary Services in food safety through the food chain'
    - c) Development of principles on traceability/traceback as a precursor to guidelines/standards
    - d) Development of guidelines on 'good farming practices' as a joint publication of OIE/FAO/WHO
    - e) Framework document on 'ante- and post-mortem activities in the production of meat to reduce hazards of public and animal health significance'
  - 6) Work programme for 2004
  - 7) Resolutions and recommendations for the 72<sup>nd</sup> General Session (2004)
  - 8) Other issues.
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## **GUIDE TO GOOD FARMING PRACTICES FOR ANIMAL PRODUCTION FOOD SAFETY**

### **INTRODUCTION**

These guidelines are intended to help competent authorities and stakeholders, especially farmers, to fully assume their responsibilities at the first stage of the food chain to optimise the food safety control of products of animal origin offered to consumers.

The recommendations in these guidelines complement the responsibilities of the competent authorities at the farm level, and in particular of the Veterinary Services.

Food safety is now universally recognised as a public health priority. It requires a global approach, from production to consumption, which is so aptly conveyed by the expressions “from the stable to the table” and “from the field to the plate”.

As far as animal products and products of animal origin are concerned, this inevitably means controlling the health status of the animals from which these food products are derived. These status must of course be assessed with regard to any infectious (bacteria and viruses) or parasitic agents, and especially zoonotic agents, that they could be carrying at the primary production stage. The possibility of the animals having ingested and possibly accumulated chemical (drug residues, pesticides, heavy metals, etc.) or physical contaminants (radioactive elements, foreign bodies, etc.) during their lifetime must also be addressed.

Any such biological, chemical and physical agents present in the body of the live animal may then contaminate animal products (milk, meat, fish, eggs, etc.) at levels considered unacceptable in terms of public health. Controlling the safety of food of animal origin at the primary production stage therefore involves all the measures to be implemented at the farm or production unit level necessary to ensure that these contaminants do not end up in animal products, or, if they do, that their levels do not exceed the maximum permissible levels, notably the maximum residue limits (MRL) and microbiological criteria set by the Codex Alimentarius Commission.

The tools for controlling food safety, namely the codes of hygienic practice and the HACCP system (Hazard Analysis and Critical Control Point), have proved their effectiveness at the secondary production and distribution stages. It is clearly appropriate to try to apply them wherever possible at the primary production stage of animal products, in other words at the farm or production unit level, whenever an appreciable improvement in the level of the control of food safety may result.

### **SCOPE**

The present document addresses all those hazards whose control at farm level can have a beneficial or even decisive effect on the food safety of products of animal origin (including: milk and milk products, meat and meat products, eggs and egg products, honey and apiculture products).

It does not address the processing of products at the farm level which comes within the scope of specific standards in the Codex Alimentarius.

Appendix C (contd)

It does not address animal welfare aspects of farm production.

The hazards identified at the farm level are as follows:

### 1. BIOLOGICAL HAZARDS:

The biological agents of the most common and/or dangerous diseases that can be transmitted to humans via foodstuffs of animal origin are: *Salmonella*, *Campylobacter*, verotoxinogenic *Escherichia coli* (VTEC), including *Escherichia coli* O157:H7, *Listeria monocytogenes*, *Toxoplasma*, *Leptospira*, *Coxiella Burnetii* (Q fever), *Brucella*, *Mycobacterium* (tuberculosis), *Yersinia enterocolitica*, prions (BSE agent, etc.), and parasites such as *Taenia solium*, *Taenia saginata* and *Trichinella spiralis*.

While these pathogens arouse the greatest concern among consumers and governments in terms of food safety, the diseases they cause are also the most difficult to prevent at the farm level as they can also be transmitted by warm-blooded animals, such as birds, crawling or flying insects and even by water or the soil.

### 2. CHEMICAL AND PHYSICAL HAZARDS:

These hazards chiefly consist of drug residues (notably antibiotics), growth promoters (some unauthorised hormones, substances having a thyrostatic action and anabolic substances), residues of chemical products used on the farm (pesticides, disinfectants, etc.), environmental contaminants (dioxins, PCBs, PAHs, heavy metals, radioactive isotopes, etc.) as well as foreign bodies (needles, fragments of glass, pieces of plastic or metal, etc.).

In the majority of cases, the action needed at the farm level to reduce or eliminate the risk presented by these chemical and physical contaminants is, in comparison to that needed to control biological risks, easier to implement.

The remainder of this document considers the various hazards that need to be taken into account at the primary production level and in each case recommends actions to reduce the risks that their occurrence poses for public health.

Eight areas of primary production in which these preventive actions can usefully be implemented are dealt with in turn:

I – Buildings and other facilities: surroundings and environmental control

II – Health conditions for introduction of animals into the farm

III – Animal feeding

IV – Animal watering

V – Veterinary drugs

VI – Farm management

VII - Preparation of animals for slaughter

VIII - Common measures

## SECTION I – BUILDINGS AND OTHER FARM FACILITIES: SURROUNDINGS AND ENVIRONMENTAL CONTROL

**Hazards:** These consist of pathogenic biological agents (*e.g. leptospirosis, salmonellosis, trichinosis, legionellosis*, etc.), chemical agents (*e.g. dioxins, pesticides, hydrocarbons*, etc.) or physical agents (*e.g. radioisotopes*) which can be a direct (air-borne or feed-borne) or indirect (notably via water and feedstuffs) source of contamination for animals.

1) coming from farm's immediate surroundings**GGFP recommendations:**

- Avoid conducting farming activities close to industrial activities likely to be a source of pollution (e.g. domestic waste incineration plant releasing dioxins, surface processing plant releasing solvents or heavy metals, etc.) or in an environment susceptible to air-borne pollution (e.g. near a road with heavy motor traffic – emissions of lead and hydrocarbons), soil pollution (former industrial site or site where dumping of toxic substances has taken place) or the proliferation of pests (e.g. open municipal rubbish tip),
- Site farm buildings or other facilities (e.g. in the case of extensive husbandry) so that they are independent of private buildings (residential accommodation), sufficiently far away from areas where waste materials are stored, and so that access by visitors can be effectively controlled (direction signs or "access prohibited" signs where necessary).
- Site farm buildings or other facilities away from buildings used for purposes on neighbouring farms which could increase the risk of disease transfer.
- If necessary, seek the advice of the relevant competent authorities (e.g. Veterinary Services, Environmental Services, etc.).

2) coming from failure to control the environment in livestock buildings**GGFP recommendations:**

Design farm buildings and other livestock facilities:

- adequate in size and correctly ventilated,
- with a rational arrangement of the premises (separation of clean and soiled areas, absence of any intersection of production chains, separation of working areas and storage areas from animal production areas),
- allowing animals to be dealt with in single groups (poultry, pigs) and newly arrived (quarantine) or sick animals (observation pen) to be satisfactorily isolated,
- allowing easy, complete and effective cleaning and disinfection,
- correctly isolated from pests and from wild or stray animals, and from other domestic animals as appropriate,
- allowing easy, rational and effective evacuation of excreta,
- suitably equipped for the collection of farm effluents and wastewater,
- keeping the immediate surroundings clear and free from stagnant water and anywhere that could harbour pests, and arranged so as to allow easy disinfection of areas used by professional visitors (veterinarian, animal or feed deliverers, milk or egg collectors, carcass disposal agents, etc.),
- so as to make access difficult for unauthorised persons or vehicles (barriers, fences, signs),

Appendix C (contd)

- taking into account the risk of natural disasters (flooding, landslides, heat waves, prolonged freezing conditions, earthquake, etc.),
- using inert construction and surface materials that cannot be a potential source of contamination (e.g. prohibit the use of lead paint),
- if necessary, seek the advice of a veterinarian, para-veterinarian or an official with the relevant competent authority.

**SECTION II – HEALTH CONDITIONS FOR INTRODUCTION OF ANIMALS INTO THE FARM**

**Hazards:** These consist of biological agents (pathogenic bacteria, viruses, parasites,...) of herds/flocks arising from animals introduced without all the necessary health guarantees.

**GGFP recommendations:**

- Introduce into the farm only animals from farms at which the present GGFP has been implemented,
- Introduce only animals of known health status (for example regarding tuberculosis, brucellosis, leptospirosis, vibriosis, salmonellosis and cryptosporidiosis), in accordance with the provisions adopted by the competent authority (Veterinary Services),
- Ensure that all the animals introduced are correctly identified (tagged or marked) and that their identification does indeed correspond to the accompanying health documents,
- Obtain from the seller full details of the route taken by the animals being introduced, from the hatchery, apiary, herd or flock of origin to their destination,
- Control the sanitary conditions under which the introduced animals are transported: ensure that the deliverer has a suitable vehicle and implements an effective cleaning and disinfection programme for the vehicle, so as to reduce the risk of transmitting pathogens between production units or farms,
- Obtain a declaration from the seller regarding any chemical residues that might be present due to the introduced animal's having recently been treated,
- Refuse any introduction of animals presenting suspicious clinical signs on delivery, and if necessary inform the competent authority (Veterinary Services) if a contagious disease is suspected,
- Record full details of the purchased animals: description, identification, sex, age, health status, date of introduction, name and address of the seller and of the attending veterinarian, etc.,
- Isolate the newly introduced animal(s) for a suitable surveillance and acclimatisation period,
- Arrange for a veterinarian or para-veterinarian to perform any necessary biological tests when the animals are introduced and isolated, and do not bring these animals into contact with other animals on the farm until the results of these tests are known and have proved satisfactory.

**SECTION III – ANIMAL FEEDING**

**Hazards:** These consist of biological agents (bacteria, viruses, prions, parasites, antibiotics, promoters, phytotoxins or mould toxins), chemical agents (farm chemicals (pesticides), dioxins, heavy metals, environmental contaminants,...) or physical agents (foreign bodies,...) which could be present in animal feed, and consequently in animal products (milk, meat, fish, egg products, etc...). Risks may also result from an overdosage of certain components, notably medication, in animal feed.

**GGFP recommendations:**

The use of veterinary drugs as supplements in animal feeding should be done in accordance with section V.

**Grassland and pasture**

- Carry out a risk assessment when livestock are put out to pasture outside the farm: in particular, ensure that the land where the animals are put out to pasture is not exposed to potential sources of chronic contamination (e.g. main road with heavy traffic, domestic waste incineration plant), is not polluted with chemical residues (e.g. pesticides, dioxins, heavy metals) at an unacceptable level and is not known to harbour animal pathogens (bacteria: e.g. anthrax spores; parasites: e.g. flukes),
- Ensure that the fields surrounding the pasture are not sprayed with substances that have not been shown to be safe, and that the animals cannot have access to potentially contaminating material on the perimeter of the pasture (e.g. unauthorised dumping, stocks of herbicides, posts coated with aluminium paint),
- Carefully follow the manufacturer's instructions shown on the label before spreading any chemical product on fields, pastures or in grain silos,
- Respect the recommended waiting times before animals are put out to pasture after the pasture or neighbouring pieces of land have been treated with agricultural chemicals,
- Comply with recommendations of the use of animal by-products for agricultural reclamation/spreading,
- Prevent livestock entering pastures containing toxic plants,
- When purchasing pasture or other land, require certification for the land in question regarding previous use of agricultural inputs or any chemical pollution (resulting for example from dumping of industrial waste). Where necessary, have a soil study carried out to detect the presence of any toxic chemicals.

**Use of commercial feed**

- Require that all the animal feed purchased is free of chemical residues and complies with regulatory requirements (obtain, if this is not stated on the label, a certificate guaranteeing that it complies with the regulations),
- Check that the feed delivered is correctly labelled (manufacturer's name, composition, manufacturing date, use-by date, instructions for use and precautionary measures to be followed, batch number, etc.) and that the packaging is intact and without any defect that might have affected the contents,
- Control the quality of the feed delivered in terms of appearance (visual examination) and keep a written record of this control,
- Refuse, treat appropriately or destroy any feed presenting traces of contamination by mould,
- Ensure that feed for ruminants is free from any trace of animal by-products prohibited by the regulations and eliminate any risk of accidental cross-contamination,
- Keep samples of purchased feed for any subsequent analytical testing should a problem of residues be identified at the farm production level,

Appendix C (contd)

- Store feed in a clean area, protected from humidity and pests (insects and rodents),
- If storage conditions are not optimal, prefer more frequent deliveries of smaller quantities,
- Keep an up-to-date register of feed delivered and used (batch numbers, date used and destination),
- Seek advice if there is the slightest doubt as to the quality of the feed given to animals,
- When a problem exists, immediately inform the supplier and, if necessary, the competent authorities.

**Manufacture of animal feed on the farm**

- Control the quality of the raw materials delivered in terms of their appearance (visual examination, to rule out any risk of macroscopic contamination) and keep a record of this control,
- Ensure that all the raw materials of plant origin used as ingredients for animal feed have been grown, stored and treated using validated procedures,
- Keep an up-to-date register of the raw materials delivered and used (batch numbers, dates used, batch numbers of the feed in which they were used),
- Store the raw materials in a clean area, protected from humidity and pests (insects and rodents),
- Eliminate raw materials presenting traces of contamination with mould,
- Ensure that the water used is potable,
- Comply with the recommendations regarding storage (in a safe place) and the use of additives and feed supplements (always follow the recommendations on the label regarding dosage and withdrawal periods),
- Ensure uniform mixing of the different components,
- Eliminate any risk of cross-contamination, at all stages (production, storage and distribution),
- Have clearly defined written procedures for the manufacture of feed, fixing precisely the formulation, production stages, and in particular making provision for mixers to be purged between the production of two types of feed with different ingredients,
- Regularly control and calibrate weighing machines,
- Plan corrective actions to be implemented in the event of a formulation error and actions to deal with substandard batches that might constitute a hazard,
- Keep, and file for as long as necessary, up-to-date manufacturing records specifying the dosage and batch number(s) of each of the raw materials used,
- Keep samples of manufactured feed for subsequent analytical testing should a problem of residues be identified at the farm production level,
- Set a use-by date for each batch of manufactured feed, taking into account the use-by dates of each of the ingredients and the packaging and storage conditions,



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- Correctly label the sacks or hoppers containing the manufactured feed (date of manufacture, feed type, batch number, use-by date),
- Store the manufactured feed in a clean place, protected from humidity and pests (insects and rodents),
- In the case of bulk feed, do not mix two batches of feed in the same container (separate hoppers),
- Have the composition of the manufactured feed controlled at least once a year (correct dosages of the various ingredients, presence of any contaminants),
- Keep an up-to-date register of feed delivered and used (batch numbers and dates of use),
- Seek advice if there is the slightest doubt as to the quality of the manufactured feed,
- When a problem occurs that could affect the safety of animal products, inform the competent authorities immediately.

**General recommendations on animal feeding:**

- Avoid overfilling the animals' feeding troughs (fill them twice rather than once, adapt the quantity of feed to the specific requirements of the animals),
- Remove any unused feed from the troughs before refilling,
- Clean the troughs and automatic feeders regularly,
- Ensure animals are fed with feed suitable for the species.

## SECTION IV – ANIMAL WATERING

**Hazards:** These are basically of two types: microbiological and chemical.

**Microbiological hazards**

These consist of:

- pathogenic bacteria which include toxic strains of *Escherichia coli* (e.g. *E. coli* O157:H7), *Salmonella* spp., *Vibrio cholerae* and *Shigella* spp,
- viruses which include small round structured viruses (SRSV or Norwalk virus) and the hepatitis A virus,
- parasites which include pathogenic protozoa such as *Cryptosporidium parvum*, *Giardia lamblia* and *Cyclospora cayetanensis*, and eggs and larvae of nematoda, cestoda and trematoda.

Microbiological hazards are most frequently caused by human waste and animal excreta, which may contaminate the water supply used for livestock.

**Chemical hazards**

These consist of farm chemicals (e.g. pesticides, nitrates/nitrites), industrial contaminants (e.g. dioxins, PAHs, heavy metals), or the water supply network itself (e.g. lead piping).

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These chemical agents may eventually be found in animal products (milk, meat, egg products, aquaculture products, apiculture products, etc.) as a result of the animals' drinking this water.

**GGFP recommendations:**

- The use of veterinary drugs as supplements in animal watering should be done in accordance with section V,
- Prevent, by means of barriers or fences, domestic or wild animals approaching safe water reserves or watering points and polluting them,
- Prevent, by means of barriers or fences, livestock approaching polluted water reserves or watering points and contaminating themselves,
- Protect water reserves from contamination by undesirable substances, and specifically:
  - ✓ Use chemicals and organic substances with great care (comply with doses and minimum distance requirements), notably near water collection points, streams and ditches,
  - ✓ Always follow the manufacturer's instructions (see label) for the use of any chemical product for spraying or fumigating (how to apply, dosage and waiting time),
  - ✓ Avoid using pesticides and herbicides anywhere where there is a possibility of contaminating the water table or nearby water collection points,
  - ✓ Avoid cleaning spraying equipment or chemical product containers in places where any remaining substances and the flushing water can re-enter the water supply network,
  - ✓ Avoid spreading slurry, manure or dairy effluents where there is any possibility of their contaminating the water table or nearby water collection points,
  - ✓ Avoid human and animal effluent being a source of contamination.
- Monitor compliance of, maintain and regularly clean water distribution systems. Use closed-circuit systems whenever possible, so as to reduce access by other animals,
- Have the bacteriological and physico-chemical quality of water regularly tested, where appropriate (e.g. bore-hole), and ask to receive the results of analyses conducted on water in the local water supply network,
- Seek advice and test the water resources if there is the slightest doubt about the safety of water used for animals.

**SECTION V – VETERINARY DRUGS**

**Hazards:** These consist of inappropriate use of both veterinary drugs, which may induce presence of residues in food products, and antibiotics, which may induce creation of multi-resistant bacterial strains, which can pose a major threat to public health.

**GGFP recommendations:**

- Any therapeutic treatment should only be undertaken when the diagnosis is precise and certain, and should be based on the dual principle of maximum efficacy and minimum risk,

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- Use only drugs that are authorised for the treatment of the particular species, and use antimicrobials only on veterinary prescription and as prescribed,
  - Use drugs in accordance with the species, uses and doses indicated on the label, and in accordance with the instructions on the label or on the advice of a veterinarian well acquainted with the animals and the production site,
  - Use only drugs that are known to be effective for the intended use and in strict compliance with the recommendations on the label or the veterinarian's prescription,
  - Do not use veterinary drugs beyond their expiry date,
  - Use weighing machines, animal measuring tape or other suitable measuring instrument to evaluate the weight of the animals and adjust the dose to be administered (avoid any overdose),
  - Wherever possible, isolate sick animals from healthy animals, so as to avoid the transfer of resistant bacteria, and treat animals individually,
  - Strictly observe the recommended withdrawal periods so as to guarantee that residue levels in food of animal origin do not present any risk to the consumer, on the understanding that any drug likely to result in residues must be prescribed by a veterinarian,
  - Use the appropriate techniques and equipment to administer drugs, and avoid any accidental contamination of the product by thoroughly cleaning equipment, such as buckets. Change the syringe for each new drug and, if appropriate, the needle for each animal.
  - In the event of the injection needle breaking in the animal's muscle tissue, place an indelible mark on the injection site, note the identification number of the animal and record the problem in a written document which will accompany the animal to the abattoir,
  - Keep a written record of all treatments dispensed to the animals, and keep all the laboratory reports, including bacteriological tests and sensitivity tests,
  - Keep up-to-date records of the use made of veterinary drugs on the farm, including the following information:
    - ✓ name of the product or active substance, and the batch number,
    - ✓ supplier's name,
    - ✓ dates of administration and date of end of treatment,
    - ✓ identification of the animal (or group of animals) to which the drug was administered,
    - ✓ diagnosis or clinical signs treated,
    - ✓ quantity of the drug administered and the administration route (if transcutaneous, state the injection site),
    - ✓ withdrawal periods (dates from which milk, meat or any other animal product can be offered for human consumption),
    - ✓ results of laboratory tests,
    - ✓ effectiveness of the therapy.
- and place them at the disposal of the competent authority (Veterinary Services),

Appendix C (contd)

- Develop national stock management procedures for drugs, in particular vaccines and medicated premixes (keep an up-to-date record of stock movements),
- Ensure that the conditions under which antimicrobials and other veterinary drugs are stored on the farm comply with the label and insert instructions (in particular provide a safe place (cabinet in a locked room), where they can be stored in the dark and at the recommended temperature),
- Safely dispose of all veterinary drugs past their expiry date, instruments and empty containers in an environmentally friendly manner.

## SECTION VI – FARM MANAGEMENT

**Hazards:** These consist of pathogenic biological agents which can be introduced and proliferate on farm for lack of respect of basic rules in farm management. These can also consist of chemical contaminants. Both biological agents and chemical contaminants can induce subsequent contamination of animals and their products.

**GGFP recommendations:****Training, conduct and health status of staff**

- Provide suitable training for staff required to handle farm chemical inputs, manufacture feed on the farm, clean and disinfect premises and equipment and treat animals, which will give them a good knowledge of hazards present on the farm and methods of managing risks so as to guarantee the safety of food products of animal origin,
- Train staff in basic biosecurity principles and practices to minimize the likelihood of introducing or spreading pathogens,
- Insist on staff wearing suitable working attire (clothing and boots), kept clean or changed as often as necessary, and respecting sanitary measures (e.g. changing clothes, washing hands or showering) before they enter controlled areas,
- Ensure that staff are regularly monitored to detect any healthy carriers of bacterial or parasitic agents that could be transmitted to animals.

**Maintenance, cleaning and disinfection of equipment, premises and immediate surroundings**

- Develop and implement the appropriate procedures to maintain, clean and disinfect farm equipment, premises and immediate surroundings, respecting the manufacturer's instructions regarding the use of detergents and disinfectants (preparation of surfaces, dilution, contact period),
- Ensure that the procedures in place are effective (visual self-inspections with, if necessary, recourse to bacteriological analysis) and take any corrective measures that may be required,
- Use clean instruments so as to avoid spreading diseases.

**Measures to control pests and stray animals and prevent unauthorised access**

- Develop and implement a global plan to control pests (rodents, insects, spiders) within the farm, using licensed products in the appropriate manner,
- Ensure the effectiveness of this control plan (visual self-inspections) and take any corrective measures that may be required,

Appendix C (contd)

- Prevent domestic animals (cats and dogs) from roaming in and around livestock buildings,
- Put in place all the appropriate prevention and control measures, respecting the regulations currently in force in terms of protection of biodiversity, so as to minimise contact between livestock and wild animals,
- Ensure that no unauthorised person can enter the livestock buildings.

**Stock management (feed, drugs)**

- Ensure that there is a satisfactory turnover of stock, applying the FIFO (first in, first out) method, and disposing of any product that has passed its expiry date,
- Ensure that all containers (sacks or cans) are hermetically sealed,
- Ensure that storage conditions are appropriate and in particular that the recommended temperatures are respected.

**Management of waste materials, effluents and expired products**

- Ensure that the waste materials generated by the farm (excreta, feed remains, etc.) are regularly removed, in such a way that neither their transport to the storage site nor the conditions under which they are stored can be either a source of environmental contamination for the farm and its immediate surroundings or conducive to the proliferation of pests (rodents, insects),
- Ensure that products that have passed their expiry date (farm chemical inputs, veterinary drugs) and their packaging are disposed, of and effluents (wastewater, washing water) treated, in such a way that they cannot be a source of environmental pollution, and, indirectly, of contamination for the animals.

**Storage of chemical products**

- Store chemical products and equipment that may contain them safely out of reach of the animals.

**Production monitoring of animals**

- Ensure that the animals or groups of animals present on the farm are permanently identified and keep the farm records up-to-date,
- Minimise mixing of animals of different species,
- Conduct daily surveillance of the animals to detect any anomaly or suspicious symptom,
- Set up a system for monitoring the production performance of the animals and identify indicators that will allow the early detection of any anomaly.

**Health monitoring of animals and disease prevention programmes**

- Develop, in conjunction with the veterinarian in charge of the animals, an animal health and welfare plan including disease prevention measures to be implemented (e.g. mastitis programme, vaccination and deworming programmes, etc.),
- Implement this health plan, following the guidelines issued by the competent authority for animal disease control (Veterinary Services), with the advice of a veterinarian or para-veterinarian,

Appendix C (contd)

- Treat animals regularly against gastrointestinal parasites,
- Seek professional advice in the event of unusual clinical signs suggestive of a disease in the herd/flock or if there is an unexpected drop in the yield or quality of animal products.
- Establish written standardised operational procedures for the detection and management of animal diseases, and for the use of veterinary products,
- Inform the veterinarian responsible for monitoring the health of the animals of any problems of disease recurrence or relapses,
- Take advantage of all the information obtained at the abattoir during ante-mortem inspections of animals and post-mortem inspection of meat and offal by official veterinarians, relating to specific pathologies for which corrective measures can be taken at the farm level (parasitism, muscular degeneration, melanosis, presence of foreign bodies [e.g. cactus spines], etc.),
- Determine whether fallen stock and dead animals need to be tested as part of an official surveillance programme.

**Animal movements**

- Ensure that any isolated or seasonal movement of animals outside the farm (transhumance, grazing on mountain pasture, etc.) does not expose them to an excessive risk of chemical or microbiological contamination, whether by air-borne route, digestive route or direct or indirect contact with wild animals.

**Isolation of sick animals and their products**

- Separate sick or potentially sick animals from healthy animals, so as to avoid the transfer of pathogenic agents and resistant bacteria,
- Comply with hygiene regulations relating to contacts between persons (veterinarians, livestock producers, owners, children) and animals undergoing treatment,
- Ensure that products from sick animals cannot be used for human consumption or for animal feed.

**Storage and disposal of dead animals**

- Isolate the dead animals prior to their collection or destruction, and store them in a suitable place (easy access and disinfection) so as to avoid any contact with livestock or their environment,
- Ensure that the dead animals that have died on the farm are rapidly disposed of and ensure that their removal by a carcass disposal firm cannot be a source of pathogens for the farm.

**SECTION VII – PREPARATION OF ANIMALS FOR SLAUGHTER**

**Hazards:** These consist of numerous potentially dangerous agents for humans which are present in the digestive tube, excreta, and on the hides and skins of cattle and sheep or the plumage of birds in good health. These agents include *E. coli*, *Salmonella* and *Campylobacter*, which can cause food poisoning in humans.

Stress caused by grouping animals together, loading them and transporting them to the abattoir can promote the passage of these pathogenic bacteria from the intestine into muscle tissue.

Moreover, the greater the amount of faecal soiling of hides, skins and feathers, the higher the risk of any pathogenic bacteria they may contain contaminating meat during the dressing or defeathering of carcasses at the abattoir.

**GGFP recommendations:****General measures**

- Ensure animals are fit for slaughter,
- Prevent animals from becoming soiled, by keeping the enclosures, gangways, and loading and unloading areas clean, avoiding overcrowding, increasing the quantity of litter and resolving any problems of effluent disposal,
- Give animals raised in livestock buildings free access to straw, hay and silage with a high dry matter content for 48 hours prior to slaughter,
- Avoid any abrupt changes in diet at the end of the production cycle,
- Give animals free access to watering points up to their departure for the abattoir, and withdraw feed from animals for the 24 hours prior to slaughter,
- Handle animals humanely and do not subject them to undue stress, given that stressed animals are more likely to release pathogenic bacteria, and especially *E. coli* O157:H7, in their excreta,
- Check the state of the animals' identification marks and bands several days before they are due to leave so as to avoid having to tag the animals immediately before they are transported to the abattoir,
- Ensure that the conditions under which the animals are transported to the abattoir are not a source of stress and are not conducive to substantial soiling of their hides, skins or plumage.

***Extensively grazed livestock***

Weather conditions prior to departure (e.g: heavy rainfall) and the absence of any special measures to avoid watering points becoming a quagmire, can lead to considerable soiling of ruminants (cattle, sheep, goats) and omnivores (pigs) before their departure to the abattoir. Furthermore, gathering animals together prior to their transport is an operation that causes stress, especially for animals that have ranged freely all year round in the open and are unused to the presence of humans.

It is therefore important to ensure that:

- animals at the end of the fattening phase are placed in pastures that are the least prone to the effects of inclement weather, with watering points that are sufficient in number and arranged in such a way as to avoid the animals becoming soiled with mud,
- the animals are brought together a sufficient length of time before their departure to the abattoir, in an enclosure, preferably covered, or other suitable area, so as to minimise the risk of major soiling of their hides, skins, wool or plumage.

***Livestock housed on slatted flooring***

The correct stocking density of feedlots and enclosures (density per square metre) throughout the fattening phase is an important consideration, as overcrowding, like under-population, prevents the satisfactory evacuation of excreta between the slats.

Appendix C (contd)

It is therefore important to ensure:

- that the correct stocking density is maintained for as long as possible during the fattening phase (the density depends on the size and nature of the stalls, as well as on the age of the animals),
- that the slatted flooring is kept satisfactorily clean and that the housing is correctly ventilated,
- that particular attention is given to the cleaning operations conducted just before the departure of the animals for the abattoir,
- that, wherever possible, cattle are kept on straw bedding for 1 to 20 days before slaughter.

***Livestock housed on litter***

The density of animals housed on litter has a significant effect on the cleanliness of the hides. The addition of extra litter will not counteract the adverse effects of over-stocking. The amount of litter required depends on factors such as the density of animals, their weight and the design of the building.

It is therefore important:

- to avoid over-stocking,
- to provide an adequate supply of clean litter as often as is necessary,
- to ensure that the premises are adequately ventilated and correctly arranged for the evacuation of effluent and cleaning water.

**Health measures**

- Isolate sick animal in suitable premises, treat them and wait until they have fully recovered before sending them to the abattoir,
- Check the treatment records of all the animals before they leave so as to ensure that the withdrawal periods or pre-slaughter confinement periods have indeed been respected.
- Withdraw from the batch being sent to the abattoir any animal of whose health status is in doubt or is still in the withdrawal period following the administration of medication.

**SECTION VIII – COMMON MEASURES**

An identification and traceability system for animals, their feed and products leaving the farm, can assist:

- to identify the true source of a problem of contamination of products of animal origin,
- and to implement measures to eliminate, or at least limit, any harmful consequences (such as by the targeted withdrawal of the products in question).

A complete and reliable system of recording procedures, actions and controls implemented on the farm can assist genuine and effective control of the risks that primary production represents for food safety. It can also assist livestock owners to prove that they have fully carried out their public health responsibilities.



**GGFP recommendations:****Traceability of animals, animal feed and animal products:**

- For each animal or group of animals, require and keep all commercial and health documents enabling their exact itinerary to be traced, from their farm or establishment of origin to their final destination (other farm or abattoir),
- Establish a data recording system that can be used to ascertain exactly which batches of commercial feed the farm's livestock were fed with, and what raw materials were used in feed manufactured on the farm and given to the animals. Keep samples of all the feed used,
- Establish a data recording system that can be used to ascertain the exact origin (animal batch) and destination of animal products produced by the farm,
- Keep all these documents and records and place them at the disposal of the competent authority (Veterinary Services).

**Record keeping:**

- Keep a record of all persons entering the farm: visitors, service staff and farm professionals (veterinarian, milk tester, inseminator, feed deliverer, carcass disposal agent, etc.),
- Keep the medical certificates of persons working in contact with animals and any document certifying their qualifications and training,
- Keep, for each animal or group of animals, all documents relating to the treatment and veterinary actions it has undergone (castration, calving, caesarean section, dehorning, debeaking, administration of medication, etc.),
- Keep all laboratory reports, including bacteriological tests and sensitivity tests (data to be placed at the disposal of the veterinarian responsible for treating the animals ),
- Keep all documents proving that the bacteriological and physico-chemical quality of the water given to the animals is regularly tested,
- Keep all records of all feed manufacture procedures and manufacturing records for each batch of feed,
- Keep detailed records of any application of chemical products to fields, pastures and grain silos, as well as the dates that animals are put out to grass and on which plots of land,
- Keep all the records relating to the cleaning and disinfection procedures used in the farm (including data sheets for each detergent or disinfectant used), as well as all the records showing that these procedures have effectively been implemented (job sheets, self-inspection checks on the effectiveness of the operations),
- Keep documents relating to the pest control plan (including the data sheets for each raticide and insecticide used), as well as all the records showing that the control plan has effectively been implemented (plan showing the location of baits and insecticide diffusers, self-inspection checks on the effectiveness of the plan),
- Keep all the documents relating to self-inspections (by the livestock producer) and controls (by the authorities and other official bodies) relating to the proper management of the farm and the sanitary and hygienic quality of the animal products leaving it,

Appendix C (contd)

- Keep all documents sent by the official inspection services, the quality control departments of food-processing firms or distributors, relating to anomalies detected at the abattoir, dairy, processing plant or during the distribution phase in products (meat, eggs, milk, fish, etc.) derived from the farm's animals,
- Ensure that all these documents are kept long enough to enable any subsequent investigations to be carried out to determine whether contamination of food products detected at the secondary production or distribution stage was due to a dysfunction at the primary production level,
- Place all these documents and records at the disposal of the competent authority (Veterinary Services) when it conducts farm visits.

**ANNEX: INTERNATIONAL STANDARDS AND REFERENCES**

**OIE *Terrestrial Animal Health Code*** (year 2003), and in particular the following sections:

- 1.1. dealing with GENERAL DEFINITIONS AND NOTIFICATION OF ANIMAL DISEASES

and, in particular, definitions of the following terms: disease, disinfection, disinfestation, establishment, infection, laboratory, official control programme, official veterinary control, Veterinary Administration, Veterinary Authority, and Veterinary Services.

- 1.3. dealing with IMPORT RISK ANALYSIS

Chapter 1.3.3. Evaluation of Veterinary Services

Chapter 1.3.4. Guidelines for the evaluation of Veterinary Services

- 3.4. dealing with HEALTH CONTROL AND HYGIENE IN ESTABLISHMENTS

APPENDIX 3.4.1. Hygiene and disease security procedures in poultry breeding flocks and hatcheries

APPENDIX 3.4.2. Hygiene and disease security procedures in apiaries

APPENDIX 3.4.3. Hygiene precautions, identification, blood sampling and vaccination

- 3.6. dealing with INACTIVATION OF PATHOGENS AND VECTORS

APPENDIX 3.6.1. General recommendations on disinfection and disinfestation

- 3.7. dealing with TRANSPORT OF ANIMALS

APPENDIX 3.7.1. Principles applicable to all forms of transport

APPENDIX 3.7.2. Principles applicable to specific forms of transport

- 3.9. dealing with ANTIMICROBIAL RESISTANCE

APPENDIX 3.9.1. Guidelines for the harmonisation of antimicrobial resistance surveillance and monitoring programmes

APPENDIX 3.9.2. Guidelines for the monitoring of the quantities of antimicrobials used in animal husbandry

APPENDIX 3.9.3. Guidelines for the responsible and prudent use of antimicrobial agents in veterinary medicine

Appendix C (contd)**Codes and standards of Codex Alimentarius**, and in particular:

- *General principles of food hygiene, including the appendix on HACCP and the guidelines for implementing the system;*
- *Code of hygienic practice for meat hygiene (in the process of adoption);*
- *Codes of hygienic practice for food products of animal origin (fresh meat, milk and milk products, poultry, egg products);*
- *Individual standards for food products of animal origin*
  - *milk and milk products,*
  - *meat products,*
  - *fish and fishery products;*
- *Code of practice of good animal feeding (under review);*
- *Recommended international code of practice for control of the use of veterinary drugs;*
- *Codex general standard for contaminants and toxins in foods (under review);*
- *Codex maximum residue limits (MRL) for veterinary drugs in foods, for pesticides in foods;*
- *Code of practice for the reduction of aflatoxin B1 in raw materials and supplemental feedingstuffs for milk-producing animals;*
- *Code of practice for source directed measures to reduce contamination of food with chemicals;*
- *Draft Code of practice for aquaculture.*

**Guide on good practices in primary production**

- *Guidelines on good dairy farming practices (Task Force on Good Dairy Farming Practices) of the International Dairy Federation.*

**Manual on implementing the HACCP system**

- *A training manual on food hygiene and the FAO Hazard Analysis and Critical Control Point (HACCP) system (Food Quality and Safety Systems).*
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## **CONTROL OF HAZARDS OF PUBLIC HEALTH AND ANIMAL HEALTH IMPORTANCE THROUGH ANTE- AND POST-MORTEM MEAT INSPECTION**

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### **Background**

Food-borne disease is generally recognised as an important public health problem and an important cause of decreased economic productivity in both developed and developing countries. Similarly, transmission of hazards of animal health importance via the food chain can result in highly significant economic loss in animal populations. Inspection of slaughter animals can also provide a valuable contribution to surveillance for specified diseases of animal health importance particularly exotic disease. Consequently, control of hazards of public health and animal health importance by ante- and post-mortem meat inspection is a core responsibility for government *veterinary services*.

Recent government policy changes in many countries reflect the demand for significantly increased resources to protect public health against food-borne diseases of animal origin. Along with this, rapidly increasing trade in food at both the local and international level is resulting in increased attention to the potential for transmission of diseases of animal health importance via the food chain. In a global regulatory environment that is more and more intent on placing primary responsibility on industry for ensuring food safety and biosecurity in relation to animal health, government *veterinary services* must exercise these responsibilities in a cost-effective, transparent and interdisciplinary manner.

### **Scope of this paper**

Increased collaboration between World Organisation for Animal Health (OIE) and the Codex Alimentarius Commission (CAC) in respect of food standards (see below) has led to the formation by OIE of the Animal Production Food Safety Working Group (APFS WG). It is the intent of OIE that the work of the APFS WG will result in the development of recommendations on several aspects of veterinary involvement in food safety. This document on ante- and post-mortem meat inspection provides a discussion paper on which to base future development of an OIE text through the APFS WG. It is complementary to a discussion paper on "The role and functionality of *Veterinary Services* in food safety throughout the food chain" that has been circulated to OIE Member Countries and will be discussed at the OIE General Session in May 2004.

### **International standards**

International organisations involved with public and animal health include the World Trade Organisation (WTO), Food and Agriculture Organisation (FAO), and World Health Organisation (WHO). At the sector level, the international organisations developing "standards" (standards, guidelines and related texts) are the CAC and the OIE.

Appendix D (contd)**CAC**

The CAC develops international food standards, guidelines and related texts (hereafter referred to collectively as "standards"). Standards concerned with food safety should be implemented within a generic framework for managing food-borne risks and should "recognise the need for flexibility consistent with the protection of consumers' health"<sup>1</sup>. The activities of Task Forces functioning outside of the Committee system also include risk-based approaches to food safety e.g. the goal of the *Ad Hoc* Intergovernmental Task Force on Animal Feeding is to ensure risk-based animal feeding practices at the level of primary production<sup>2</sup>. National competent authorities are increasingly adopting this approach.

Although the establishment of national food regulatory systems is the responsibility of governments, the CAC has a strong interest in providing guidance on sound legislative frameworks and infrastructure. Official recognition of the equivalence of alternative measures in different scenarios is a key principle of food safety risk management.

The CAC seeks wider strategic alliances with other international organisations in working towards enhancing food control on a world-wide basis. In this respect, the strategic framework of the CAC for 2003-2007 has an objective to "promote linkages between Codex and other multilateral regulatory instruments and conventions".

**OIE**

OIE develops international "standards" for animal health and zoonoses. These are primarily designed to prevent the introduction of infectious agents and diseases pathogenic to animals and humans into an importing country during trade.

There has been a significant increase in OIE food safety activities in recent years. Historically OIE has mainly been concerned with zoonoses that cause disease in animals but has now decided to be more active in the area of public health and consumer protection and has noted that this should include "zoonoses and diseases transmissible to humans through food, whether or not animals are affected by such diseases". OIE intends developing new standards covering all pathogens and contaminants that are dangerous for humans for inclusion into the *Terrestrial Animal Health Code* and the *Manual of Diagnostic Tests and Vaccines for Terrestrial Animals*.

Veterinary public health issues addressed by OIE to date include: inspection regimes for products of animal origin; certification of meat; control of food-borne hazards during primary production e.g. the agent of BSE, *Salmonella* spp., *Trichinella spiralis*, cysticercosis and residues of veterinary drugs; and good veterinary practice at farm level. All these activities contribute to meat hygiene.

Where the OIE develops standards for zoonoses, the unavailability of risk assessment information for the whole food chain prevents inclusion of "appropriate level of protection" (ALOP) concepts. The *Terrestrial Animal Health Code* also does not generally differentiate measures intended to safeguard animal health compared to measures to safeguard human health.

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<sup>1</sup> Report of the Twenty-third Session of the Codex Alimentarius Commission. ALINORM 99/37. FAO 1999

<sup>2</sup> Proposed Draft Code of Practice on Good Animal Feeding. CL 2001/36-AF. FAO 2001

Appendix D (contd)

Increased collaboration between OIE and CAC in respect of food borne zoonoses, particularly through the work of the OIE APFS WG, will result in standards and texts that bridge public and animal health interests across the 'production to consumption' continuum. It is the intent of OIE that collaborative work will result in increasing cross-reference to Codex in the *Terrestrial Animal Health Code*, and development of recommendations by OIE on several aspects of veterinary involvement in food safety. Similarly, it is expected that OIE will provide major contributions to the Codex codes of practice and other texts that incorporate a 'production to consumption' risk-based approach.

### **Codex Code of Hygienic Practice for Meat**

A new Draft Code of Hygienic Practice for Meat<sup>3</sup> is currently being developed by the Codex Committee on Meat Hygiene (CCMH) and is at Step 6 of the Codex process. It is expected to be finalised in 2005. The Code constitutes the primary international standard for meat hygiene and incorporates a risk-based approach to application of sanitary measures throughout the food chain. Ante-mortem inspection is described as a primary component of meat hygiene pre-slaughter, and post-mortem inspection is described as a primary component of process control in post-slaughter meat hygiene.

As the draft Code must serve as an international standard, it does not provide inspection standards for specific hazards or organoleptically detected abnormalities. The public (and animal) health risks associated with slaughter populations are very different in different geographical regions and animal husbandry systems, and ante- and post-mortem inspection should be tailored to the individual country situation and their public and animal health objectives. This remains an obligation of national competent authorities.

Other inputs to ante- and post-mortem meat inspection programmes arise from other Codex work. In particular, the Codex Committee on Food Hygiene (CCFH) develops overarching standards on food hygiene; the Codex Committee on General Principles (CCGP) develops general guidelines for risk analysis and the Codex Committee on Import and Export Inspection and Certification Systems (CCFICS) develops "horizontal" standards that guide implementation of national inspection programmes and certification.

Ante- and post-mortem inspection includes "any procedure or test conducted by a competent person...for the purpose of judgement of safety and suitability and disposition"<sup>4</sup>. Thus tests for compliance with the standards established by CAC for chemical residues, pesticides and contaminants may be included in these inspection activities. Similarly, the new microbiological risk assessment work of the Joint Expert Meeting on Microbiological Risk Assessment (JEMRA) will lead to specific risk management advice from CCFH on tests for microbial hazards e.g. *Salmonella* spp. in broilers, enterohaemorrhagic *Escherichia coli* in ground meats, *Listeria* spp. in manufactured meats.

The Draft Code of Hygienic Practice for Meat specifically recognises the duality of objectives that slaughterhouse inspection activities deliver in terms of public and animal health.

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<sup>3</sup> Draft Code of Hygienic Practice for Meat. ALINORM 04/27/16. FAO 2004

<sup>4</sup> Draft Code of Hygienic Practice for Meat. ALINORM 04/27/16. FAO 2004

Appendix D (contd)**Veterinary services**

Special editions of the OIE Scientific and Technical Review Series have illustrated the widely varying approaches to organisation of veterinary public health, veterinary animal health and public health services within national competent authorities<sup>5</sup>. Integrating all nationally-mandated food inspection systems under a single competent authority is promoted as having several advantages, including a reduction in overlap and improvement in service delivery<sup>6</sup>. While organisation structure can vary from country to country, it is essential that coverage, resources and scientific and technical capabilities deliver a continuously high standard of service. Further, credible public and animal health assurances are essential for access of animal products to international markets.

In respect of ante- and post-mortem inspection as a component of meat hygiene, responsibilities of national competent authorities who are usually Veterinary Services<sup>7</sup> include:

- Risk assessment
- Establishment of policies and standards
- Design and management of inspection programmes to deliver public and animal health objectives
- Assurance and certification of appropriate delivery of inspection and compliance activities
- Dissemination of information throughout the food chain
- Conformance with WTO obligations
- Negotiation of mutual recognition and equivalence agreements with trading partners.

**Ante- and post-mortem meat inspection programmes**

Ante- and post-mortem meat inspection programmes are primary responsibilities of national *Veterinary Services*<sup>8</sup>. Wherever possible, inspection procedures should be designed according to a risk-based approach and management systems should reflect international norms.

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<sup>5</sup> Scientific and Technical Review Series: Volumes 10 (4) 1991; 11 (1) 1992; 22 (2) 2003

<sup>6</sup> The organisation of federal Veterinary Services in Canada: the Canadian Food Inspection Agency. Scientific and Technical Review Series: Volume 22 (2): 409-421. 2003

<sup>7</sup> For the purposes of this discussion paper, "Veterinary Services" refers to veterinary public and animal health activities irrespective of the organisational arrangements of competent authorities at the national level.

<sup>8</sup> OIE Animal Production Food Safety Working Group. "Role and functionality of veterinary services in meat hygiene throughout the food chain". 71st General Session of the OIE. 2003



## Risk assessment

In a contemporary veterinary public health and animal health environment, *Veterinary Services* should utilise risk assessment to the greatest extent possible in the development of standards. National competent authorities are facing increased demands for technical expertise to develop domestic standards on this basis, while at the same time endeavouring to meet risk analysis obligations as assumed under international trading agreements.

### Risk assessment in meat hygiene

Ante- and post-mortem inspection programmes contribute to designation of meat as being "safe and suitable". However, this is generally only a *qualitative* measure of freedom from hazards to human health. Post-mortem meat inspection cannot ensure freedom from grossly-detectable abnormalities, and sampling programmes for chemical hazards have limited ability to detect randomly-occurring non-complying levels of residues and contaminants. More importantly, some transfer of microbiological contamination from the hide / fleece etc. to the carcass is inevitable in the slaughterhouse environment.

There is only limited scientific evidence linking ante- and post-mortem inspection with measurable outcomes in terms of human health. Additionally, there has been limited progress in tailoring inspection procedures to the spectrum and prevalence of the diseases/defects present in a particular class of slaughtered livestock from a specific geographical region. A risk assessment approach can be used to address these problems and facilitate the proportional allocation of meat hygiene resources according to level of risk<sup>9</sup>.

Risk-based approaches to meat-borne risks to human health are also demonstrating that unseen microbiological contamination rather than grossly-apparent abnormalities detected at ante and post-mortem inspection, is the most important source of hazards. This has led to increasing demands for more systematic approaches to combat these hazards e.g. HACCP systems.

### Risk assessment in animal health

The OIE *Terrestrial Animal Health Code* contains detailed provisions on import risk analysis. Regionalisation and monitoring of animal health in the exporting country provide important inputs to the risk assessment process. Unlike food safety, animal health risk assessment for control of endemic diseases of animal health importance in a regional environment is not commonly carried out. OIE standards for zoonoses are not based on human health risk assessments *per se*.

OIE defines risk assessment as "the evaluation of the likelihood and the biological and economic consequences of entry, establishment, or spread of a hazard within the territory of an importing country". For many of the standards, it is stated that there is "broad agreement concerning the likely risks", however, these are not linked to specific decisions on an appropriate level of protection (ALOP). The recently formulated OIE risk analysis process for antimicrobial resistance introduces a risk management framework very similar to that used in food safety<sup>10</sup> (see below).

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<sup>9</sup> Hathaway, S. C. (1993). Risk analysis and meat hygiene. OIE Scientific and Technical Review 12 (4): 1265-1290

<sup>10</sup> Antimicrobial resistance: risk analysis methodology for the potential impact on public health of antimicrobial resistant bacteria of animal origin. OIE Scientific and Technical Review 20: 811-827

Appendix D (contd)Generic framework for managing public health and animal health risks

Although public and animal health sectors have developed a different history and usage of risk analysis, many aspects are common to all sectors<sup>11</sup>. Application of a generic framework provides a systematic and consistent process for managing biosecurity risks while accommodating different risk assessment methodologies as appropriate. This framework generally consists of four components:

- Preliminary risk management activities
- Assessment of risk management options
- Implementation
- Monitoring and review.

Veterinary involvement in risk assessments

Whatever the biosecurity issue, there should be a strategic, organisational and operational context for veterinary aspects of risk analysis. Appropriate inputs will be required to guide the process, which should be undertaken in a transparent and consistent manner.

Veterinary involvement in risk assessments associated with development of ante- and post-mortem inspection standards is essential. In this respect, the trend toward institutional approaches that bridge the animal and public health sectors / disciplines involved is increasingly apparent at the national level and the traditional focus on regulating individual production systems is shifting to one of ensuring confidence in overall regulatory frameworks at all levels. Further, development of a more unified approach will assist general understanding of risk assessment and the optimisation of scarce technical resources in developing countries.

**Establishment of policies and standards**Safety and suitability of meat

Meat hygiene is defined as "all conditions and measures necessary to ensure the safety and suitability of meat at all stages of the food chain"<sup>12</sup>. In the context of meat hygiene, safety is defined in terms of appropriate application of measures to protect public health, and achievement of any quantitative outcomes for hazard control that may be required. Suitability is defined in terms of meat having been produced in a hygienic manner, and meeting any non-safety quantitative standards that may be present.

Development of policies and standards for ante-and post-mortem inspection are predicated by these objectives. Technical justification, practicality and effectiveness of standards rely on veterinary public health inputs, as do establishment of competencies of inspection personnel and training requirements<sup>13</sup>. The national competent authority(s) must also provide an appropriate institutional environment for *Veterinary Services* to develop such policies and standards.

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<sup>11</sup> Hathaway S.C. Risk analysis in biosecurity for food and agriculture. Consultant Report. *In*: Report of the Expert Consultation on Biosecurity in Food and Agriculture. FAO, Rome. September 2002

<sup>12</sup> Draft Code of Hygienic Practice for Meat. ALINORM 04/27/16. FAO, 2004

<sup>13</sup> In the absence of a risk-based approach, inspection standards are prescribed according to long-standing practice: see Appendix I

Appendix D (contd)

Standards for ante- and post-mortem inspection of meat include disposition judgements following detection of abnormalities. Judgements must be exercised by personnel who have the appropriate competence if dispositions are to achieve the "safety and suitability" objectives described above. However, sorting and removal of all abnormal tissues from the food chain without recourse to further examination/judgement as to safety or suitability is a practical alternative in many situations. In fact, a conservative policy in regard to disposition of abnormal carcasses and/or viscera is reflected in the precautionary approach inherent in any risk assessment process<sup>14</sup>.

Animal health surveillance and monitoring

Animal health surveillance constitutes "continuous investigation of a given population to detect the occurrence of disease for control purposes" and monitoring constitutes "on-going programmes directed at detection of changes in the prevalence of a disease in a given population"<sup>15</sup>. In this context, organoleptic inspection of slaughter animals can provide an important sentinel function for zoonoses and diseases solely of animal health importance. Further diagnostic tests can be applied in the case of suspect animals.

Animal health surveillance and monitoring allow *Veterinary Services* to identify and control significant endemic or exotic diseases within their territory, and substantiate reports on the animal health situation in their country. Both functions provide essential inputs to import risk analysis.

As for meat hygiene, policies and standards applied at ante- and post-mortem inspection for the purposes of animal health surveillance and monitoring should be risk-based and should be feasible and practical in the slaughterhouse environment.

An example of risk-based monitoring of zoonoses is well illustrated in the OIE standard for bovine spongiform encephalopathy (BSE)<sup>16</sup>. It is stated that surveillance strategies "should be determined by, and commensurate with the outcome of risk assessment" and have two primary goals: to determine whether BSE is present in a country, and once it has been detected, monitor development of the epizootic, direct control measures and monitor their effectiveness.

Control of animal health

In some situations, it may be necessary to identify and remove animals or their tissues that have the potential to infect other animals with non-zoonotic diseases via the food chain. This may be via inadvertent exposure to meat that has been passed as fit for human consumption e.g. transmission of exotic diseases by feeding of meat scraps to animals, or via meat with a designated non-human end-use e.g. uncooked petfood.

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<sup>14</sup> Where scientific information is uncertain or incomplete, the WTO SPS Agreement provides for precautionary food safety measures to be applied. Routine rejection of tissues with abnormalities at post-mortem inspection without further recourse to detailed organoleptic inspection or tests is one manifestation of a precautionary approach

<sup>15</sup> OIE Terrestrial Animal Health Code

<sup>16</sup> OIE Terrestrial Animal Health Code. Chapter 2.3.13.1. 2002

## Appendix D (contd)

### Other activities

Increasingly, veterinarians are developing multidisciplinary skills that extend their activities well beyond the farm and initial processing of meat. Also, veterinary activities associated with meat production systems extend beyond public and animal health. Ensuring adequate animal welfare and preventing degradation of the environment by contamination with animal wastes and animal products are two such activities.

### Integration of veterinary activities

It is clear that veterinary inputs to ante- and post-mortem inspection achieve a duality of public health and animal health objectives. Irrespective of the jurisdiction of the competent authorities involved, it is obvious that *Veterinary Services* should integrate their activities to the maximum extent possible and practicable so as to prevent duplication of effort and unnecessary costs.

In addition to sharing of routine inspection activities to achieve both public health and animal health objectives, other opportunities that arise are: collection and integration of monitoring data, sharing of diagnostic facilities and methodologies, verification and enforcement of inspection requirements in an integrated manner, and pooling of technical expertise. Additionally, the primary role of industry in ensuring food safety can be better specified, allowing cost-effective structural adjustments in *Veterinary Services*.

## **Management of public and animal health inspection programmes**

### Competent Authority

In meeting veterinary public health and animal health objectives prescribed in national legislation or required by importing countries, *Veterinary Services* contribute in various ways "from the direct performance of necessary veterinary tasks to the evaluation of veterinary activities conducted by operators in the agro-industrial chain". It should be noted that "*Veterinary Services*" are no longer the sole managers of animal health protection and disease control, but rather guarantors that all parties involved in food production fulfil their respective obligations to guarantee safe food for the consumer"<sup>17</sup>. To this end *Veterinary Services* fulfil the role of "Competent Authority" and provide assurance both domestically and to trading partners guaranteeing safety standards have been met as well as those pertaining to suitability.

The CCMH recognises that while responsibility for meat hygiene always rests with *Veterinary Services* in the national Competent Authority, "flexibility should be allowed on how the service is delivered e.g. by the competent Authority or by an officially recognised competent body operating under the supervision and control of the Competent Authority"<sup>18</sup>.

The OIE *Terrestrial Animal Health Code* ascribes that the quality of *Veterinary Services* can be determined through an evaluation that ensures compliance with principles on professional judgement, independence, impartiality, integrity, objectivity, general organisation, quality policy, procedures/standards, communication, and self-evaluation. Whatever the activity, *Veterinary Services* must be able to demonstrate that no conflict of interest exists between public and/or animal health objectives and economic support for the meat production and processing industry.

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<sup>17</sup> Marabelli, R. The role of official Veterinary Services in dealing with new social challenges: animal health and protection, food safety and the environment. Scientific and Technical Review Series: Volumes 22 (2): 363-371. 2003

<sup>18</sup> Report of the 10<sup>th</sup> Session of the Codex Committee on Meat Hygiene. ALINORM 04/27/16. FAO, Rome

Appendix D (contd)

Inputs to ante- and post-mortem inspection activities may also be provided by veterinarians employed by industry e.g. industry-led quality assurance programmes at the level of primary production may involve veterinary supervision and slaughterhouse information servicing. Individual health certification of groups of slaughter animals is a common practice in a number of countries e.g. for zoonotic diseases, veterinary drug residues and vaccination regimes. Veterinary ante-mortem inspection may also be provided at the level of livestock production<sup>19</sup>.

Quality systems

Those who benefit from inspection provided by *Veterinary Services* e.g. farmers and meat processing companies, are increasingly committing themselves to quality systems due to demand from their customers<sup>20</sup>. Consequently, these stakeholders are increasingly demanding inspection by competent authorities that is consistent and of high-quality.

In some countries, formal quality assurance procedures are being put in place to assure competence and reliability of *Veterinary Services* on an on-going basis<sup>21</sup>. Creating a quality system is a simple way of implementing the objectives contained in the quality policies that are written by veterinary managers. Tools such as quality accreditation are seen as necessary components of "modern economic management systems"<sup>22</sup>.

Quality assurance systems can be extended in the case of ante- and post-mortem inspection to "co-regulatory" systems that integrate industry and *Veterinary Service* activities<sup>23</sup>. In Australia, these systems are based on HACCP principles, are nationally uniform and extend from "production to consumption". Through a regulatory partnership arrangement, the official *Veterinary Service* is responsible for the broad design of the inspection system and its audits and sanctions, while the industry is responsible for further developing, implementing and maintaining the system. The veterinarian responsible for the specific slaughterhouse ensures that the meat safety quality assurance programme implemented by industry meets regulatory requirements on an on-going basis.

Use of non-veterinary inspection personnel

Use of private or public non-veterinary personnel to carry out ante- and post-mortem inspection activities is well established within many national programmes. However, all ante- and post-mortem inspection arrangements should satisfy the principles of independence, competence of inspectors and impartiality, and must be carried out under the overall supervision and responsibility of the official *Veterinary Services*. The Competent Authority should specify the competency requirements for all persons engaged in inspection and verify the performance of those persons<sup>24</sup>

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<sup>19</sup> McKenzie, A. I. and Hathaway S. C. The role of veterinarians in the prevention and management of food-borne diseases, in particular at the level of livestock producers. 70<sup>th</sup> General Session of OIE. 2002

<sup>20</sup> Gary F. Accreditation of veterinary inspection systems. Scientific and Technical Review Series: Volumes 22 (2): 761-768. 2003

<sup>21</sup> Gerster, F., Guerson, N., Moreau, V., Mulnet, O., Provot, S. and Salabert, C. The implementation of a quality assurance procedure for the Veterinary Services of France. Scientific and Technical Review Series: Volume 22 (2): 629-659. 2003

<sup>22</sup> Marabelli, R. The role of official Veterinary Services in dealing with new social challenges: animal health and protection, food safety and the environment. Scientific and Technical Review Series: Volumes 22 (2): 363-371. 2003

<sup>23</sup> Butler R.J., Murray J.G. and Tidswell S. Quality assurance and meat inspection in Australia. Scientific and Technical Review Series: Volume 22 (2): 629-659. 2003

<sup>24</sup> Draft Code of Hygienic Practice for Meat. ALINORM 04/27/16. FAO, 2004

## Appendix D (contd)

An OIE questionnaire of Member countries identified that personnel other than veterinarians were involved in ante-mortem inspection of poultry and red meat animals in 37% and 31% of countries respectively. Personnel other than veterinarians were involved in post-mortem inspection of poultry and red meat animals in 60% and 59% of countries respectively<sup>25</sup>.

### **Assurance and certification**

Assurance and certification of appropriate delivery of inspection and compliance activities<sup>26</sup> 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.

### **Information networks**

The SPS Agreement and the standards developed by the CAC and OIE all refer to the need for a systematic process to gather, evaluate and document scientific and other information as the basis for sanitary measures. This has long been recognised by *Veterinary Services* at the national level.

Organisation and dissemination of information throughout the food chain involves multidisciplinary inputs. Effective implementation of risk-based ante- and post-mortem inspection procedures is dependant on on-going monitoring and exchange of information. Animal identification, either as individuals or groups, is necessary in most situations and slaughtered animals should be able to be traced back to their place of origin as appropriate.

Veterinary inputs from primary production and slaughter are especially important to information networks servicing ante- and post-mortem inspection. As an example, it is likely that extrinsic cross-contamination as a result of slaughter, dressing and subsequent processing of meat is by far the most important source of hazards of public health importance. Bioloads of known food-borne pathogens that are transferred in this way are often a reflection of pre-harvest animal husbandry, the health status of the slaughter population, and pre-slaughter handling.

### **Conformance with WTO obligations**

The World Trade Organisation (WTO) Sanitary and Phytosanitary (SPS) Agreement represents the best efforts of the global community to establish principles and guidelines governing the establishment and implementation of measures to protect public and animal health.

*Veterinary Services* should ensure that ante-and post-mortem inspection of slaughter is based on an overall assessment, as appropriate to the circumstances, "of the risks to human, animal, or plant life or health, taking into account risk assessment techniques developed by the relevant international organisations". Further, inspection procedures utilised in import/export programmes should be comparable to those used in domestic programmes.

In implementing the provisions of the WTO SPS and TBT Agreements, *Veterinary Services* have an increasing role in developing mutual recognition and equivalence agreements with trading partners. A risk-based approach to ante- and post-mortem inspection programmes allows the performance and equivalence of different meat inspection systems to be judged in terms of in meeting animal and public health objectives, thereby mitigating technical barriers to trade.

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25 McKenzie, A. I. and Hathaway S. C. The role of veterinarians in the prevention and management of food-borne diseases, in particular at the level of livestock producers. 70th General Session of OIE. 2002

26 Principles for Food Import and Export Inspection and Certification. CAC/GL 20 - 1995. FAO, Rome.

### Recommendations

It is recommended that the OIE Animal Production Food Safety Working Group use this discussion paper as a basis for:

1. Agreeing on a work programme to formulate principles and guidelines on the role of *veterinary services* in design and application of systems for ante- and post-mortem inspection of slaughter animals, for establishment as an OIE guideline text.
  2. Discussing the usefulness of appending examples of routine ante- and post-mortem inspection programmes for application in situations where risk assessment information is inadequate or unavailable
  3. Ensuring that this work is harmonised with guideline texts being developed by other international bodies e.g. Codex Draft Code of Practice on Hygiene of Meat, FAO Manual of Meat Inspection
  4. Incorporating linkages to other OIE and Codex texts that describe detailed aspects of possible veterinary inputs e.g. Principles for Food Import and Export Inspection and Certification (CAC/GL 20 - 1995).
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Appendix D (contd)**Appendix I****Post-mortem inspection procedures**

Post-mortem inspection procedures and tests should be established by the competent authority according to a science- and risk-based approach. In the absence of a risk-based system, procedures will have to be based on current scientific knowledge and practice.

Post-mortem inspection procedures based on current knowledge and practice vary considerably in different countries. The procedures that are presented in the following tables are only intended to provide general guidance in meeting public and animal health objectives, and should be adapted by the competent authority as appropriate. In particular:

- 1) Routine procedures may be supplemented by additional procedures to assist judgement.
  - 2) Young animals are likely to need less intensive inspection than older animals, although some diseases are confined to young animals e.g. omphalophlebitis.
  - 3) In the case of farmed game and farmed game birds, post-mortem inspection procedures established for similar domestic animals may act as a basis for their post-mortem inspection. These may need to be modified as necessary.
  - 4) In the case of killed wild game and wild game birds, post-mortem inspection procedures should reflect the particular circumstances of harvesting and transport to the establishment.
  - 5) Special post-mortem inspection procedures may need to be applied to animals that have reacted to screening tests, e.g., animals which have reacted positively to a tuberculin test should be slaughtered under special hygiene conditions and be subject to more intensive inspection procedures than non-reactor animals.
  - 6) Special post-mortem judgements may need to be applied to animals that have reacted to screening tests, e.g., irrespective of detection of lesions suggestive of infection, the udder, genital tract and blood of animals which have reacted positively to a brucellosis test should be judged as unfit for human consumption.
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**Table 1: Examples of procedures for routine post-mortem inspection of the head of animals intended for human consumption**

	Cattle	Pigs	Sheep/goats	Horses	Deer	Poultry
External surfaces/oral cavity	V	V	V <sup>a</sup>	V	V	—
Submaxillary lymph nodes	V, I <sup>b</sup>	V, I	—	V, P	V, I	—
Parotid lymph nodes	V, I	—	—	V, P	V, I	—
Retropharyngeal lymph nodes	V, I	—	—	V, P	V, I	—
Tongue	V, P <sup>c</sup>	V	—	V, P	V, P	—
Muscles of mastication	V, P, I <sup>d</sup>	V, P, I	—	—	—	—
Other	—	—	—	— <sup>e</sup>		

V is visual inspection, P is inspection by palpation, I is inspection by incision.

<sup>a</sup> Notwithstanding post-mortem inspection for animal health purposes, the head may be discarded if brains and tongues are not collected for human consumption

<sup>b</sup> Incision of lymph nodes of the head is not necessary in calves

<sup>c</sup> Palpation of the tongue is not necessary in calves

<sup>d</sup> The muscles of mastication should be incised according to the potential for infestation with cysts of *Taenia* spp.

<sup>e</sup> The nasal septum should be removed and examined if glanders is present in the slaughter population

Appendix D (contd)**Table 2: Examples of procedures for routine post-mortem inspection of the carcass of animals intended for human consumption**

	Cattle	Pigs	Sheep/goats	Horses	Deer	Poultry
External surfaces	V	V <sup>a</sup>	V	V	V	V
Prescapular lymph nodes	V	—	V	—	V	—
Thoracic cavity/pleura	V	V	V	V	V	V
Abdominal cavity/peritoneum	V	V	V	V	V	V
Superficial inguinal lymph nodes	V, P	—	V, P	V, P	V, P	—
External/internal iliac lymph nodes	V, P	—	V, P	V, P	V	—
Supramammary lymph nodes	V, P <sup>b</sup>	V	V	V	—	—
Pre-pectoral lymph nodes	V, P	—	V, P	V, P	V, P	—
Popliteal lymph nodes	—	—	P	—	—	—
Renal lymph nodes	V, P	V, P	—	V, P	V	—
Diaphragm	V	V <sup>c</sup>	V	V	V	—
Other	— <sup>d</sup>	—	—	— <sup>e</sup>	—	—

V is visual inspection, P is inspection by palpation, I is inspection by incision.

Note: The umbilicus and joints of the limbs should be viewed and palpated in very young animals.

Note: A quality assurance system should be in place to ensure that all thyroid tissue has been removed from the throat.

<sup>a</sup> Castration sites should be palpated

<sup>b</sup> Supramammary lymph nodes should be incised in lactating animals

<sup>c</sup> The muscles of the diaphragm should be incised according to the potential for infestation with cysts of *Taenia* spp.

<sup>d</sup> The udder should be incised if it is intended for human consumption

<sup>e</sup> The muscles and lymph nodes beneath one of the two scapular cartilages should be examined for melanosis in all grey and white horses

**Table 3: Examples of procedures for routine post-mortem inspection of the viscera of animals intended for human consumption**

	Cattle	Pigs	Sheep/goats	Horses	Deer	Poultry
Lungs	V, P <sup>a</sup>	V, P	V, P	V, P	V, P	V
Oesophagus	V	V	V	V	V	—
Trachea	V	V	—	V	—	—
Bronchial lymph nodes	V, I <sup>b</sup>	V, P	V, P	V, P	V, I	—
Mediastinal lymph nodes	V, I	V, P	V, P	V, P	V, I	—
Heart	V, P, I <sup>c</sup>	V, P, I <sup>c</sup>	V, P	V, P, I	V, P	V
Pericardium	V	V	V	V	V	V
Liver	V, P	V, P	V, P	V, P	V, P	V
Portal lymph nodes	V, P	V, P	V	V, P	V, P	—
Gall bladder	V, I <sup>d</sup>	—	V, P	—	V, P	—
Kidneys	V	P	V	V <sup>e</sup>	V	V
Renal lymph nodes	V	—	—	—	V	—
Spleen	V	V	V	V	V	—
Gastrointestinal tract	V	V	V	V	V	V
Mesenteric lymph nodes	V, P	V, P	V	V, P	V, P	—
Genital organs <sup>f</sup>	V	V	—	V	V	V

V is visual inspection, P is inspection by palpation, I

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- <sup>a</sup> Incision of the diaphragmatic lobe can be used to examine the bronchii if lungs are intended for human consumption
- <sup>b</sup> Incision of the bronchial and mediastinal lymph nodes is not necessary in calves
- <sup>c</sup> The number and location of incisions in the heart muscle should be according to the potential for infestation with cysts of *Taenia* spp.
- <sup>d</sup> An alternative to incision of the bile ducts for the deletion of distomatosis is incision through the gastric surface of the liver. Inspection for distomatosis is not necessary in calves
- <sup>e</sup> Kidneys should be palpated if intended for human consumption; kidneys of grey or white horses should be incised
- <sup>f</sup> Palpation and incision should be carried out as appropriate if tissues are intended for human consumption e.g. uterus of heifers.

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