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**REPORT OF THE MEETING OF THE  
OIE TERRESTRIAL ANIMAL HEALTH STANDARDS COMMISSION  
Paris, 2-13 October 2006**

The OIE Terrestrial Animal Health Standards Commission (hereafter referred to as the Terrestrial Code Commission) met at the OIE Headquarters in Paris from 2 to 13 October 2006.

The members of the Terrestrial Code Commission are listed in [Appendix I](#). The agenda adopted is given in [Appendix II](#).

The Terrestrial Code Commission examined various OIE *Terrestrial Animal Health Code* (hereinafter referred to as the *Terrestrial Code*) texts in response to Member Countries' comments received by the end of August, as well as outstanding comments from the previous meeting and the General Session. During this meeting, the Terrestrial Code Commission again experienced difficulty in examining some of the comments because of the lack of explicit rationale.

The outcome of the Terrestrial Code Commission's work is presented as appendices to this report. Amendments made to existing chapters and previously circulated drafts are shown as double underlined text, with deleted text in ~~strikeout~~.

Member Countries should note that, unless stated otherwise, all texts submitted for comment in this report (Part A) may be proposed for adoption at the 75<sup>th</sup> General Session. Depending on the nature of the comments received on each text, the Terrestrial Code Commission will indicate in its March 2007 meeting report whether a particular text will be proposed for adoption or held for further work.

The Terrestrial Code Commission strongly encourages Member Countries to participate in the development of the OIE's international standards by sending comments on this report. The Terrestrial Code Commission reiterates that it would be very helpful if comments were submitted as specific proposed text changes, supported by a scientific rationale.

Comments on this report need to reach the OIE Headquarters by **10 February 2007** in order to be considered at the next meeting of the Terrestrial Code Commission in March 2007. Comments should be sent to the International Trade Department at: [trade.dept@oie.int](mailto:trade.dept@oie.int).

The Director General, Dr B. Vallat, welcomed the members and thanked them for their willingness to participate in this important work. He noted the need of further close communication and cooperation among Specialist Commissions, in particular between the Terrestrial Code Commission and the Scientific Commission for Animal Diseases (hereafter referred to as the Scientific Commission) for developing and revising chapters and appendices of the *Terrestrial Code*, and between the Terrestrial Code Commission and Aquatic Animal Health Standards Commission (hereinafter referred to as the Aquatic Animals Commission) for harmonisation of the two Codes.

Dr Vallat briefed the Terrestrial Code Commission on the recent meeting he held with Presidents of Specialist Commissions and the directors of Scientific and Technical Department and the International Trade Department. The purpose of that meeting was to review the terms of reference of the Commissions and to improve coordination between Commissions and Departments. Arrangements were made to improve the exchange of information including documents.

The Terrestrial Code Commission had detailed discussions with Dr Vallat on: BSE Chapter and Appendix on BSE risk assessment; the future of draft guidelines of traceability; the review of the *Performance, Vision and Strategy* [PVS] *Instrument* and the development of indicators and manual for evaluators; the terms of reference for the *ad hoc* Group on certification; the definition of animal handler as recommended by the Working Group on Animal Welfare; the urgently needed review of the Chapter on rinderpest; the review of the Chapter on zoning and compartmentalisation; and modification of the Chapter on avian influenza.

The Terrestrial Code Commission thanked the following Member Countries for providing written comments: Argentina, Australia, Canada, Chile, the European Union (EU), Japan, New Zealand, South Africa, Sudan, Switzerland, Taipei China and the United States of America (USA).

## **A. TEXTS WHICH ARE SUBMITTED FOR MEMBER COUNTRY COMMENT**

### **1. General definitions (Chapter 1.1.1.)**

After considering many Member Countries' concerns about the definition of "animal handler", including the proposed requirement for certification of competency, the Terrestrial Code Commission modified the text in the general definitions. An explanation for this decision may be found under Item 19 Animal Welfare below.

Comments received from countries on the definitions of "slaughter" and "stunning" will be forwarded to the Working Group on Animal Welfare for further examination.

Noting that there are two different definitions for "surveillance", one in Chapter 1.1.1. and the other in Appendix 3.8.1., the Terrestrial Code Commission decided to seek advice from the Scientific Commission, for a single definition of surveillance, including examination of the closely-related definition of "monitoring".

The Terrestrial Code Commission reviewed the definitions adopted for 'veterinary services', 'veterinary authority' and 'veterinary administration' and the usage of these terms in the *Terrestrial Code*. The Terrestrial Code Commission agreed that, in principle, definitions for the terms 'competent authority', 'veterinary authority' and 'veterinary services' should be clarified and steps taken to ensure that these terms are used consistently throughout the *Terrestrial Code*. The Terrestrial Code Commission proposes to eliminate the term 'veterinary administration' and instead use one of the other terms (as appropriate). Only after the definitions have been finalised can the use of the various terms throughout the *Terrestrial Code* be reviewed and modified as appropriate.

The revised chapter, which is presented at Appendix III, is circulated among Member Countries for comment.

## 2. Evaluation of Veterinary Services

- a) **Evaluation of Veterinary Services (Chapter 1.3.3.)**
- b) ***Performance, Vision and Strategy Instrument***

The Terrestrial Code Commission discussed with Dr Vallat the future development of the *Performance, Vision and Strategy* [PVS] *Instrument* and next steps in the development of a Handbook and Indicators for conducting evaluations. The Terrestrial Code Commission noted the work under way and the planned meeting of the *ad hoc* Group on the Evaluation of Veterinary Services, which will take place from 31 October to 2 November. The Terrestrial Code Commission anticipates reviewing the work of the *ad hoc* Group at its March meeting. The PVS Instrument, the Handbook and the Indicators will not form part of the *Terrestrial Code*. Rather, they will be published by the OIE as an official tool for use in the evaluation of Veterinary Services, in accordance with Chapters 1.3.3. and 1.3.4.

## 3. Zoning and compartmentalisation

The Terrestrial Code Commission has requested that the Scientific Commission evaluate the incorporation of the concept of compartmentalisation into specific disease chapters where applicable.

- a) **Zoning and compartmentalisation (Chapter 1.3.5.)**

An expert was asked to review the chapter and incorporate Member Countries' comments, taking into account the input from the Scientific Commission's concept paper published in the OIE *Bulletin* (No. 2006 – 2). On the basis of further discussion, the Terrestrial Code Commission drafted the revision of Chapter 1.3.5. shown in Appendix IV. The draft chapter is circulated among Member Countries for comment.

- b) **Practical guidelines on compartmentalisation for avian influenza**

Experts have been commissioned to develop practical guidelines on the application of the compartmentalisation concept to avian influenza. There is a possibility of applying these guidelines simultaneously to Newcastle disease. The Terrestrial Code Commission examined an early draft text and provided feedback to the experts to assist in this work. The Terrestrial Code Commission expects to produce a draft for circulation as part of the March 2007 report.

## 4. International transfer of pathogens (Chapter 1.4.5.)

The Terrestrial Code Commission considered comments received from Member Countries. Reassurance was sought that material removed from the revised chapter would be retained in the *Manual of Diagnostic Tests and Vaccines for Terrestrial Animals* (hereinafter referred to as the *Terrestrial Manual*). This was endorsed by the Biological Standards Commission (hereinafter referred to as the Laboratories Commission) at its 13-15 September meeting. A new edition of the *Terrestrial Manual* will be developed in 2007. Chapter 1.4.5. will not be removed from the *Terrestrial Code*. The amendments in the *Terrestrial Code* will be harmonised with amendments in the *Terrestrial Manual* and will be made at the same time.

## 5. Rabies (Chapter 2.2.5.)

The Terrestrial Code Commission followed advice from the Laboratories Commission and updated this chapter in relation to the use of recombinant vaccines in a live virus vector.

The revised chapter, which is presented at Appendix V, is circulated among Member Countries for comment.

## 6. Paratuberculosis (Chapter 2.2.6)

The Terrestrial Code Commission had decided at its March meeting that it could not proceed with revision of the Paratuberculosis Chapter without consulting the Biological Standards Commission on diagnostic methods.

The Biological Standards Commission has undertaken to consult experts for advice on diagnostic methods. Once this information is received and assessed, the Biological Standards Commission will make recommendation to the Terrestrial Code Commission.

The Terrestrial Code Commission considered that there would be merit in forwarding to such experts the text circulated among Member Countries as Appendix XXXVII to the meeting report of September 2005 together with the comments subsequently received from Member Countries.

## 7. Foot and mouth disease

### a) Foot and mouth disease (Chapter 2.2.10.)

The comments received from Member Countries on the chapter were submitted to the Scientific Commission for consideration. Recommendations from the Scientific Commission were incorporated by the Terrestrial Code Commission.

As requested in Resolution No. XXX of the 74<sup>th</sup> General Session, an *ad hoc* Group was convened to consider the establishment of a procedure to expedite the recovery of status in the event of a limited outbreak in a previously FMD free country or zone. The recommendations of the *ad hoc* Group were endorsed by the Scientific Commission and the new article 2.2.10.6.(bis) and a definition for a containment zone were submitted to the Terrestrial Code Commission for consideration. The recommendations were adapted for inclusion in the chapter.

Suggested changes to the chapter, which are at [Appendix VI](#), are circulated among Member Countries for comment.

### b) Guidelines for surveillance of foot and mouth disease (Appendix 3.8.4.)

The Terrestrial Code Commission has requested that the Scientific Commission evaluate the feasibility of incorporating the concept of compartmentalisation into the FMD surveillance appendix (Appendix 3.8.4.).

## 8. Bluetongue

The Terrestrial Code Commission reviewed comments received from Member Countries and the recommendations from the Scientific Commission. The discussion by an emergency *ad hoc* Group on bluetongue held immediately after the meeting of the Terrestrial Code Commission was also taken into consideration. The texts of the Chapter and of the Appendix on surveillance were modified accordingly. These texts, which are presented at [Appendices VII and VIII](#), are circulated among Member Countries for comment.

### a) Bluetongue (Chapter 2.2.13.)

Considering recent outbreaks in Europe and the understanding that bluetongue is increasing its geographical distribution in this region, the Terrestrial Code Commission modified the northern latitude boundary in Articles 2.2.13.1. and 2.2.13.2.

Article 5 was deleted as per the Scientific Commission's recommendation. The Terrestrial Code Commission considers that the risks associated with importation from a bluetongue infected country are adequately addressed in the commodity articles.

The request to reassess the possibility of allowing importation of semen/embryos/oocytes from vaccinated donors was considered by the Terrestrial Code Commission. It was determined that this is already covered by relevant articles in the chapter.

**b) Bluetongue surveillance guidelines**

Comments received from Member Countries on the first draft of the guidelines on surveillance for bluetongue were reviewed by the Scientific Commission and appropriate changes to the text were made. The Terrestrial Code Commission noted the incorporation of the concept of compartmentalisation in these surveillance guidelines and questioned how this could be applied, in practice, to anything more than an individual holding, such as artificial insemination centres and quarantine stations. The principle of vector free premises is already well established in the *Terrestrial Code* without the need to consider the application of compartmentalisation. The Terrestrial Code Commission will further consider incorporating the concept of compartmentalisation in the bluetongue chapter in light of future comments from Member Countries.

**9. Bovine brucellosis (Chapter 2.3.1.)**

Significant comments were received from several Member Countries. The comments were reviewed by the Scientific Commission, which determined that the complex technical nature of the comments required consultation and that an *ad hoc* Group would be convened in February 2007.

**10. Bovine spongiform encephalopathy**

**a) Risk assessment recommendations (Appendix 3.8.5.)**

Among a substantial number of comments suggesting modifications and better linkage to Chapter 2.3.13., the Terrestrial Code Commission recognised it should first address a comment from New Zealand requesting clarification of the purpose of this Appendix in relation to a set of guidelines titled “BSE Questionnaire for country status recognition” prepared by the Scientific Commission. The OIE has agreed to conduct procedures to recognise the BSE status of Member Countries. In view of this, the Terrestrial Code Commission was of the opinion that Appendix 3.8.5. on factors to consider in conducting BSE risk assessment should be incorporated, without further review by the Terrestrial Code Commission, into the documents used for the official OIE categorisation of Member Countries.

Once such guidelines become available to Member Countries on the OIE website or otherwise, the Terrestrial Code Commission will propose to Member Countries that current Appendix 3.8.5. be dropped from the *Terrestrial Code*. It was agreed that any detailed and very prescriptive documents should not be part of the *Terrestrial Code*.

**b) Bovine spongiform encephalopathy (Chapter 2.3.13.)**

Some Member Countries requested clarification of the term “imported” appearing in Article 2.3.13.2. point a) Release assessment. The Terrestrial Code Commission was of the view that this should be addressed in Chapter 1.3.5. as it is a general consideration in implementation of zone and compartment.

The Terrestrial Code Commission examined outstanding concerns raised by the EU and Japan regarding the risk of potentially infected animals present in the age cohorts born before the risk management measures were enforced. As a result, Articles 2.3.13.6., 2.3.13.7. and 2.3.13.12. were modified.

The Terrestrial Code Commission was informed by the EU that an article from French scientists (D. Calavas, V. Supervie, E. Morignat, D. Costagliola & C. Ducrot) has been accepted for publication in the *Journal on Risk Analysis* and will be published very soon. This document will provide the scientific rationale for changes made to the compliance period (i.e. the period of 7 years from the reporting of the case changed to 11 years from the birth of the case - Article 2.3.13.3. paragraph 3 b).

A Member Country requested to exclude the transverse processes of the thoracic and lumbar vertebrae and the wings of the sacrum from the definition of the vertebral column in point 2 of Article 2.3.13.13. The Terrestrial Code Commission did not adopt this recommendation because it doubted if the proposed definitions would be universally practicable or enforceable.

The Terrestrial Code Commission examined comments from a Member Country regarding the safety of gelatine irrespective of the origin of source material due to the safety of the production process. Based on the supporting document and a risk assessment recently published by the New Zealand Food Safety Authority (NZFSA, 2005, Wellington) and entitled “Officials’ Review of New Zealand’s BSE Country-Categorisation Measure” (<http://www.nzfsa.govt.nz/imported-food/bse-categorisation/report/index.htm>), the Terrestrial Code Commission decided to revise Article 2.3.13.14. to allow all cattle bones to be used as a source material for the production of gelatine, provided the cattle have passed ante-mortem and post-mortem inspections.

The revised chapter, which is presented at Appendix IX, is circulated among Member Countries for comment.

**c) Surveillance for bovine spongiform encephalopathy (Appendix 3.8.4.)**

The Terrestrial Code Commission examined comments received from Member Countries on this Appendix. Noting that some questions remain on the usage of the full BSurvE model instead of Appendix 3.8.4., the Terrestrial Code Commission reiterated its intention as follows: Appendix 3.8.4. was developed using a modified version of the BSurvE model so that it would be easily applicable to any Member Country. However, the Terrestrial Code Commission does not see any problem in a Member Country choosing to use the full BSurvE model to estimate its BSE presence/prevalence. The reason why Appendix 3.8.4. does not make any reference to the BSurvE model as an alternative method is that the concept of equivalence underpins all chapters of the *Terrestrial Code*.

The Terrestrial Code Commission did not adopt country recommendations to modify descriptions of cattle sub-populations, as those used in the Appendix are consistent with commonly used terminology. The Terrestrial Code Commission did not adopt a request to expand Table 1 (Appendix 3.8.4.) to provide a more detailed breakdown of cattle sub-populations because it considered that additional detail and complexity would not be helpful. Member Countries wishing to apply a more expanded version for BSE surveillance can use the BSurvE model.

**d) Supporting document**

The Terrestrial Code Commission received a fully revised supporting document on BSE prepared by a group of experts. The document was commissioned to provide supporting scientific evidence for recent changes made to the chapter on BSE. All Commission members expressed their sincere appreciation to the experts who contributed to the drafting of the report.

The supporting document, which is presented at Appendix XXVIII, is circulated among Member Countries for information.

**11. Equine influenza (Chapter 2.5.5.)**

The Terrestrial Code Commission reviewed country comments on the draft chapter, which was circulated as part of its meeting report in March 2006. The chapter was revised taking these comments into consideration. Most significantly, the chapter was modified to be consistent with the format and the purpose of the *Terrestrial Code*. Articles were modified to meet the requirements for safe trade, rather than identifying the status of importing country.

Submissions suggesting all trade in horses would require excessive quarantine period, including when imported into countries not free of disease, are not justified. Consistent with the approach of the *Terrestrial Code*, only countries or zones that are free or have adopted official control for the disease should require the application of measures recommended in the chapter. Countries that are not free and do not have a control programme should only require measures equivalent to those applied within the country.

The Terrestrial Code Commission received an enquiry about the scientific basis for recommending that no measures be applied in regard to trade in equine semen and embryos (see Article 2.5.5.5. in the working draft). The Terrestrial Code Commission sought additional advice from experts and will revisit this issue at its March meeting. In the meantime, this article is placed ‘under study’.

In response to an enquiry about the scientific rationale for adopting a period of 30 days (see Article 2.5.5.10.) as opposed to 21 days (used elsewhere in the draft chapter), the Terrestrial Code Commission requested clarification from the members of the *ad hoc* Group on Equine Influenza. In the absence of definitive advice on this point, the Terrestrial Code Commission decided to adopt a period of 21 days throughout the chapter.

The revised chapter, which is presented at [Appendix X](#), is circulated among Member Countries for comment.

## 12. Equine diseases (other than equine influenza)

- a) **Equine infectious anaemia (Chapter 2.5.4.)**
- b) **Equine piroplasmiasis (Chapter 2.5.6.)**
- c) **Equine rhinopneumonitis (Chapter 2.5.7.)**

The Terrestrial Code Commission examined further comments received on Chapters 2.5.4., 2.5.6. and 2.5.7. As for equine infectious anaemia, country comments on point 3 of Article 2.5.4.2. were accepted to cover equines imported on a temporary basis. As for equine piroplasmiasis, point 3 of Article 2.5.6.2. was modified to give clear guidance. In response to Member Country requests, “equine herpes virus infection” was adopted in Article 2.5.7.2. and added to the chapter title in parentheses. The reference to equine rhinopneumonitis cannot be deleted as this is the name used in the *Terrestrial Manual*.

The revised chapters, which are presented at [Appendix XI, XII and XIII](#), are circulated among Member Countries for comment.

- d) **Glanders (Chapter 2.5.8.)**

The Terrestrial Code Commission examined newly-received comments on glanders in addition to those received for its March meeting. Recognising the use of surveillance programmes, Article 2.5.8.2. was modified based on a comment from Member Countries. Point 3 of Article 2.5.8.3. was deleted, as testing is considered unnecessary for equines from glanders free countries. Point 3 of Article 2.5.8.4. was modified from 15 to 30 days based on a proposal from a Member Country for reasons of practicality in line with other disease test periods. Article 2.5.8.5. was deleted, as the Terrestrial Code Commission agreed with Member Countries’ concerns about exemption from testing for equines, even for immediate slaughter, taking into account the zoonotic potential of *B. malleus*.

The revised chapter, which is presented at [Appendix XIV](#), is circulated among Member Countries for comment. In this Appendix, modifications made during this meeting on the text from the September 2005 report are indicated with a coloured background to distinguish the two groups of proposal.

- e) **Equine viral arteritis (Chapter 2.5.10.)**

The Terrestrial Code Commission examined comments received from Member Countries and made appropriate changes.

The main change in Article 2.5.10.2. relates to young horses with maternal antibodies. Articles 2.5.10.4. and 2.5.10.5. relating to fresh and frozen semen were combined.

The revised chapter, which is presented at [Appendix XV](#), is circulated among Member Countries for comment. In this Appendix, modifications made during this meeting on the text from the September 2005 report are indicated with a coloured background to distinguish the two groups of proposal.

### 13. Classical swine fever (Chapter 2.6.7.)

The Terrestrial Code Commission reviewed Chapter 2.6.7., which was largely restructured and adopted in last General Session, and recognised that certain articles may still need revision. To avoid possible confusion between point 2 of Article 2.6.7.3. and Article 2.6.7.5., titles of sub-article in Article 2.6.7.3. were modified to clarify that this article concerns the initial attainment of free status, while the word “previously” was inserted in Article 2.6.7.5. to clarify that this article concerns recovery of free status. In light of Member Countries’ comments, the title of Article 2.6.7.4. was modified to clarify the difference between Articles 2.6.7.3. and 2.6.7.4. (being with/without infection in the wild pig population). Point 2 of Article 2.6.7.4. was modified to clarify the intent of these articles.

As for Member Countries’ comments about harmonising time periods that animals must be kept in free countries/zones or compartments to obtain free status (30 days per Article 2.6.7.5.; 3 months per Article 2.6.7.7. and subsequent articles), the Terrestrial Code Commission decided to seek advice from the Scientific Commission.

Suggested changes to the chapter, which are presented at [Appendix XVI](#), are circulated among Member Countries for comment.

### 14. Avian influenza

#### a) Avian influenza (Chapter 2.7.12.)

Although few comments were received on this revised chapter from Member Countries, the Terrestrial Code Commission noted that the Central Bureau has been receiving many inquiries, from Member Countries and industry representatives, about the health status of particular countries following occurrences of HPNAI infection in various birds including wild birds and zoo birds. The Terrestrial Commission therefore clarified the definition of poultry (see point 2 of Article 2.7.12.1).

Considering the ongoing difficulty of Member Countries in applying the measures in the *Terrestrial Code*, which has resulted in trade bans being imposed following the reporting of any findings, including reports in birds other than poultry, a new point 4 clarifying the obligations of countries was added to Article 2.7.12.1.

The Terrestrial Code Commission also provided a clarification in regard to the detection of antibodies in the absence of virus. Further investigation should be conducted to identify the source of the antibodies. This should not be considered as an occurrence of infection if further investigation fails to isolate the virus or to detect viral RNA.

Suggested changes to the chapter, which are presented at [Appendix XVII](#), are circulated among Member Countries for comment.

#### b) Guidelines for the surveillance of avian influenza (Appendices 3.8.9.)

After reviewing countries’ comments, the Terrestrial Code Commission revised the title of Article 3.8.9.5. to clarify that it refers to countries declaring that they have regained freedom.

Suggested changes to the Appendix, which are presented at [Appendix XVIII](#), are circulated among Member Countries for comment.

#### c) Guidelines for the inactivation of avian influenza virus (Appendix 3.6.5.)

The Terrestrial Code Commission reviewed a research paper titled “Thermal Inactivation of H5N1 High Pathogenicity Avian Influenza Virus in Chicken Meat” published by Drs C. Thomas and D. Swayne (Research report to the USDA, 2006 April 25), which was sent by a Member Country for the purpose of reconsidering the conditions stipulated in Article 3.6.5.2. The Commission used this paper as a basis to modify the recommendations on the thermal inactivation of avian influenza virus in poultry meat. Article 3.6.5.1. was modified based on a communication from Dr Swayne regarding his review of his research findings on egg products.

Suggested changes to the Appendix, which are presented at [Appendix XIX](#), are circulated among Member Countries for comment.

### **15. Bovine and small ruminant semen (Appendix 3.2.1.)**

The Terrestrial Code Commission examined comments received from Member Countries on the Appendix. A comment on point 2 a) in Article 3.2.1.5. recommending to remove the requirement for a serological test in the case of animals from brucellosis free countries was not adopted, as the current definition of 'free country' does not assume that all animals are free of infection.

A suggestion on Article 3.2.1.5 point 3 to use RT-PCR as a suitable testing method was forwarded to the Laboratories Commission for review. An inquiry on the possibility of transmission of border disease via semen was forwarded to an expert for advice.

### **16. Animal identification and traceability**

The Terrestrial Code Commission noted the report of the third meeting of the *ad hoc* Group on Identification and Traceability of Live Animals, which is at [Appendix XXV](#) for Member Countries' information.

#### **a) General principles for animal identification and traceability (Appendix 3.5.1.)**

The Terrestrial Code Commission addressed the recommendations of the *ad hoc* Group and of the Animal Production Food Safety Working Group in revising the principles. The revised Appendix, which is presented at [Appendix XX](#), is circulated among Member Countries for comment.

#### **b) Guidelines for animal identification and traceability**

The Terrestrial Code Commission noted the progress made by the *ad hoc* Group on the guidelines for animal identification and traceability. It noted questions from Member Countries about the intended future status of the guidelines and the need to retain a focus on outcomes rather than to develop prescriptive guidance based on system design elements. The Terrestrial Code Commission clarified that the guidelines were intended as an Appendix to the *Terrestrial Code* and that the guidelines would indeed set out principles and general approaches rather than prescribing specific standards. The comments of Member Countries and the Terrestrial Code Commission will be sent back to the Animal Production Food Safety Working Group to consider at its November 2006 meeting.

### **17. Disposal of dead animals (Appendix 3.6.6.)**

The Terrestrial Code Commission reviewed detailed recommendations received from a Member Country on Appendix 3.6.6. The Terrestrial Code Commission considered that these recommendations enhanced the newly-developed guidelines.

Suggested changes to the Appendix, which are presented at [Appendix XXI](#), are circulated among Member Countries for comment.

### **18. Ante-mortem and post-mortem inspections (Appendix 3.10.1.)**

The Terrestrial Code Commission addressed the comments received on Appendix 3.10.1. and considered that no immediate amendments were necessary since the text already addressed these issues. It forwarded to the Animal Production Food Safety Working Group the comments raised by Delegates at the 74<sup>th</sup> General Session.

### **19. Ad hoc Group on the Revision of the OIE Model Certificates**

The Terrestrial Code Commission reviewed the report of the electronic meeting of the *ad hoc* Group on the revision of the OIE model certificates which is at [Appendix XXVI](#) for the information of Member Countries. The Terrestrial Code Commission noted the recommendation from the recent OIE Regional Conference for Europe concerning methods to combat fraudulent certification in international trade and recommended that this be considered by the *ad hoc* Group in its work.

The Terrestrial Code Commission reviewed the terms of reference for updating the current texts on certification in the *Terrestrial Code* and recommended that the *ad hoc* Group, with membership as proposed, be convened to do this work.

## 20. Animal welfare

After considering many Member Countries' concerns about the definition of "animal handler", including the proposed requirement of certification of competency, the Terrestrial Code Commission modified the text in the general definitions. The Terrestrial Code Commission supported the principle that animal handlers should be experienced and knowledgeable and that Veterinary Services should have a role in ensuring that competent people work as animal handlers, but considered that it is the responsibility of Member Countries to determine how the competence of animal handlers should be demonstrated. Also, the Terrestrial Code Commission was of the view that formal certification systems for animal handlers may not be practical or feasible for many Member Countries at this time. Consequently, the recommendation by the Working Group on Animal Welfare for the certification of competence of animal handlers was not adopted. The modified definition adopted by the Terrestrial Code Commission appears in General Definitions (Chapter 1.1.1.) and, to facilitate consultation with Member Countries, in the relevant Guidelines. Once adopted the definition would be removed from the Guidelines.

### a) Guidelines for the transport of animals by sea and land (Appendices 3.7.2. and 3.7.3.)

The Terrestrial Code Commission examined the comments of countries and the work done by the Animal Welfare Working Group to refine the draft guidelines for the transport of animals by sea and land including substantial modification to the presentation. The Terrestrial Code Commission noted a recommendation from a Member Country to develop more specific guidance on the transport of poultry and agreed that such work could be undertaken in future. However, this would depend on the priority afforded to other tasks currently before the OIE and the availability of resources to carry out the high priority work items.

The revised Appendices, which are presented at [Appendices XXII and XXIII](#), are circulated among Member Countries for comment.

### b) Report of the OIE Working Group on Animal Welfare

The Terrestrial Code Commission noted the report of the Working Group on Animal Welfare, including some outstanding work in the guidelines on animal slaughter and killing for disease control purposes. The Terrestrial Code Commission endorsed the priorities identified by the Working Group including on the development of guidelines on the humane management of stray dogs, the use of laboratory animals in research and on animal production, housing and management. The report of the fifth meeting of the Working Group on Animal Welfare is presented at [Appendix XXVII](#) for information.

## 21. Revision of the structure of the *Terrestrial Code*

The Terrestrial Code Commission agreed to a recommendation from the International Trade Department that, based on the quantity of material and technical considerations, the printed version of the *Terrestrial Code* should be divided into two separate volumes. The International Trade Department recommended that one volume contain horizontal chapters (i.e. all of Part 1 plus some information from Parts 3 and 4, including guidelines on animal welfare). The International Trade Department recommended that the second volume contain specific disease chapters together with appendices relevant to specific diseases (including guidelines on surveillance, inactivation of specified pathogens, risk analysis for specified diseases). A table showing the proposed distribution of current *Terrestrial Code* chapters and appendices in the proposed new format appears in [Appendix XXIX](#) for the information of Member Countries.

## 22. Meeting with the Aquatic Animal Health Standards Commission

The Terrestrial Code Commission held a short meeting with the Aquatic Animals Commission to discuss issues of mutual interest, including: the future structure of the *Terrestrial Code* (the need to divide the *Terrestrial Code* into two volumes and the possibility of combining horizontal chapters of the *Terrestrial* and *Aquatic Codes*), harmonisation of terms and horizontal themes, animal welfare recommendations and exchange of information, including documents.

## 23. Future Work Programme

The Terrestrial Code Commission expressed its satisfaction with the proposal by the Scientific Commission to convene an *ad hoc* Group to review new scientific information and experience of managing rinderpest in the field in order to update the chapter. The Terrestrial Code Commission considered this information to be of urgent priority to modify the OIE pathway to eradicate this disease. On receipt of the report of the Scientific Commission, the Terrestrial Code Commission anticipates being able to review the chapter at its March meeting.

The Terrestrial Code Commission reviewed progress on the work programme agreed at its September 2005 meeting, including comments received from Member Countries on the work programme.

The Terrestrial Code Commission discussed the repeated request from Member Countries to establish a *Terrestrial Code* chapter on the small hive beetle. A draft chapter and supporting documents are currently with the Scientific Commission awaiting review. The Terrestrial Code Commission agreed to expedite work on this request as soon as it receives advice from the Scientific Commission.

A Member Country suggested that, further to planned work on the inactivation of *B. anthracis*, the OIE should develop guidelines on methods for the inactivation of agents of important zoonotic diseases, such as toxoplasmosis, brucellosis and leptospirosis. The Terrestrial Code Commission referred this request to the Working Group on Animal Production Food Safety.

Some other Member Countries' comments that related to disease reporting arrangements were referred to the Information Department.

The updated work programme is shown in [Appendix XXIV](#) for the comments of Member Countries.

## 24. Others

The next meeting of the Terrestrial Code Commission is scheduled for 12 to 16 March 2007.

### B. REPORTS OF WORKING GROUPS AND *AD HOC* GROUPS

The following reports are presented to Member Countries for information:

- *Ad hoc* Group on Identification and Traceability of Live Animals ([Appendix XXV](#))
- *Ad hoc* Group on the Revision of the OIE Model Certificates ([Appendix XXVI](#))
- Animal Welfare Working Group ([Appendix XXVII](#))

### C. OTHER DOCUMENTS

The following documents are presented to Member Countries for information:

- Supporting document of the *Terrestrial Code* Chapter on BSE (edition 2006) (Appendix XXVIII)
  - Plan of the division of the *Terrestrial Code* into two volumes (Appendix XXIX)
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.../Appendices

**MEETING OF THE OIE TERRESTRIAL ANIMAL  
HEALTH STANDARDS COMMISSION**

**Paris, 2-13 October 2006**

**List of Participants**

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**MEETING OF THE OIE TERRESTRIAL ANIMAL  
HEALTH STANDARDS COMMISSION**

*Paris, 2-13 October 2006*

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**Adopted agenda**

**A. EXAMINATION OF MEMBER COUNTRIES' COMMENTS AND  
WORK OF RELEVANT EXPERT GROUPS**

- Item 1** General definitions (Chapter 1.1.1.)
- Item 2** Evaluation of Veterinary Services
  - a) Evaluation of Veterinary Services (Chapter 1.3.3.)
  - b) *Performance, Vision and Strategy Instrument*
- Item 3** Zoning and Compartmentalisation
  - a) Zoning and compartmentalisation (Chapter 1.3.5.)
  - b) Practical biosecurity guidelines for avian influenza
- Item 4** International transfer of pathogens (Chapter 1.4.5.)
- Item 5** Rabies (Chapter 2.2.5.)
- Item 6** Paratuberculosis (Chapter 2.2.6.)
- Item 7** Foot and mouth disease
  - a) Foot and mouth disease (Chapter 2.2.10.)
  - b) Guidelines for surveillance of foot and mouth disease (Appendix 3.8.4.)
- Item 8** Bluetongue
  - a) Bluetongue (Chapter 2.2.13.)
  - b) Bluetongue surveillance
- Item 9** Bovine brucellosis (Chapter 2.3.1.)
- Item 10** Bovine spongiform encephalopathy
  - a) Risk assessment recommendations (Appendix 3.8.5.)
  - b) BSE (Chapter 2.3.13.)

Appendix II (contd)

- c) **Surveillance for BSE (Appendix 3.8.4.)**
  - d) **Supporting document**
- Item 11 Equine influenza (Chapter 2.5.5.)**
- Item 12 Equine diseases (other than equine influenza)**
- a) **Equine infectious anaemia (Chapter 2.5.4.)**
  - b) **Equine piroplasmosis (Chapter 2.5.6.)**
  - c) **Equine rhinopneumonitis (Chapter 2.5.7.)**
  - d) **Glanders (Chapter 2.5.8.)**
  - e) **Equine viral arteritis (Chapter 2.5.10.)**
- Item 13 Classical swine fever (Chapter 2.6.7.)**
- Item 14 Avian influenza**
- a) **Avian influenza (Chapter 2.7.12.)**
  - b) **Guidelines for the surveillance of avian influenza (Appendix 3.8.9.)**
  - c) **Guidelines for the inactivation of avian influenza virus (Appendix 3.6.5.)**
- Item 15 Bovine and small ruminant semen (Appendix 3.2.1.)**
- Item 16 Animal identification and traceability**
- a) **Animal identification and traceability (Appendix 3.5.1.)**
  - b) **Guidelines for traceability**
  - c) **Animal identification and traceability *ad hoc* Group work**
- Item 17 Disposal of dead animals (Appendix 3.6.6.)**
- Item 18 Ante-mortem and post-mortem inspection (Appendix 3.10.1.)**
- Item 19 Ad hoc Group on the revision of the OIE Model Certificate**
- Item 20 Animal welfare**
- a) **Guidelines for the transport of animals by sea and land**
  - b) **Report of the OIE Working Group on Animal Welfare**

**B. OTHER ISSUES**

- Item 21** Revision of the structure of the Terrestrial Code
  - Item 22** Meeting with the OIE Aquatic Animal Health Standards Commission
  - Item 23** Future work programme
  - Item 24** Others
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## CHAPTER 1.1.1.

## GENERAL DEFINITIONS

***Animal handler***

means a person with a knowledge of the behaviour and needs of *animals* ~~who~~ which, with appropriate experience and a professional and positive response to an *animal's* needs, ~~results in~~ can achieve effective management and good welfare. ~~Their competence should be demonstrated through independent assessment and certification from the Competent Authority or from an independent body accredited by the Competent Authority. (under study)~~ Competence should be gained through formal training and/or practical experience.

***Competent Authority***

means the *Veterinary Services*, Authority or other Governmental Authority of a Member Country, having the responsibility and competence for ensuring or supervising the implementation of the animal health measures ~~or~~ and other standards and guidelines in the *Terrestrial Code* in the entire territory of the country.

***Veterinary Administration***

~~means the governmental *Veterinary Service* having authority in the whole country for implementing the animal health measures and international veterinary certification process which the OIE recommends, and supervising or auditing their application.~~

***Veterinary Authority***

~~means a *Veterinary Service*, under the authority of the *Veterinary Administration*, which is directly responsible for the application of animal health measures in a specified area of the country. It may also have responsibility for the issuing or the supervision of the issuing of *international veterinary certificates* in that area.~~

means the Governmental Authority of a Member Country, comprising veterinarians, other professionals and para-professionals, having the responsibility and competence for ensuring or supervising the implementation of animal health measures and other standards and guidelines in the *Terrestrial Code* in the entire territory of the country.

***Veterinary Service(s)***

~~means the *Veterinary Administration*, all the *Veterinary Authorities*, and all persons authorised, registered or licensed by the veterinary statutory body.~~

means the infrastructure comprising the governmental and non-governmental organisations that deliver animal health measures and other standards and guidelines in the *Terrestrial Code* in the entire territory of the country. The *Veterinary Services* are under the overall control and direction of the *Veterinary Authority*. Private sector organisations are normally accredited or approved to deliver functions by the *Veterinary Authority*.

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## CHAPTER 1.3.5.

**ZONING AND COMPARTMENTALISATION**

(Definition) once adopted, this will move to Chapter 1.1.1.

**Biosecurity plan**

means a plan that identifies potential pathways for the introduction and spread of disease in a zone or compartment, and describes the measures which are being or will be applied to mitigate the disease risks in accordance, when applicable, with the recommendations in the Terrestrial Code. The plan also describes how these measures are audited to ensure that the risks are regularly re-assessed and the measures adjusted accordingly.

Article 1.3.5.1.

**Introduction**

For the purposes of the *Terrestrial Code*, ‘zoning’ and ‘regionalisation’ have the same meaning.

Given the difficulty of establishing and maintaining a *disease* free status for an entire country, especially for *diseases* the entry of which is difficult to control through measures at national boundaries, there may be benefits to a Member Countries in establishing and maintaining a *subpopulation* with a ~~different distinct~~ animal health status within ~~national boundaries~~ its territory. *Subpopulations* may be separated by natural or artificial geographical barriers or, in certain situations, ~~animal industries~~ by the application of appropriate management systems, ~~including biosecurity management~~.

Zoning and compartmentalisation are procedures implemented by a country under the provisions of this chapter with a view to defining *subpopulations* of ~~different distinct~~ animal health status within its territory for the purpose of *disease* control and/or *international trade*. Compartmentalisation applies to a *subpopulation* when management ~~practices systems~~ related to biosecurity are the defining factors applied, while zoning applies when a *subpopulation* is defined on a geographical basis. In practice, spatial considerations and good management play important roles in the application of both concepts.

This chapter is to assist OIE Member Countries wishing to establish and maintain different *subpopulations* within their national borders using the principles of compartmentalisation and zoning. These principles should be applied in accordance with the measures recommended in the relevant *disease* chapter(s). ~~† This chapter~~ also outlines a process through which for trading partners to follow in achieving recognition of may recognise such *subpopulations*. ~~These procedures are~~ This process is best implemented by trading partners through establishing parameters and gaining agreement on the necessary measures prior to *disease outbreaks*.

Before trade in *animals* or their products may occur, an *importing country* needs to be satisfied that its *animal health status* will be appropriately protected. In most cases, the import regulations developed will rely in part on judgements made about the effectiveness of sanitary procedures undertaken by the *exporting country*, both at its borders and within its territory.

#### Appendix IV (contd)

~~The benefits of~~ As well as contributing to the safety of *international trade*, zoning and compartmentalisation may include a contribution to assist disease control or eradication within Member Countries, and to the safety of *international trade*. Zoning may encourage the more efficient use of resources within certain parts of a country to allow trade in certain commodities from that zone in accordance with the *Terrestrial Code*. and compartmentalisation may allow safe trade due to the functional separation of a *subpopulation* from other domestic or wild animals through biosecurity measures, which a *zone* (through geographical separation) would not achieve. Following a *disease outbreak*, compartmentalisation may be able to take advantage of epidemiological links among subpopulations or common practices relating to biosecurity, despite diverse geographical locations, to facilitate disease control and/or the resumption of trade.

Zoning and compartmentalisation cannot be applied to all diseases but separate requirements will be developed for each disease for which the application of zoning or compartmentalisation is considered appropriate.

To regain free status following a disease outbreak in a zone or compartment, Member Countries should follow the recommendations in the relevant disease chapter in the *Terrestrial Code*.

Article 1.3.5.2.

#### **General considerations**

The *Veterinary Services* of an *exporting country* which is establishing a *zone* or *compartment* within its territory for *international trade* purposes should clearly define the *subpopulation* in accordance with the ~~measures stipulated~~ recommendations in the relevant chapters in the *Terrestrial Code*, including those on surveillance, and the identification and traceability of live animals. ~~The *Veterinary Services* of an *exporting country* and~~ should be able to explain to the *Veterinary Services* of an *importing country* the basis for its claim of a distinct *animal health status* for the *zone* or *compartment* in such terms.

The procedures used to establish and maintain the distinct *animal health status* of a *zone* or *compartment* should be appropriate to the particular circumstances, and will depend on the epidemiology of the *disease*, environmental factors and applicable biosecurity measures ~~(including movement controls, use of natural and artificial boundaries, commercial management and husbandry practices), and surveillance and monitoring.~~

The authority, organisation and infrastructure of the *Veterinary Services*, including laboratories, must be clearly documented in accordance with the chapter on the evaluation of *Veterinary Services* of the *Terrestrial Code*, to provide confidence in the integrity of the *zone* or *compartment*. The final authority of the *zone* or *compartment*, for the purposes of domestic and international trade, lies within the *Veterinary Administration*.

The *exporting country* should be able to demonstrate, through detailed documentation published through official channels, that it has implemented the ~~measures stipulated~~ recommendations in the *Terrestrial Code* for establishing and maintaining such a *zone* or *compartment*.

An *importing country* should recognise the existence of this *zone* or *compartment* when the appropriate measures recommended in the *Terrestrial Code* are applied and the *Veterinary Administration* of the *exporting country* certifies that this is the case.

## Appendix IV (contd)

The exporting country should conduct an assessment of the resources needed and available to establish and maintain a zone or compartment for international trade purposes. These include the human and financial resources, and the technical capability of the Veterinary Services (and of the relevant industry, in the case of a compartment) including disease surveillance and diagnosis.

Biosecurity and surveillance are essential components of zoning and compartmentalization and the arrangements should be developed through cooperation of industry and Veterinary Services.

Industry's responsibilities in most cases include the application of biosecurity measures, quality assurance schemes, monitoring the efficacy of the measures, documenting corrective actions, conducting surveillance, rapid reporting and maintenance of records in a readily accessible form.

The Veterinary Services should provide movement certification, periodic inspections of facilities, biosecurity measures, records and surveillance procedures. Veterinary Services should audit surveillance and reporting and conduct or oversee laboratory diagnostic examinations.

## Article 1.3.5.3.

**Prerequisite considerations in defining a zone or compartment**

~~The exporting country should conduct an assessment of the resources needed and available to establish and maintain a zone or compartment for international trade purposes. These include the human and financial resources, and the technical capability of the Veterinary Services (and of the relevant industry, in the case of a compartment).~~

## Article 1.3.5.4.

**Principles for defining a zone or compartment**

In conjunction with the above considerations, the following principles should apply when Member Countries defining a zone or a compartment should be based on the application of the following principles:

1. The extent of a zone and its geographical limits should be established by the *Veterinary Administration* on the basis of natural, artificial and/or legal boundaries, and made public through official channels.
2. ~~The requirements regarding~~ factors defining a compartment should be established by the *Veterinary Administration* on the basis of relevant criteria such as ~~biosecurity~~ biosecurity management and husbandry practices related to biosecurity, and made public through official channels.
3. Animals and herds belonging to such *subpopulations* need to be ~~clearly~~ recognisable as such through a clear epidemiological separation from other animals and all things presenting a *disease* risk. For a zone or compartment, the *Veterinary Administration* ~~must~~ should document in detail the measures taken to ensure the identification of the *subpopulation* and the ~~recognition~~ establishment and maintenance of its *animal health status* through a *biosecurity plan*. The ~~procedures~~ measures used to establish and maintain the distinct *animal health status* of a zone or compartment should be appropriate to the particular circumstances, and will depend on the epidemiology of the *disease*, environmental factors, the *animal health status* of animals in adjacent areas, applicable biosecurity measures (including movement controls, use of natural and artificial boundaries, the spatial separation of animals, and commercial management and husbandry practices), and surveillance.

Appendix IV (contd)

4. The existence of a valid animal traceability system is a prerequisite to assess the integrity of the *zone* or *compartment*. Animals within the *zone* or *compartment* should be identified in such a way that their history can be audited. Depending on the system of production, identification may be done at the herd, flock lot or individual animal level. All animal movements into and out of the *zone* or *compartment* should be well documented, controlled and supervised.
5. For a *compartment*, the *biosecurity plan* should describe the partnership between the relevant enterprise/industry and the *Veterinary Administration*, and their respective responsibilities. It should also describe the routine operating procedures to provide clear evidence that the surveillance conducted, the live animal identification and traceability system, and the management practices are adequate to meet the definition of the *compartment*. In addition to information on animal movement controls, the plan should include herd or flock production records, feed sources, surveillance results, birth and death records, visitor logbook, morbidity and mortality history, medications, vaccinations, documentation of training and any other criteria necessary for evaluation of risk mitigation. The information required may vary according to the species and *disease(s)* under consideration. The *biosecurity plan* should also describe how the measures will be audited to ensure that the risks are regularly re-assessed and the measures adjusted accordingly.
6. ~~Thus defined, the *zones* and *compartments* constitute the relevant *subpopulations* for the application of the recommendations in Part 2 of the *Terrestrial Code*.~~

Article 1.3.5.5.

**Sequence of steps to be taken in defining establishing a zone/compartment and having it recognised for international trade purposes**

There is no single sequence of steps which ~~must~~ should be followed in ~~defining~~ establishing a *zone* or a *compartment*. The steps that the *Veterinary Services* of the *importing country* and the *exporting country* choose and implement will generally depend on the circumstances existing within ~~a~~ the countries ~~and~~ at ~~its~~ their borders, and their trading history. The recommended steps are:

1. For zoning
  - a) The *exporting country* identifies a geographical area within its territory, which it considers to contain an animal *subpopulation* with a distinct *health status* with respect to a specific *disease*/specific *diseases*, based on surveillance ~~and monitoring~~.
  - b) The *exporting country* ~~identifies~~ describes in the *biosecurity plan* for the *zone* the ~~procedures~~ measures which are being, or ~~could~~ will be, ~~employed~~ applied to distinguish such an area epidemiologically from other parts of its territory, in accordance with the ~~measures stipulated~~ recommendations in the *Terrestrial Code*.
  - c) The *exporting country* provides the above information ~~above~~ to the *importing country*, ~~and explains that~~ with an explanation of why the area can be treated as an epidemiologically separated zone for *international trade* purposes.

## Appendix IV (contd)

- d) The *importing country* determines whether it ~~may~~ accepts such an area as a *zone* for the importation of *animals* and animal products, taking into account:
- i) an evaluation of the *exporting country's Veterinary Services*;
  - ii) the result of a *risk assessment* based on the information provided by the *exporting country* and its own research;
  - iii) its own animal health situation with respect to the *disease(s)* concerned; and
  - iv) other relevant OIE standards.
- e) The *importing country* notifies the *exporting country* of the result of its determination and the underlying reasons, within a reasonable period of time, being ~~either~~:
- i) recognition of the *zone*; or
  - ii) request for further information; or
  - iii) rejection of the area as a *zone* for *international trade* purposes.
- f) An attempt should be made to resolve any differences over the definition of the *zone*, either in the interim or finally, by using an agreed mechanism to reach consensus (such as the OIE in-house procedure for settlement of disputes (Article 1.3.1.3.) settlement mechanism).
- g) The Veterinary Administrations of the importing country and the *exporting country* ~~may~~ should enter into a formal agreement ~~defining~~ recognizing the *zone*.

2. For compartmentalisation

- a) Based on discussions with the relevant enterprise/industry, the *exporting country* identifies within its territory a compartment of one or more *establishments* or other premises owned by an enterprise(s) which operates under a common ~~biosecurity~~ management system practices related to biosecurity, and which ~~it considers~~ contains an identifiable animal *subpopulation* with a distinct animal health status with respect to a specific *disease/specific diseases*; ~~and the exporting country describes how that~~ this status is maintained through a partnership between the relevant enterprise/industry and the *Veterinary Services* of the *exporting country*.
- b) The *exporting country* examines the compartment's 'biosecurity plan management manual' produced by the enterprise/industry for such *establishment(s)*, and confirms through an audit that:
- i) ~~such establishment(s) the compartment~~ is(are) epidemiologically closed throughout its routine operating procedures as a result of effective implementation of its 'biosecurity plan management manual'; and
  - ii) the surveillance and monitoring programme in place is appropriate to verify the ~~free~~ status of such *establishment(s)* with respect to such *disease(s)*.

Appendix IV (contd)

- c) The *exporting country* ~~identifies~~ describes the ~~such an enterprise to be a free compartment,~~ in accordance with the ~~measures stipulated~~ recommendations in the *Terrestrial Code*.
- d) The *exporting country* provides the above information ~~above~~ to the *importing country*, ~~and explains that~~ with an explanation of why such an enterprise can be treated as an epidemiologically separated *compartment* for international trade purposes.
- e) The *importing country* determines whether it ~~may~~ accepts such an enterprise as a *compartment* for the importation of animals and animal products, taking into account:
- i) an evaluation of the *exporting country's Veterinary Services*;
  - ii) the result of a *risk assessment* based on the information provided by the *exporting country* and its own research;
  - iii) its own animal health situation with respect to the *disease(s)* concerned; and
  - iv) other relevant OIE standards.
- f) The *importing country* notifies the *exporting country* of the result of its examination and the underlying reasons, within a reasonable period of time, being ~~either~~:
- i) recognition of the *compartment*; or
  - ii) request for further information; or
  - iii) rejection of such an enterprise as a *compartment* for international trade purposes.
- g) An attempt should be made to resolve any differences over the definition of the *compartment*, either in the interim or finally, by using an agreed mechanism to reach consensus (such as the OIE in-house procedure for settlement of disputes (Article 1.3.1.3.) ~~settlement mechanism~~).
- h) The *Veterinary Administrations of the importing country* and the *exporting country* ~~may~~ should enter into a formal agreement ~~defining~~ recognizing the *compartment*.

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## CHAPTER 2.2.5.

**RABIES**

## Article 2.2.5.1.

For the purposes of the *Terrestrial Code*, the *incubation period* for rabies shall be 6 months, and the *infective period* in domestic carnivores starts 15 days before the onset of the first clinical signs and ends when the animal dies.

Standards for diagnostic tests and vaccines are described in the *Terrestrial Manual*.

## Article 2.2.5.2.

**Rabies free country**

A country may be considered free from rabies when:

1. the disease is notifiable;
2. an effective system of disease surveillance is in operation;
3. all regulatory measures for the prevention and control of rabies have been implemented including effective importation procedures;
4. no *case* of indigenously acquired rabies infection has been confirmed in man or any animal species during the past 2 years; however, this status would not be affected by the isolation of a European Bat Lyssavirus (EBL1 or EBL2);
5. no imported case in carnivores has been confirmed outside a *quarantine station* for the past 6 months.

## Article 2.2.5.3.

When importing from rabies free countries, *Veterinary Administrations* should require:

for domestic mammals, and wild mammals reared under confined conditions

the presentation of an *international veterinary certificate* attesting that the animals:

1. showed no clinical sign of rabies on the day of shipment;
2. were kept since birth or for the 6 months prior to shipment in a rabies free country or were imported in conformity with the regulations stipulated in Articles 2.2.5.5., 2.2.5.6. or 2.2.5.7.

## Article 2.2.5.4.

When importing from rabies free countries, *Veterinary Administrations* should require:

for wild mammals not reared under confined conditions

the presentation of an *international veterinary certificate* attesting that the animals:

Appendix V (contd)

1. showed no clinical sign of rabies on the day of shipment;
2. have been captured in a rabies free country, at a sufficient distance from any infected country. The distance should be defined according to the species exported and the reservoir species in the infected country.

## Article 2.2.5.5.

When importing from countries considered infected with rabies, *Veterinary Administrations* should require:

for dogs and cats

the presentation of an *international veterinary certificate* attesting that the animals:

1. showed no clinical sign of rabies within 48 hours of shipment;

AND EITHER

2. were vaccinated against rabies:
  - a) not less than 6 months and not more than one year prior to shipment in the case of a primary vaccination, which should have been carried out when the animals were at least 3 months old;
  - b) not more than one year prior to shipment in the case of a booster vaccination;
  - c) with an inactivated virus vaccine or with a recombinant vaccine expressing the rabies virus protein;
3. were identified by a permanent mark (including a microchip) before the vaccination (their identification number shall be stated in the certificate);
4. were subjected not less than 3 months and not more than 24 months prior to shipment to an antibody test as prescribed in the *Terrestrial Manual* with a positive result equivalent to at least 0.5 IU/ml;

OR

5. have not been vaccinated against rabies or do not meet all the conditions set out in points 1), 2), 3) and 4) above; in such cases, the *importing country* may require the placing of the animals in a *quarantine station* located on its territory, in conformity with the conditions stipulated in its animal health legislation.

## Article 2.2.5.6.

When importing from countries considered infected with rabies, *Veterinary Administrations* should require:

for domestic ruminants, equines and pigs

the presentation of an *international veterinary certificate* attesting that the animals:

1. showed no clinical sign of rabies on the day of shipment;

Appendix V (contd)

2. were kept for the 6 months prior to shipment in an *establishment* where separation from wild and feral animals was maintained and where no *case* of rabies was reported for at least 12 months prior to shipment.

## Article 2.2.5.7.

When importing from countries considered infected with rabies, *Veterinary Administrations* should require:

for laboratory reared rodents and lagomorphs, and lagomorphs or wild mammals (other than non-human primates) reared under confined conditions

the presentation of an *international veterinary certificate* attesting that the animals:

1. showed no clinical sign of rabies on the day of shipment;
2. were kept since birth, or for the 12 months prior to shipment, in an *establishment* where no *case* of rabies was reported for at least 12 months prior to shipment.

## Article 2.2.5.8.

When importing from countries considered infected with rabies, *Veterinary Administrations* should require:

for wild mammals not belonging to the orders of primates or carnivores and not reared under confined conditions

the presentation of an *international veterinary certificate* attesting that the animals:

1. showed no clinical sign of rabies on the day of shipment;
2. were kept in a *quarantine station* for the 6 months prior to shipment.

## Article 2.2.5.9.

When importing from countries considered infected with rabies, *Veterinary Administrations* should require:

for frozen semen of dogs

the presentation of an *international veterinary certificate* attesting that the donor animals showed no clinical sign of rabies during the 15 days following collection of the semen.



## CHAPTER 2.2.10.

**FOOT AND MOUTH DISEASE**

(Definition) once adopted, this will move to Chapter 1.1.1.

**Containment zone**

means a defined zone around and including suspected or infected establishments, taking into account the epidemiological factors and results of investigations, where control measures to prevent the spread of the infection are applied.

## Article 2.2.10.1.

For the purposes of this *Terrestrial Code*, the *incubation period* for foot and mouth disease (FMD) shall be 14 days.

For the purposes of this Chapter, ruminants include animals of the family of Camelidae.

For the purposes of this Chapter, a *case* includes an animal infected with FMD virus (FMDV).

For the purposes of *international trade*, this Chapter deals not only with the occurrence of clinical signs caused by FMDV, but also with the presence of infection with FMDV in the absence of clinical signs.

The following defines the occurrence of FMDV infection:

1. FMDV has been isolated and identified as such from an animal or a product derived from that animal; or
2. viral antigen or viral RNA specific to one or more of the serotypes of FMDV has been identified in samples from one or more animals showing clinical signs consistent with FMD, or epidemiologically linked to a confirmed or suspected *outbreak* of FMD, or giving cause for suspicion of previous association or contact with FMDV; or
3. antibodies to structural or nonstructural proteins of FMDV that are not a consequence of vaccination, have been identified in one or more animals showing clinical signs consistent with FMD, or epidemiologically linked to a confirmed or suspected *outbreak* of FMD, or giving cause for suspicion of previous association or contact with FMDV.

Standards for diagnostic tests and vaccines are described in the *Terrestrial Manual*.

## Article 2.2.10.2.

**FMD free country where vaccination is not practised**

Susceptible animals in the FMD free country should be separated from neighbouring infected countries by a buffer zone, or physical or geographical barriers, and animal health measures that effectively prevent the entry of the virus should be implemented.

Appendix VI (contd)

To qualify for inclusion in the existing list of FMD free countries where vaccination is not practised, a country should:

1. have a record of regular and prompt animal disease reporting;
2. send a declaration to the OIE stating that:
  - a) there has been no *outbreak* of FMD during the past 12 months;
  - b) no evidence of FMDV infection has been found during the past 12 months;
  - c) no vaccination against FMD has been carried out during the past 12 months;
  - d) no vaccinated animal has been introduced since the cessation of vaccination;

and

3. supply documented evidence that:
  - a) surveillance for both FMD and FMDV infection in accordance with Appendix 3.8.7. is in operation; ~~and that~~
  - b) regulatory measures for the prevention and control of FMD have been implemented;
- ~~3. not have imported since the cessation of vaccination any animals vaccinated against FMD.~~

The country will be included in the list only after the submitted evidence has been accepted by the OIE.

The information required in points 2 and 3a) above, should be submitted annually to the OIE.

Article 2.2.10.3.

### **FMD free country where vaccination is practised**

Susceptible animals in the FMD free country where vaccination is practiced should be separated from neighbouring infected countries by a *buffer zone*, or physical or geographical barriers, and animal health measures that effectively prevent the entry of the virus should be implemented.

To qualify for inclusion in the list of FMD free countries where vaccination is practised, a country should:

1. have a record of regular and prompt animal disease reporting;
2. send a declaration to the OIE that there has been no *outbreak* of FMD for the past 2 years and no evidence of FMDV circulation for the past 12 months, with documented evidence that:
  - a) surveillance for FMD and FMDV circulation in accordance with Appendix 3.8.7. is in operation, and that regulatory measures for the prevention and control of FMD have been implemented;

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- b) routine vaccination is carried out for the purpose of the prevention of FMD;
- c) the vaccine used complies with the standards described in the *Terrestrial Manual*.

The country will be included in the list only after the submitted evidence has been accepted by the OIE.

The information required in point 2 above, should be submitted annually to the OIE.

If an FMD free country where vaccination is practised wishes to change its status to FMD free country where vaccination is not practised, the country should wait for 12 months after vaccination has ceased then notify the OIE and provide evidence showing that FMDV circulation has not occurred during that period.

Article 2.2.10.4.

### **FMD free zone where vaccination is not practised**

An FMD free zone where vaccination is not practised can be established in either an FMD free country where vaccination is practised or in a country of which parts are infected. In defining such zones the principles of Chapter 1.3.5. should be followed. Susceptible animals in the FMD free zone should be separated from the rest of the country ~~if infected~~, and from neighbouring ~~infected~~ countries, if of a different health status, by a *buffer zone*, or physical or geographical barriers, and ~~A~~ animal health measures that effectively prevent the entry of the virus should be implemented. A country in which an FMD free zone where vaccination is not practised is to be established should:

1. have a record of regular and prompt animal disease reporting;
2. send a declaration to the OIE stating that it wishes to establish an FMD free zone where vaccination is not practised and that within the proposed FMD free zone:
  - a) there has been no *outbreak* of FMD during the past 12 months;
  - b) no evidence of FMDV infection has been found during the past 12 months;
  - c) no vaccination against FMD has been carried out during the past 12 months;
  - d) no vaccinated animal has been introduced into the zone since the cessation of vaccination, except in accordance with Article 2.2.10.8.;
3. supply documented evidence that surveillance for both FMD and FMDV infection in accordance with Appendix 3.8.7. is in operation in the proposed FMD free zone where vaccination is not practised;
4. describe in detail:
  - a) regulatory measures for the prevention and control of both FMD and FMDV infection,
  - b) the boundaries of the proposed FMD free zone and, if applicable, the *buffer zone* or physical or geographical barriers,

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- c) the system for preventing the entry of the virus (including the control of the movement of susceptible animals) into the proposed FMDV free zone (in particular if the procedure described in Article 2.2.10.8. is implemented),

and supply documented evidence that these are properly implemented and supervised.

The proposed free zone will be included in the list of FMD free zones where vaccination is not practiced only after the submitted evidence has been accepted by the OIE.

The information required in points 2, 3 and 4 c) above should be submitted annually as well as any relevant changes under points 4 a) and b).

Article 2.2.10.5.

**FMD free zone where vaccination is practised**

An FMD free zone where vaccination is practised can be established in either an FMD free country where vaccination is not practised or in a country of which parts are infected. In defining such zones the principles of Chapter 1.3.5. should be followed. Susceptible animals in the FMD free zone where vaccination is practised should be separated from the rest of the country, ~~if infected,~~ and from neighbouring ~~infected~~ countries, if of a different health status, by a *buffer zone*, or physical or geographical barriers, and ~~A~~ animal health measures that effectively prevent the entry of the virus should be implemented.

A country in which an FMD free zone where vaccination is practised is to be established should:

1. have a record of regular and prompt animal disease reporting;
2. send a declaration to the OIE that it wishes to establish an FMD free zone where vaccination is practised, where there has been no *outbreak* of FMD for the past 2 years and no evidence of FMDV circulation for the past 12 months, with documented evidence that surveillance for FMD and FMDV circulation in accordance with Appendix 3.8.7. is in operation in the proposed FMD free zone;
3. supply documented evidence that the vaccine used complies with the standards described in the *Terrestrial Manual*;
4. describe in detail:
  - a) regulatory measures for the prevention and control of both FMD and FMDV circulation,
  - b) the boundaries of the proposed FMD free zone where vaccination is practised and, if applicable, the *buffer zone* or physical or geographical barriers,
  - c) the system for preventing the entry of the virus into the proposed FMD free zone (in particular if the procedure described in Article 2.2.10.8. is implemented),

and supply evidence that these are properly implemented and supervised;

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5. ~~supply documented evidence that it has a system of intensive and frequent surveillance for FMD in the FMD free zone where vaccination is practised.~~

The proposed free zone will be included in the list of FMD free zones where vaccination is practised only after the submitted evidence has been accepted by the OIE. The information required in points 2, 3 and 4 c) above should be submitted annually as well as any relevant changes under points 4 a) and b).

If a country that has an FMD free zone where vaccination is practised wishes to change the status of the zone to FMD free zone where vaccination is not practised, a waiting period of 12 months after vaccination has ceased is required and evidence must be provided showing that FMDV infection has not occurred in the said zone during that period

Article 2.2.10.6.

### **FMD infected country or zone**

An FMD infected country is a country that does not fulfil the requirements to qualify as either an FMD free country where vaccination is not practised or an FMD free country where vaccination is practised.

An FMD infected zone is a *zone* that does not fulfil the requirements to qualify as either an FMD free zone where vaccination is not practised or an FMD free zone where vaccination is practised.

Article 2.2.10.6 (bis) (under study)

### **Establishment of a containment zone within an FMD free country or zone**

In the event of a limited outbreak within an FMD free country or zone with or without vaccination, a containment zone can be established for the purpose of minimizing the impact on the entire country or zone. For this to be achieved, the Veterinary Administration should provide documented evidence that:

1. the outbreak is limited based on the following factors:
  - a) immediately on suspicion, a rapid response including notification has been made;
  - b) standstill of animal movements has been imposed;
  - c) epidemiological investigation (trace-back, trace-forward) has been completed;
  - d) a single “containment zone” has been defined;
  - e) the infection has been confirmed;
  - f) the primary case and its source have been identified;
  - g) all cases have been shown to be epidemiologically linked and are within the “containment zone”;
2. surveillance, in accordance with Appendix 3.8.7., demonstrates that there are no undetected cases in the “containment zone”;
3. a stamping-out policy has been applied;

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4. increased passive and targeted surveillance in accordance with Appendix 3.8.7. in the rest of the country or zone has been carried out and has not detected any evidence of infection;
5. measures to prevent spread of the infection from the *containment zone* to the rest of the country or zone, including ongoing surveillance in the *containment zone*, are in place.

The free status of the areas outside the *containment zone* would be suspended pending the establishment of the *containment zone*. The suspension of free status of these areas could be lifted irrespective of the provisions of Article 2.2.10.7., once the containment zone is clearly established, by complying with points 1 to 5 above.

The recovery of the FMD free status of the *containment zone* should follow the provisions of Article 2.2.10.7.

## Article 2.2.10.7.

**Recovery of free status**

1. When an FMD *outbreak* or FMDV infection occurs in an FMD free country or zone where vaccination is not practised, one of the following waiting periods is required to regain the status of FMD free country or zone where vaccination is not practised:
  - a) 3 months after the last *case* where a *stamping-out policy* and serological surveillance are applied in accordance with Appendix 3.8.7.; or
  - b) 3 months after the slaughter of all vaccinated animals where a *stamping-out policy*, emergency vaccination and serological surveillance are applied in accordance with Appendix 3.8.7.; or
  - c) 6 months after the last *case* or the last vaccination (according to the event that occurs the latest), where a *stamping-out policy*, emergency vaccination not followed by the slaughtering of all vaccinated animals, and serological surveillance are applied in accordance with Appendix 3.8.7., provided that a serological survey based on the detection of antibodies to nonstructural proteins of FMDV demonstrates the absence of infection in the remaining vaccinated population.

Where a *stamping-out policy* is not practised, the above waiting periods do not apply, and Article 2.2.10.2. or 2.2.10.4. applies.

2. When an FMD *outbreak* or FMDV infection occurs in an FMD free country or zone where vaccination is practised, one of the following waiting periods is required to regain the status of FMD free country or zone where vaccination is practised:
  - a) 6 months after the last *case* where a *stamping-out policy*, emergency vaccination and serological surveillance in accordance with Appendix 3.8.7. are applied, provided that the serological surveillance based on the detection of antibodies to nonstructural proteins of FMDV demonstrates the absence of virus circulation; or
  - b) 18 months after the last *case* where a *stamping-out policy* is not applied, but emergency vaccination and serological surveillance in accordance with Appendix 3.8.7. are applied, provided that the serological surveillance based on the detection of antibodies to nonstructural proteins of FMDV demonstrates the absence of virus circulation.

## Article 2.2.10.8.

**Transfer directly to slaughter of FMD susceptible animals from an infected zone to a free zone within a country**

FMD susceptible animals should only leave the infected zone if moved by mechanised transport to the nearest designated *abattoir* located in the *buffer zone* directly to slaughter.

In the absence of an *abattoir* in the *buffer zone*, live FMD susceptible animals can be transported to the nearest *abattoir* in a free zone directly to slaughter only under the following conditions:

1. no FMD susceptible animal has been introduced into the *establishment* of origin and no animal in the *establishment* of origin has shown clinical signs of FMD for at least 30 days prior to movement;
2. the animals were kept in the *establishment* of origin for at least 3 months prior to movement;
3. FMD has not occurred within a 10-kilometre radius of the *establishment* of origin for at least 3 months prior to movement;
4. the animals must be transported under the supervision of the *Veterinary Authority* in a *vehicle*, which was cleansed and disinfected before *loading*, directly from the *establishment* of origin to the *abattoir* without coming into contact with other susceptible animals;
5. such an *abattoir* is not approved for the export of *fresh meat* during the time it is handling the meat of animals from the infected zone;
6. *vehicles* and the *abattoir* must be subjected to thorough cleansing and *disinfection* immediately after use.

All products obtained from the animals and any products coming into contact with them must be considered infected, and treated in such a way as to destroy any residual virus in accordance with Appendix 3.6.2.

Animals moved into a free zone for other purposes must be moved under the supervision of the *Veterinary Authority* and comply with the conditions in Article 2.2.10.11.

## Article 2.2.10.9.

When importing from FMD free countries where vaccination is not practised or FMD free zones where vaccination is not practised, *Veterinary Administrations* should require:

for FMD susceptible animals

the presentation of an *international veterinary certificate* attesting that the animals:

1. showed no clinical sign of FMD on the day of shipment;
2. were kept in an FMD free country or zone where vaccination is not practised since birth or for at least the past 3 months.
3. have not been vaccinated.

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## Article 2.2.10.10.

When importing from FMD free countries where vaccination is practised or from FMD free zones where vaccination is practised, *Veterinary Administrations* should require:

for domestic ruminants and pigs

the presentation of an *international veterinary certificate* attesting that the animals:

1. showed no clinical sign of FMD on the day of shipment;
2. were kept in an FMD free country or zone since birth or for at least the past 3 months; and
3. have not been vaccinated and were subjected, with negative results, to tests for antibodies against FMD virus, when destined to an FMD free country or zone where vaccination is not practised.

## Article 2.2.10.11.

When importing from FMD infected countries or zones, *Veterinary Administrations* should require:

for domestic ruminants and pigs

the presentation of an *international veterinary certificate* attesting that the animals:

1. showed no clinical sign of FMD on the day of shipment;
2. were kept in the *establishment* of origin since birth, or
  - a) for the past 30 days, if a *stamping-out policy* is in force in the *exporting country*, or
  - b) for the past 3 months, if a *stamping-out policy* is not in force in the *exporting country*,

and that FMD has not occurred within a ten-kilometre radius of the *establishment* of origin for the relevant period as defined in points a) and b) above; and

3. were isolated in an *establishment* for the 30 days prior to shipment, and all animals in isolation were subjected to diagnostic tests (probang and serology) for evidence of FMDV infection with negative results at the end of that period, and that FMD did not occur within a ten-kilometer radius of the *establishment* during that period; or
4. were kept in a *quarantine station* for the 30 days prior to shipment, all animals in quarantine were subjected to diagnostic tests (probang and serology) for evidence of FMDV infection with negative results at the end of that period, and that FMD did not occur within a ten-kilometre radius of the *quarantine station* during that period;
5. were not exposed to any source of FMD infection during their transportation from the *quarantine station* to the *place of shipment*.

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## Article 2.2.10.12.

When importing from FMD free countries where vaccination is not practised or FMD free zones where vaccination is not practised, *Veterinary Administrations* should require:

for fresh semen of domestic ruminants and pigs

the presentation of an *international veterinary certificate* attesting that:

1. the donor animals:
  - a) showed no clinical sign of FMD on the day of collection of the semen;
  - b) were kept in an FMD free country or zone where vaccination is not practised for at least 3 months prior to collection;
2. the semen was collected, processed and stored in conformity with the provisions of Appendix 3.2.1. or Appendix 3.2.2., as relevant.

## Article 2.2.10.13.

When importing from FMD free countries where vaccination is not practised or FMD free zones where vaccination is not practised, *Veterinary Administrations* should require:

for frozen semen of domestic ruminants and pigs

the presentation of an *international veterinary certificate* attesting that:

1. the donor animals:
  - a) showed no clinical sign of FMD on the day of collection of the semen and for the following 30 days;
  - b) were kept in an FMD free country or zone where vaccination is not practised for at least 3 months prior to collection;
2. the semen was collected, processed and stored in conformity with the provisions of Appendix 3.2.1. or Appendix 3.2.2., as relevant.

## Article 2.2.10.14.

When importing from FMD free countries where vaccination is practised or from FMD free zones where vaccination is practised, *Veterinary Administrations* should require:

for semen of domestic ruminants and pigs

the presentation of an *international veterinary certificate* attesting that:

1. the donor animals:
  - a) showed no clinical sign of FMD on the day of collection of the semen and for the following 30 days;

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- b) were kept in a country or zone free from FMD for at least 3 months prior to collection;
  - c) if destined to an FMD free country or zone where vaccination is not practised:
    - i) have not been vaccinated and were subjected, not less than 21 days after collection of the semen, to tests for antibodies against FMD virus, with negative results; or
    - ii) had been vaccinated at least twice, with the last vaccination not more than 12 and not less than one month prior to collection;
2. no other animal present in the *artificial insemination centre* has been vaccinated within the month prior to collection;
3. the semen:
- a) was collected, processed and stored in conformity with the provisions of Appendix 3.2.1. or Appendix 3.2.2., as relevant;
  - b) was stored in the country of origin for a period of at least one month following collection, and during this period no animal on the *establishment* where the donor animals were kept showed any sign of FMD.

Article 2.2.10.15.

When importing from FMD infected countries or zones, *Veterinary Administrations* should require:

for semen of domestic ruminants and pigs

the presentation of an *international veterinary certificate* attesting that:

- 1. the donor animals:
  - a) showed no clinical sign of FMD on the day of collection of the semen;
  - b) were kept in an *establishment* where no animal had been added in the 30 days before collection, and that FMD has not occurred within 10 kilometres for the 30 days before and after collection;
  - c) have not been vaccinated and were subjected, not less than 21 days after collection of the semen, to tests for antibodies against FMD virus, with negative results; or
  - d) had been vaccinated at least twice, with the last vaccination not more than 12 and not less than one month prior to collection;
- 2. no other animal present in the *artificial insemination centre* has been vaccinated within the month prior to collection;
- 3. the semen:
  - a) was collected, processed and stored in conformity with the provisions of Appendix 3.2.1. or Appendix 3.2.2., as relevant;

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- b) was subjected, with negative results, to a test for FMDV infection if the donor animal has been vaccinated within the 12 months prior to collection;
- c) was stored in the country of origin for a period of at least one month following collection, and during this period no animal on the *establishment* where the donor animals were kept showed any sign of FMD.

## Article 2.2.10.16.

Irrespective of the FMD status of the *exporting country* or *zone*, *Veterinary Administrations* should authorise without restriction on account of FMD the import or transit through their territory of *in vivo* derived embryos of cattle subject to the presentation of an *international veterinary certificate* attesting that the embryos were collected, processed and stored in conformity with the provisions of Appendix 3.3.1. or Appendix 3.3.3., as relevant.

## Article 2.2.10.17.

When importing from FMD free countries where vaccination is not practised or FMD free zones where vaccination is not practised, *Veterinary Administrations* should require:

for *in vitro* produced embryos of cattle

the presentation of an *international veterinary certificate* attesting that:

1. the donor females:
  - a) showed no clinical sign of FMD at the time of collection of the oocytes;
  - b) were kept in a country or zone free from FMD at the time of collection;
2. fertilisation was achieved with semen meeting the conditions referred to in Articles 2.2.10.12., 2.2.10.13., 2.2.10.14. or 2.2.10.15., as relevant;
3. the oocytes were collected, and the embryos were processed and stored in conformity with the provisions of Appendix 3.3.2. or Appendix 3.3.3., as relevant.

## Article 2.2.10.18.

When importing from FMD free countries where vaccination is practised or from FMD free zones where vaccination is practised, *Veterinary Administrations* should require:

for *in vitro* produced embryos of cattle

the presentation of an *international veterinary certificate* attesting that:

1. the donor females:
  - a) showed no clinical sign of FMD at the time of collection of the oocytes;
  - b) were kept in a country or zone free from FMD for at least 3 months prior to collection;

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- c) if destined for an FMD free country or zone where vaccination is not practised:
  - i) have not been vaccinated and were subjected, with negative results, to tests for antibodies against FMD virus, or
  - ii) had been vaccinated at least twice, with the last vaccination not less than one month and not more than 12 months prior to collection;
- 2. no other animal present in the *establishment* has been vaccinated within the month prior to collection;
- 3. fertilization was achieved with semen meeting the conditions referred to in Articles 2.2.10.12., 2.2.10.13., 2.2.10.14. or 2.2.10.15., as relevant;
- 4. the oocytes were collected, and the embryos were processed and stored in conformity with the provisions of Appendix 3.3.2. or Appendix 3.3.3., as relevant.

Article 2.2.10.19.

When importing from FMD free countries where vaccination is not practised or FMD free zones where vaccination is not practised, *Veterinary Administrations* should require:

for fresh meat of FMD susceptible animals

the presentation of an *international veterinary certificate* attesting that the entire consignment of meat comes from animals which:

- 1. have been kept in the FMD free country or zone where vaccination is not practised since birth, or which have been imported in accordance with Article 2.2.10.9., Article 2.2.10.10. or Article 2.2.10.11.;
- 2. have been slaughtered in an *approved abattoir* and have been subjected to ante-mortem and post-mortem inspections for FMD with favourable results.

Article 2.2.10.20.

When importing from FMD free countries where vaccination is practised or from FMD free zones where vaccination is practised, *Veterinary Administrations* should require:

for fresh meat of cattle and buffalo (*Bubalus bubalis*) (excluding feet, head and viscera)

the presentation of an *international veterinary certificate* attesting that the entire consignment of meat comes from animals which:

- 1. have been kept in the FMD free country or zone where vaccination is practised since birth, or which have been imported in accordance with Article 2.2.10.9., Article 2.2.10.10. or Article 2.2.10.11.;
- 2. have been slaughtered in an *approved abattoir* and have been subjected to ante-mortem and post-mortem inspections for FMD with favourable results.

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## Article 2.2.10.21.

When importing from FMD free countries where vaccination is practised or from FMD free zones where vaccination is practised, *Veterinary Administrations* should require:

for fresh meat or meat products of pigs and ruminants other than cattle and buffalo

the presentation of an *international veterinary certificate* attesting that the entire consignment of meat comes from animals which:

1. have been kept in the FMD free country or zone where vaccination is practised since birth, or which have been imported in accordance with Article 2.2.10.9., Article 2.2.10.10. or Article 2.2.10.11.;
2. have been slaughtered in an *approved abattoir* and have been subjected to ante-mortem and post-mortem inspections for FMD with favourable results.

## Article 2.2.10.22.

When importing from FMD infected countries or zones, where an official control programme exists, involving compulsory systematic vaccination of cattle, *Veterinary Administrations* should require:

for fresh meat of cattle and buffalo (*Bubalus bubalis*) (excluding feet, head and viscera)

the presentation of an *international veterinary certificate* attesting that the entire consignment of meat:

1. comes from animals which:
  - a) have remained in the *exporting country* for at least 3 months prior to slaughter;
  - b) have remained, during this period, in a part of the country where cattle are regularly vaccinated against FMD and where official controls are in operation;
  - c) have been vaccinated at least twice with the last vaccination not more than 12 months and not less than one month prior to slaughter;
  - d) were kept for the past 30 days in an *establishment*, and that FMD has not occurred within a ten-kilometre radius of the *establishment* during that period;
  - e) have been transported, in a *vehicle* which was cleansed and disinfected before the cattle were loaded, directly from the *establishment* of origin to the *approved abattoir* without coming into contact with other animals which do not fulfil the required conditions for export;
  - f) have been slaughtered in an *approved abattoir*:
    - i) which is officially designated for export;
    - ii) in which no FMD has been detected during the period between the last *disinfection* carried out before slaughter and the shipment for export has been dispatched;

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- g) have been subjected to ante-mortem and post-mortem inspections for FMD with favourable results within 24 hours before and after slaughter;
2. comes from deboned carcasses:
- a) from which the major lymphatic nodes have been removed;
  - b) which, prior to deboning, have been submitted to maturation at a temperature above + 2°C for a minimum period of 24 hours following slaughter and in which the pH value was below 6.0 when tested in the middle of both the longissimus dorsi.

## Article 2.2.10.23.

When importing from FMD infected countries or zones, *Veterinary Administrations* should require:

for meat products of domestic ruminants and pigs

the presentation of an *international veterinary certificate* attesting that:

1. the entire consignment of *meat* comes from animals which have been slaughtered in an *approved abattoir* and have been subjected to ante-mortem and post-mortem inspections for FMD with favourable results;
2. the *meat* has been processed to ensure the destruction of the FMD virus in conformity with one of the procedures referred to in Article 3.6.2.1.;
3. the necessary precautions were taken after processing to avoid contact of the *meat products* with any potential source of FMD virus.

## Article 2.2.10.24.

When importing from FMD free countries or zones (where vaccination either is or is not practised), *Veterinary Administrations* should require:

for milk and milk products intended for human consumption and for products of animal origin (from FMD susceptible animals) intended for use in animal feeding or for agricultural or industrial use

the presentation of an *international veterinary certificate* attesting that these products come from animals which have been kept in the country or zone since birth, or which have been imported in accordance with Article 2.2.10.9., Article 2.2.10.10. or Article 2.2.10.11.

## Article 2.2.10.25.

When importing from FMD infected countries or zones where an official control programme exists, *Veterinary Administrations* should require:

for milk, cream, milk powder and milk products

the presentation of an *international veterinary certificate* attesting that:

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1. these products:
  - a) originate from herds or flocks which were not infected or suspected of being infected with FMD at the time of *milk* collection;
  - b) have been processed to ensure the destruction of the FMD virus in conformity with one of the procedures referred to in Article 3.6.2.5. and in Article 3.6.2.6.;
2. the necessary precautions were taken after processing to avoid contact of the products with any potential source of FMD virus.

Article 2.2.10.26.

When importing from FMD infected countries, *Veterinary Administrations* should require:

for blood and meat-meals (from domestic or wild ruminants and pigs)

the presentation of an *international veterinary certificate* attesting that the manufacturing method for these products included heating to a minimum internal temperature of 70°C for at least 30 minutes.

Article 2.2.10.27.

When importing from FMD infected countries, *Veterinary Administrations* should require:

for wool, hair, bristles, raw hides and skins (from domestic or wild ruminants and pigs)

the presentation of an *international veterinary certificate* attesting that:

1. these products have been processed to ensure the destruction of the FMD virus in conformity with one of the procedures referred to in Article 3.6.2.2., Article 3.6.2.3. and Article 3.6.2.4.;
2. the necessary precautions were taken after collection or processing to avoid contact of the products with any potential source of FMD virus.

*Veterinary Administrations* can authorise, without restriction, the import or transit through their territory of semi-processed hides and skins (limed hides, pickled pelts, and semi-processed leather -e.g. wet blue and crust leather), provided that these products have been submitted to the usual chemical and mechanical processes in use in the tanning industry.

Article 2.2.10.28.

When importing from FMD infected countries or zones, *Veterinary Administrations* should require:

for straw and forage

the presentation of an *international veterinary certificate* attesting that these *commodities*:

1. are free of grossly identifiable contamination with material of animal origin:

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2. have been subjected to one of the following treatments, which, in the case of material sent in bales, has been shown to penetrate to the centre of the bale:
  - a) either to the action of steam in a closed chamber such that the centre of the bales has reached a minimum temperature of 80°C for at least 10 minutes,
  - b) or to the action of formalin fumes (formaldehyde gas) produced by its commercial solution at 35-40% in a chamber kept closed for at least 8 hours and at a minimum temperature of 19°C;

OR

3. have been kept in bond for at least 3 months (under study) before being released for export.

Article 2.2.10.29.

When importing from FMD free countries or zones (where vaccination either is or is not practised), *Veterinary Administrations* should require:

for skins and trophies derived from FMD susceptible wild animals

the presentation of an *international veterinary certificate* attesting that these products are derived from animals that have been killed ~~kept~~ in such a country or zone ~~since birth~~, or which have been imported from a country or zone free of FMD (where vaccination either is or is not practised).

Article 2.2.10.30.

When importing from FMD infected countries or zones, *Veterinary Administrations* should require:

for skins and trophies derived from FMD susceptible wild animals

the presentation of an *international veterinary certificate* attesting that these products have been processed to ensure the destruction of the FMD virus in conformity with the procedures referred to in Article 3.6.2.7.

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## CHAPTER 2.2.13.

**BLUETONGUE**

## Article 2.2.13.1.

For the purposes of the *Terrestrial Code*, the *infective period* for bluetongue virus (BTV) shall be 60 days.

The global BTV distribution is currently between latitudes of approximately 50°N and 34°S but is known to be expanding in the northern hemisphere.

In the absence of clinical disease in a country or *zone* within this part of the world, its BTV status should be determined by an ongoing surveillance programme (in accordance with Appendix 3.8.X.). The programme may need to be adapted to target parts of the country or *zone* at a higher risk due to historical, geographical and climatic factors, ruminant population data and *Culicoides* ecology, or proximity to enzootic or incursional zones as described in Appendix 3.8.X.

All countries or *zones* adjacent to a country or *zone* not having free status should be subjected to similar surveillance. The surveillance should be carried out over a distance of at least 100 kilometres from the border with that country or *zone*, but a lesser distance could be acceptable if there are relevant ecological or geographical features likely to interrupt the transmission of BTV or a bluetongue surveillance programme (in accordance with Appendix 3.8.X.) in the country or *zone* not having free status supports a lesser distance.

Standards for diagnostic tests and vaccines are described in the *Terrestrial Manual*.

## Article 2.2.13.2.

**BTV free country or zone**

1. A country or a *zone* may be considered free from BTV when bluetongue is notifiable in the whole country and either:
  - a) the country or *zone* lies wholly north of 50°N or south of 34°S, and is not adjacent to a country or *zone* not having a free status; or
  - b) a surveillance programme in accordance with Appendix 3.8.X. has demonstrated no evidence of BTV in the country or *zone* during the past 2 years; or
  - c) a surveillance programme has demonstrated no evidence of *Culicoides* likely to be competent BTV vectors in the country or *zone*.
2. A BTV free country or zone in which surveillance has found no evidence that *Culicoides* likely to be competent BTV vectors are present will not lose its free status through the importation of vaccinated, seropositive or infective animals, or semen or embryos/ova from infected countries or zones.

Appendix VII (contd)

3. A BTV free country or zone in which surveillance has found evidence that *Culicoides* likely to be competent BTV vectors are present will not lose its free status through the importation of vaccinated or seropositive animals from infected countries or zones, provided:
  - a) the animals have been vaccinated in accordance with the *Terrestrial Manual* at least 60 days prior to dispatch with a vaccine which covers all serotypes whose presence in the source population has been demonstrated through a surveillance programme in accordance with Appendix 3.8.X., and that the animals are identified in the accompanying certification as having been vaccinated; or
  - b) the animals are not vaccinated, and a surveillance programme in accordance with Appendix 3.8.X. has been in place in the source population for a period of 60 days immediately prior to dispatch, and no evidence of BTV transmission has been detected.
  
4. A BTV free country or zone adjacent to an infected country or zone should include a zone as described in Article 2.2.13.1. in which surveillance is conducted in accordance with Appendix 3.8.X. Animals within this *zone* must be subjected to continuing surveillance. The boundaries of this *zone* must be clearly defined, and must take account of geographical and epidemiological factors that are relevant to BTV transmission.

## Article 2.2.13.3.

**BTV seasonally free zone**

A BTV seasonally free zone is a part of an infected country or zone for which for part of a year, surveillance demonstrates no evidence either of BTV transmission or of adult *Culicoides* likely to be competent BTV vectors.

For the application of Articles 2.2.13.7., 2.2.13.10. and 2.2.13.14., the seasonally free period is taken to commence the day following the last evidence of BTV transmission (as demonstrated by the surveillance programme), or of the cessation of activity of adult *Culicoides* likely to be competent BTV vectors.

For the application of Articles 2.2.13.7., 2.2.13.10. and 2.2.13.14., the seasonally free period is taken to conclude either:

1. at least 28 days before the earliest date that historical data show bluetongue virus activity has recommenced; or
2. immediately if current climatic data or data from a surveillance programme indicate an earlier resurgence of activity of adult *Culicoides* likely to be competent BTV vectors.

A BTV seasonally free zone in which surveillance has found no evidence that *Culicoides* likely to be competent BTV vectors are present will not lose its free status through the importation of vaccinated, seropositive or infective animals, or semen or embryos/ova from infected countries or zones.

## Article 2.2.13.4.

**BTV infected country or zone**

A BTV infected country or zone is a clearly defined area where evidence of BTV has been reported during the past 2 years.

~~Article 2.2.13.5.~~

~~Veterinary Administrations of countries shall consider whether there is a risk with regard to BTV infection in accepting importation or transit through their territory, from other countries, of the following commodities:~~

- ~~1. ruminants and other BTV susceptible herbivores;~~
- ~~2. semen of these species;~~
- ~~3. embryos/ova of these species;~~
- ~~4. *pathological material* and biological products (from these species) (see Chapter 1.4.5. and Section 1.5.).~~

~~Other commodities should be considered as not having the potential to spread BTV when they are the subject of *international trade*.~~

## Article 2.2.13.6.5.

When importing from BTV free countries or zones, *Veterinary Administrations* should require:

for ruminants and other BTV susceptible herbivores

the presentation of an *international veterinary certificate* attesting that:

1. the animals were kept in a BTV free country or zone since birth or for at least 60 days prior to shipment; or
2. the animals were kept in a BTV free country or zone for at least 28 days, then were subjected, with negative results, to a serological test to detect antibody to the BTV group according to the *Terrestrial Manual* and remained in the BTV free country or zone until shipment; or
3. the animals were kept in a BTV free country or zone for at least 7 days, then were subjected, with negative results, to an agent identification test according to the *Terrestrial Manual*, and remained in the BTV free country or zone until shipment; or
4. the animals:
  - a) were kept in a BTV free country or zone for at least 7 days;
  - b) were vaccinated in accordance with the *Terrestrial Manual* 60 days before the introduction into the free country or zone against all serotypes whose presence in the source population has been demonstrated through a surveillance programme as described in Appendix 3.8.X;

Appendix VII (contd)

- c) were identified as having been vaccinated; and
- d) remained in the BTV free country or zone until shipment;

AND

- 5. if the animals were exported from a free zone, either:
  - a) did not transit through an infected zone during transportation to *the place of shipment*; or
  - b) were protected from attack from *Culicoides* likely to be competent BTV vectors at all times when transiting through an infected zone; or
  - c) had been vaccinated in accordance with point 4 above.

Article 2.2.13.~~7~~6.

When importing from BTV seasonally free zones, *Veterinary Administrations* should require:

for ruminants and other BTV susceptible herbivores

the presentation of an *international veterinary certificate* attesting that the animals:

- 1. were kept during the seasonally free period in a BTV seasonally free zone for at least 60 days prior to shipment; or
- 2. were kept during the BTV seasonally free period in a BTV seasonally free zone for at least 28 days prior to shipment, and were subjected during the residence period in the zone to a serological test to detect antibody to the BTV group according to the *Terrestrial Manual*, with negative results, carried out at least 28 days after the commencement of the residence period; or
- 3. were kept during the BTV seasonally free period in a BTV seasonally free zone for at least 14 days prior to shipment, and were subjected during the residence period in the zone to an agent identification test according to the *Terrestrial Manual*, with negative results, carried out at least 14 days after the commencement of the residence period; or
- 4. were kept during the seasonally free period in a BTV seasonally free zone, and were vaccinated in accordance with the *Terrestrial Manual* 60 days before the introduction into the free country or zone against all serotypes whose presence in the source population has been demonstrated through a surveillance programme in accordance with Appendix 3.8.X.; and were identified as having been vaccinated and remained in the BTV free country or zone until shipment;

Appendix VII (contd)

AND

5. if the animals were exported from a free zone, either:
  - a) did not transit through an infected zone during transportation to the *place of shipment*; or
  - b) were protected from attack from *Culicoides* likely to be competent BTV vectors at all times when transiting through an infected zone; or
  - c) were vaccinated in accordance with point 4 above.

## Article 2.2.13.8.Z

When importing from BTV infected countries or zones, *Veterinary Administrations* should require:

for ruminants and other BTV susceptible herbivores

the presentation of an *international veterinary certificate* attesting that the animals:

1. were protected from attack from *Culicoides* likely to be competent BTV vectors for at least 60 days prior to shipment; or
2. were protected from attack from *Culicoides* likely to be competent BTV vectors for at least 28 days prior to shipment, and were subjected during that period to a serological test according to the *Terrestrial Manual* to detect antibody to the BTV group, with negative results, carried out at least 28 days after introduction into the *quarantine station*; or
3. were protected from attack from *Culicoides* likely to be competent BTV vectors for at least 14 days prior to shipment, and were subjected during that period to an agent identification test according to the *Terrestrial Manual*, with negative results, carried out at least 14 days after introduction into the *quarantine station*; or
4. were vaccinated in accordance with the *Terrestrial Manual* at least 60 days before shipment, against all serotypes whose presence in the source population has been demonstrated through a surveillance programme in accordance with Appendix 3.8.X., and were identified in the accompanying certification as having been vaccinated; or
5. are not vaccinated, a surveillance programme in accordance with Appendix 3.8.X. has been in place in the source population for a period of 60 days immediately prior to shipment, and no evidence of BTV transmission has been detected;

AND

6. were protected from attack from *Culicoides* likely to be competent BTV vectors during transportation to the *place of shipment*; or

Appendix VII (contd)

7. were vaccinated in accordance with the *Terrestrial Manual* 60 days before shipment or had antibodies against all serotypes whose presence in the zones of transit has been demonstrated through a surveillance programme in accordance with Appendix 3.8.X.

## Article 2.2.13.9-8.

When importing from BTV free countries or zones, *Veterinary Administrations* should require:

for semen of ruminants and other BTV susceptible herbivores

the presentation of an *international veterinary certificate* attesting that:

1. the donor animals:
  - a) were kept in a BTV free country or zone for at least 60 days before commencement of, and during, collection of the semen; or
  - b) were subjected to a serological test according to the *Terrestrial Manual* to detect antibody to the BTV group, between 21 and 60 days after the last collection for this consignment, with negative results; or
  - c) were subjected to an agent identification test according to the *Terrestrial Manual* on blood samples collected at commencement and conclusion of, and at least every 7 days (virus isolation test) or at least every 28 days (PCR test) during, semen collection for this consignment, with negative results;
2. the semen was collected, processed and stored in conformity with the provisions of Appendix 3.2.1.

## Article 2.2.13.10-9.

When importing from BTV seasonally free zones, *Veterinary Administrations* should require:

for semen of ruminants and other BTV susceptible herbivores

the presentation of an *international veterinary certificate* attesting that:

1. the donor animals:
  - a) were kept during the BTV seasonally free period in a seasonally free zone for at least 60 days before commencement of, and during, collection of the semen; or
  - b) were subjected to a serological test according to the *Terrestrial Manual* to detect antibody to the BTV group, with negative results, at least every 60 days throughout the collection period and between 21 and 60 days after the final collection for this consignment; or

Appendix VII (contd)

- c) were subjected to an agent identification test according to the *Terrestrial Manual* on blood samples collected at commencement and conclusion of, and at least every 7 days (virus isolation test) or at least every 28 days (PCR test) during, semen collection for this consignment, with negative results;
2. the semen was collected, processed and stored in conformity with the provisions of Appendix 3.2.1.

Article 2.2.13.~~44~~10.

When importing from BTV infected countries or zones, *Veterinary Administrations* should require:

for semen of ruminants and other BTV susceptible herbivores

the presentation of an *international veterinary certificate* attesting that:

- 1. the donor animals:
    - a) were protected from attack from *Culicoides* likely to be competent BTV vectors for at least 60 days before commencement of, and during, collection of the semen; or
    - b) were subjected to a serological test according to the *Terrestrial Manual* to detect antibody to the BTV group, with negative results, at least every 60 days throughout the collection period and between 21 and 60 days after the final collection for this consignment; or
    - c) were subjected to an agent identification test according to the *Terrestrial Manual* on blood samples collected at commencement and conclusion of, and at least every 7 days (virus isolation test) or at least every 28 days (PCR test) during, semen collection for this consignment, with negative results;
2. the semen was collected, processed and stored in conformity with the provisions of Appendix 3.2.1.

Article 2.2.13.~~42~~11.

Regardless of the bluetongue status of the *exporting country*, *Veterinary Administrations* of *importing countries* should require:

for *in vivo* derived bovine embryos /oocytes

the presentation of an *international veterinary certificate* attesting that the embryos/oocytes were collected, processed and stored in conformity with the provisions of Appendix 3.3.1. or Appendix 3.3.3., as relevant.

Appendix VII (contd)Article 2.2.13.~~13~~.12.

When importing from BTV free countries or zones, *Veterinary Administrations* should require:

for *in vivo* derived embryos of ruminants (other than bovines) and other BTV susceptible herbivores

the presentation of an *international veterinary certificate* attesting that:

1. the donor females:
  - a) were kept in a BTV free country or zone for at least the 60 days prior to, and at the time of, collection of the embryos; or
  - b) were subjected to a serological test according to the *Terrestrial Manual* to detect antibody to the BTV group, between 21 and 60 days after collection, with negative results; or
  - c) were subjected to an agent identification test according to the *Terrestrial Manual* on a blood sample taken on the day of collection, with negative results;
2. the embryos were collected, processed and stored in conformity with the provisions of Appendix 3.3.1.

Article 2.2.13.~~14~~.13.

When importing from BTV seasonally free zones, *Veterinary Administrations* should require:

for *in vivo* derived embryos/oocytes of ruminants (other than bovines) and other BTV susceptible herbivores and for *in vitro* produced bovine embryos

the presentation of an *international veterinary certificate* attesting that:

1. the donor females:
  - a) were kept during the seasonally free period in a seasonally free zone for at least 60 days before commencement of, and during, collection of the embryos/oocytes; or
  - b) were subjected to a serological test according to the *Terrestrial Manual* to detect antibody to the BTV group, between 21 and 60 days after collection, with negative results; or

Appendix VII (contd)

- c) were subjected to an agent identification test according to the *Terrestrial Manual* on a blood sample taken on the day of collection, with negative results;
2. the embryos/oocytes were collected, processed and stored in conformity with the provisions of Appendix 3.3.1.

Article 2.2.13.~~15~~.14.

When importing from BTV infected countries or zones, *Veterinary Administrations* should require:

for *in vivo* derived embryos/oocytes of ruminants (other than bovines) and other BTV susceptible herbivores and for *in vitro* produced bovine embryos

the presentation of an *international veterinary certificate* attesting that:

1. the donor females:
  - a) were protected from attack from *Culicoides* likely to be competent BTV vectors for at least 60 days before commencement of, and during, collection of the embryos/oocytes; or
  - b) were subjected to a serological test according to the *Terrestrial Manual* to detect antibody to the BTV group, between 21 and 60 days after collection, with negative results; or
  - c) were subjected to an agent identification test according to the *Terrestrial Manual* on a blood sample taken on the day of collection, with negative results;
2. the embryos/oocytes were collected, processed and stored in conformity with the provisions of Appendix 3.3.1.

Article 2.2.13.~~16~~.15.**Protecting animals from *Culicoides* attack**

When transporting animals through BTV infected countries or zones, *Veterinary Administrations* should require strategies to protect animals from attack from *Culicoides* likely to be competent BTV vectors during transport, taking into account the local ecology of the vector.

Potential risk management strategies include:

1. treating animals with chemical repellents prior to and during transportation;

Appendix VII (contd)

2. *loading*, transporting and *unloading* animals at times of low vector activity (i.e. bright sunshine, low temperature);
3. ensuring *vehicles* do not stop en route during dawn or dusk, or overnight, unless the animals are held behind insect proof netting;
4. darkening the interior of the *vehicle*, for example by covering the roof and/or sides of *vehicles* with shadecloth;
5. surveillance for vectors at common stopping and offloading points to gain information on seasonal variations;
6. using historical, ongoing and/or BTV modelling information to identify low risk ports and transport routes.

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## APPENDIX 3.X.X.

## GUIDELINES FOR THE SURVEILLANCE OF BLUETONGUE

## Article 3.X.X.1.

**Introduction**

This Appendix defines the principles and provides a guide for the surveillance of bluetongue (BT) in accordance with Appendix 3.8.1., applicable to countries seeking recognition for a declared BT status, with or without the use of vaccination. This may be for the entire country, *zone* or *compartment*. Guidance for countries seeking free status following an *outbreak* and for the maintenance of BT status is also provided. This Appendix complements Chapter 2.2.13.

BT is a vector-borne infection transmitted by different species of *Culicoides* insects in a range of ecosystems. An important component of BT epidemiology is vectorial capacity which provides a measure of disease risk that incorporates vector competence, abundance, biting rates, survival rates and extrinsic incubation period. However, methods and tools for measuring some of these vector factors remain to be developed, particularly in a field context. Therefore, surveillance for BT should focus on transmission in domestic ruminants.

Susceptible wild ruminant populations should be included in surveillance ~~only if necessary~~ when these animals are intended for trade.

The impact and epidemiology of BT differ widely in different regions of the world and therefore it is impossible to provide specific guidelines for all situations. It is incumbent upon Member Countries to provide scientific data that explain the epidemiology of BT in the region concerned and adapt the surveillance strategies for defining their infection status (~~free, endemic or area of potential spread~~ free, seasonally free, infected or endemic country/zone) to the local conditions. There is considerable latitude available to Member Countries to justify their infection status at an acceptable level of confidence.

Surveillance for BT should be in the form of a continuing programme.

## Article 3.X.X.2.

**Case definition**

For the purposes of surveillance, a *case* refers to an animal infected with BT virus (BTV).

For the purposes of *international trade*, a ~~difference~~ distinction must be made between a case as defined below and an animal that is potentially infectious to vectors. The conditions for trade are defined in Chapter 2.2.13 of the *Terrestrial Code*.

The purpose of surveillance is the detection of virus circulation in a country or *zone* and not determination of the status of an individual animal or herds. Surveillance deals not only with the occurrence of clinical signs caused by BTV, but also with the ~~presence~~ evidence of infection with BTV in the absence of clinical signs.

Appendix VIII (contd)

The following defines the occurrence of BTV infection:

1. BTV has been isolated and identified as such from an animal or a product derived from that animal, or
2. viral antigen or viral RNA specific to one or more of the serotypes of BTV has been identified in samples from one or more animals showing clinical signs consistent with BT, or epidemiologically linked to a confirmed or suspected *case*, or giving cause for suspicion of previous association or contact with BTV, or
3. antibodies to structural or nonstructural proteins of BTV that are not a consequence of vaccination have been identified in one or more animals ~~that either showing~~ clinical signs consistent with BT, or epidemiologically linked to a confirmed or suspected *case*, or ~~giving~~ cause for suspicion of previous association or contact with BTV.

Standards for diagnostic tests and vaccines are described in the *Terrestrial Manual*.

Article 3.X.X.3.

**General conditions and methods**

1. A surveillance system in accordance with Appendix 3.8.1. should be under the responsibility of the *Veterinary Administration*. In particular:
  - a) a formal and ongoing system for detecting and investigating *outbreaks of disease* should be in place;
  - b) a procedure should be in place for the rapid collection and transport of samples from suspect cases of BT to a laboratory for BT diagnosis as described in the *Terrestrial Manual*;
  - c) a system for recording, managing and analysing diagnostic and surveillance data should be in place.
2. The BT surveillance programme should:
  - a) in a country/zone free or seasonally free, include an early warning system for reporting suspicious cases. Farmers and workers, who have day-to-day contact with domestic ruminants, as well as diagnosticians, should report promptly any suspicion of BT to the *Veterinary Authority*. They should be supported directly or indirectly (e.g. through private *veterinarians* or *veterinary para-professionals*) by government information programmes and the *Veterinary Administration*. An effective surveillance system will periodically identify suspicious cases that require follow-up and investigation to confirm or exclude that the cause of the condition is BTV. The rate at which such suspicious cases are likely to occur will differ between epidemiological situations and cannot therefore be predicted reliably. All suspected cases of BT should be investigated immediately and samples should be taken and submitted to an *approved laboratory*. This requires that sampling kits and other equipment are available for those responsible for surveillance;
  - b) conduct random or targeted serological and virological surveillance appropriate to the infection status of the country or *zone*.

## Appendix VIII (contd)

With regards to BT, *compartment* refers to *establishments* where animals are kept in a confirmed vector free environment to prevent BTV infection. Generally, the conditions to prevent exposure of susceptible animals to BTV infected vectors will be difficult to apply. However, under specific situations like *artificial insemination centres* or *quarantine stations* such conditions may be met. The testing requirements for animals kept in these facilities are described in Articles 2.2.13.11 and 2.2.13.15.

### Article 3.X.X.4.

#### **Surveillance strategies**

The target population for surveillance aimed at identification of *disease* and/or *infection* should cover susceptible domestic ruminants within the country, *zone* or *compartment*. Active and passive surveillance for BTV infection should be ongoing. Surveillance should be composed of random or targeted approaches using virological, serological and clinical methods appropriate for the infection status of the country or *zone*.

The strategy employed may be based on randomised sampling surveillance requiring surveillance sampling consistent with demonstrating the absence of BTV infection at an acceptable level of confidence. The frequency of sampling should be dependent on the epidemiological situation. Random surveillance is conducted using serological tests described in the *Terrestrial Manual*. Positive serological results may be followed up with virological methods as appropriate.

Targeted surveillance (e.g. based on the increased likelihood of *infection* in particular localities or species) may be an appropriate strategy. Virological and serological methods may be used concurrently to define the BTV status of targeted populations.

A country should justify the surveillance strategy chosen as being adequate to detect the presence of BTV infection in accordance with Appendix 3.8.1. and the prevailing epidemiological situation. It may, for example, be appropriate to target clinical surveillance at particular species likely to exhibit clinical signs (e.g. sheep). Similarly, virological and serological testing may be targeted to species that rarely show clinical signs (e.g. cattle).

In vaccinated populations, serological and virological surveillance is necessary to detect the BTV types circulating to ensure that all circulating types are included in the vaccination programme.

If a Member Country wishes to declare freedom from BTV infection in a specific *zone*, the design of the surveillance strategy would need to be aimed at the population within the *zone*.

For random surveys, the design of the sampling strategy will need to incorporate epidemiologically appropriate design prevalence. The sample size selected for testing will need to be large enough to detect evidence of infection if it were to occur at a predetermined minimum rate. The sample size and expected prevalence determine the level of confidence in the results of the survey. The applicant country must justify the choice of design prevalence and confidence level based on the objectives of surveillance and the epidemiological situation, in accordance with Appendix 3.8.1. Selection of the design prevalence in particular needs to be based on the prevailing or historical epidemiological situation.

Irrespective of the survey approach selected, the sensitivity and specificity of the diagnostic tests employed are key factors in the design, sample size determination and interpretation of the results obtained. Ideally, the sensitivity and specificity of the tests used should be validated for the vaccination/infection history and the different species in the target population.

## Appendix VIII (contd)

Irrespective of the testing system employed, surveillance system design should anticipate the occurrence of false positive reactions. If the characteristics of the testing system are known, the rate at which these false positives are likely to occur can be calculated in advance. There needs to be an effective procedure for following up positives to ultimately determine with a high level of confidence, whether they are indicative of infection or not. This should involve both supplementary tests and follow-up investigation to collect diagnostic material from the original sampling unit as well as those which may be epidemiologically linked to it.

The principles involved in surveillance for *disease/infection* are technically well defined. The design of surveillance programmes to prove the absence of BTV infection/circulation needs to be carefully followed to avoid producing results that are either insufficiently reliable to be accepted by ~~the OIE or~~ international trading partners, or excessively costly and logistically complicated. The design of any surveillance programme, therefore, requires inputs from professionals competent and experienced in this field.

### 1. Clinical surveillance

Clinical surveillance aims at the detection of clinical signs of BT at the flock/herd level. Whereas significant emphasis is placed on the diagnostic value of mass serological screening, surveillance based on clinical inspection should not be underrated, particularly during a newly introduced infection. In sheep and occasionally goats, clinical signs may include oedema, hyperaemia of mucosal membranes, coronitis and cyanotic tongue.

BT suspects detected by clinical surveillance should always be confirmed by laboratory testing.

### 2. Serological surveillance

An active programme of surveillance of host populations to detect evidence of BTV transmission is essential to establish BTV status in a country or *zone*. Serological testing of ruminants is one of the most effective methods of detecting the presence of BTV. The species tested depends on the epidemiology of BTV infection, and the species available, in the local area. Cattle are usually the most sensitive indicator species. Management variables that may influence likelihood of infection, such as the use of insecticides and animal housing, should be considered.

Surveillance may include serological surveys, for example abattoir surveys, the use of cattle as sentinel animals (which must be individually identifiable), or a combination of methods.

The objective of serological surveillance is to detect evidence of BTV circulation. Samples should be examined for antibodies against BTV using tests prescribed in the *Terrestrial Manual*. Positive BTV antibody tests results can have four possible causes:

- a) natural infection with BTV,
- b) vaccination against BTV,
- c) maternal antibodies,
- d) positive results due to the lack of specificity of the test.

It may be possible to use sera collected for other survey purposes for BTV surveillance. However, the principles of survey design described in these guidelines and the requirements for a statistically valid survey for the presence of BTV infection should not be compromised.

## Appendix VIII (contd)

The results of random or targeted serological surveys are important in providing reliable evidence that no BTV infection is present in a *country*, *zone* or *compartment*. It is, therefore, essential that the survey is thoroughly documented. It is critical to interpret the results in light of the movement history of the animals being sampled.

Serological surveillance in a free *zone* should target those areas that are at highest risk of BTV transmission, based on the results of previous surveillance and other information. This will usually be towards the boundaries of the free *zone*. In view of the epidemiology of BTV infection, either random or targeted sampling is suitable to select herds and/or animals for testing.

A surveillance *zone* within a free country or *zone* should separate it from a potentially infected country or *zone*. Serological surveillance in a free country or *zone* should be carried out over an appropriate distance from the border with a potentially infected country or *zone*, based upon geography, climate, history of infection and other relevant factors.

Serological surveillance in infected *zones* will identify changes in the boundary of the *zone*, and can also be used to identify the BTV types circulating. In view of the epidemiology of BTV infection, either random or targeted sampling is suitable.

### 3. Virological surveillance

Isolation and genetic analysis ~~of samples~~ of BTV from a proportion of infected animals is beneficial in terms of providing information on serotype and genetic characteristics of the viruses concerned.

Virological surveillance using tests described in the *Terrestrial Manual* can be conducted:

- a) to identify virus circulation in at risk populations,
- b) to confirm clinically suspect cases,
- c) to follow up positive serological results,
- d) to better characterize the genotype of circulating virus in a country or *zone*.

### 4. Sentinel ~~herds~~ animals

Sentinel ~~herds~~ animals are a form of targeted surveillance with a prospective study design. They are the preferred strategy for BTV surveillance. They comprise groups of unexposed animals managed at fixed locations and sampled regularly to detect new BTV infections.

The primary purpose of a sentinel ~~herd~~ animal programme is to detect BTV infections occurring at a particular place, for instance sentinel groups may be located on the usual boundaries of infected *zones* to detect changes in distribution of BTV. In addition, sentinel ~~herd~~ animal programmes allow ~~incidence rates to be determined and~~ the timing and dynamics of infections to be observed.

A sentinel ~~herd~~ animal programme should use animals of known source and history of exposure, control management variables such as use of insecticides and animal housing (depending on the epidemiology of BTV in the area under consideration), and be flexible in its design in terms of sampling frequency and choice of tests.

## Appendix VIII (contd)

Care is necessary in choosing the sites for the sentinel groups. The aim is to maximise the chance of detecting BTV activity at the geographical location for which the sentinel site acts as a sampling point. The effect of secondary factors that may influence events at each location, such as climate, may also be analysed. To avoid confounding factors, sentinel groups should comprise animals selected to be of similar age and susceptibility to BTV infection. Cattle are the most appropriate sentinels but other domestic ruminant species may be used. The only feature distinguishing groups of sentinels should be their geographical location.

Sera from sentinel ~~herd~~ animal programmes should be stored methodically in a serum bank to allow retrospective studies to be conducted in the event of new serotypes being isolated.

The frequency of sampling will depend on the reason for choosing the sampling site. In endemic areas, virus isolation will allow monitoring of the serotypes and genotypes of BTV circulating during each time period. The borders between infected and non infected areas can be defined by serological detection of infection. Monthly sampling intervals are frequently used. Sentinels in declared free *zones* add to confidence that BTV infections are not occurring unobserved. In such cases, sampling prior to and after the possible period of transmission is sufficient.

~~The definitive measure of a country or zone's BTV infection status is detection~~ Definitive information on BTVs circulating in a country or zone is provided by isolation and identification of the viruses. If virus isolation is required, sentinels should be sampled at sufficiently frequent intervals to ensure that samples are collected during the period of viraemia.

### 5. Vector surveillance

BTV is transmitted between ruminant hosts by ~~vector~~ species of *Culicoides* which vary across the world. It is therefore important to be able to identify potential vector species accurately although many such species are closely related and difficult to differentiate with certainty.

The main purpose of vector surveillance is to define high, medium and low-risk areas and local details of seasonality by determining the various species present in an area, their respective seasonal ~~incidence and profile~~ occurrence, and ~~their~~ abundance. Vector surveillance has particular relevance to potential areas of spread. Long term surveillance can also be used to assess vector abatement measures.

The most effective way of gathering this information should take account of the biology and behavioural characteristics of the local vector species of *Culicoides* and may include the use of Onderstepoort-type light traps or similar, operated from dusk to dawn in locations adjacent to domestic ruminants, or the use of drop traps over ruminant animals.

Vector surveillance should be based on scientific sampling techniques. The choice of ~~t~~ the number and type of traps to be used in a vector surveillance system and the frequency of their use will depend on ~~on~~ should take into account the availability of resources but is also dependent upon the size of ~~or~~ and ecological characteristics of the area to be surveyed.

The operation of vector surveillance sites at the same locations as sentinel ~~herds~~ animals is advisable.

The use of a vector surveillance system to detect the presence of circulating virus is not recommended as a routine procedure as the typically low vector infection rates mean that such detections can be rare. Other surveillance strategies (e.g. the use of sentinel ~~herds~~ animals of domestic ruminants) are preferred to detect virus circulation.

## Article 3.X.X.5.

**Documentation of BTV infection free status**1. Countries declaring freedom from BTV infection for the country, zone or compartment

In addition to the general conditions described in Chapter 2.2.13. of the *Terrestrial Code*, a Member Country declaring freedom from BTV infection for the entire country, or a *zone* or a *compartment* should provide evidence for the existence of an effective surveillance programme. The strategy and design of the surveillance programme will depend on the prevailing epidemiological circumstances and should be planned and implemented according to general conditions and methods described in this Appendix, to demonstrate absence of BTV infection during the preceding 24 months in susceptible domestic ruminant populations. This requires the support of a laboratory able to undertake identification of BTV infection through virus detection and antibody tests described in the *Terrestrial Manual*. This surveillance should be targeted to non-vaccinated animals. Clinical surveillance may be effective in sheep while serological surveillance is more appropriate in cattle.

2. Additional requirements for countries, zones or compartments that practise vaccination

Vaccination to prevent the transmission of BTV may be part of a disease control programme. The level of flock or herd immunity required to prevent transmission will depend on the flock or herd size, composition (e.g. species) and density of the susceptible population. It is therefore impossible to be prescriptive. The vaccine must also comply with the provisions stipulated for BTV vaccines in the *Terrestrial Manual*. Based on the epidemiology of BTV infection in the country, *zone* or *compartment*, it may be that a decision is reached to vaccinate only certain species or other subpopulations.

In countries, ~~or~~ *zones* or *compartments* that practise vaccination, there is a need to perform virological and serological tests to ensure the absence of virus circulation. These tests should be performed on non-vaccinated subpopulations or on sentinels. The tests have to be repeated at appropriate intervals according to the purpose of the surveillance programme. For example, longer intervals may be adequate to confirm endemicity, while shorter intervals may allow on-going demonstration of absence of transmission.

## Article 3.X.X.6.

**The use and interpretation of serological and virus detection tests**1. Serological testing

Ruminants infected with BTV produce antibodies to structural and non-structural viral proteins, as do animals vaccinated with current modified live virus vaccines. Antibodies to the BTV serogroup antigen are detected with high sensitivity and specificity by competitive ELISA (c-ELISA) and to a lesser extent by AGID as described in the *Terrestrial Manual*. Positive c-ELISA results can be confirmed by neutralization assay to identify the infecting serotype(s); however, BTV infected ruminants can produce neutralizing antibodies to serotypes of BTV other than those to which they were exposed (false positive results), especially if they have been infected with multiple serotypes.

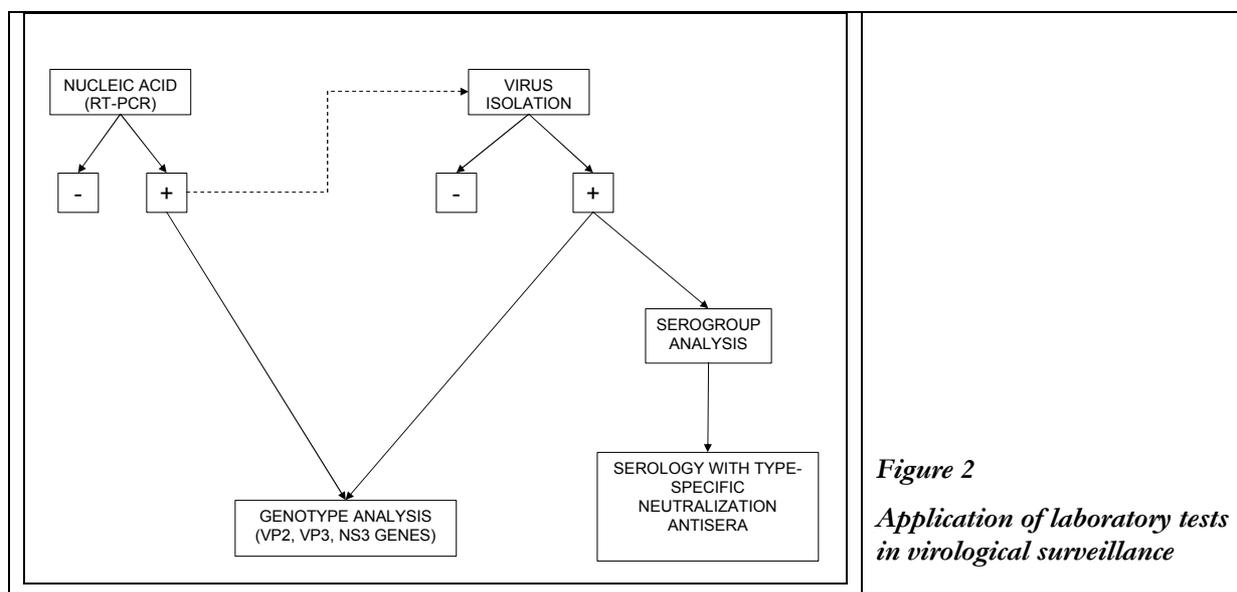
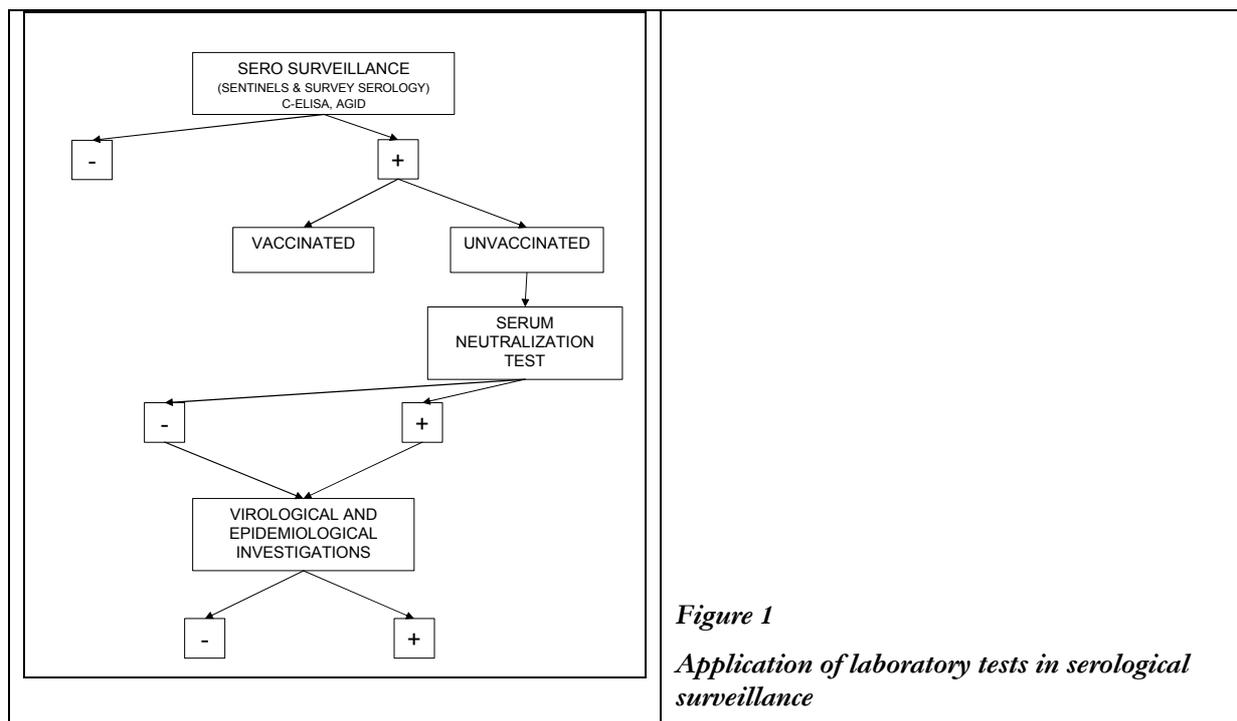
Appendix VIII (contd)2. Virus detection

The presence of BTV in ruminant blood and tissues can be detected by virus isolation or polymerase chain reaction (PCR) as described in the *Terrestrial Manual*.

Interpretation of positive and negative results (both true and false) differs markedly between these tests because they detect different aspects of BTV infection, specifically (1) infectious BTV (virus isolation) and (2) nucleic acid (PCR). The following are especially relevant to interpretation of PCR assays:

- a) The nested PCR assay detects BTV nucleic acid in ruminants long after the clearance of infectious virus. Thus positive PCR results do not necessarily coincide with active infection of ruminants. Furthermore, the nested PCR assay is especially prone to template contamination, thus there is considerable risk of false positive results.
- b) PCR procedures other than real time PCR allow sequence analysis of viral amplicons from ruminant tissues, insect vectors or virus isolates. These sequence data are useful for creating data bases to facilitate important epidemiological studies, including the possible distinction of field and vaccine virus strains of BTV, genotype characterization of field strains of BTV, and potential genetic divergence of BTV relevant to vaccine and diagnostic testing strategies.

It is essential that BTV isolates are sent regularly to the OIE Reference Laboratories for genetic and antigenic characterization.



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## CHAPTER 2.3.13.

**BOVINE SPONGIFORM ENCEPHALOPATHY**

## Article 2.3.13.1.

The recommendations in this Chapter are intended to manage the human and animal health risks associated with the presence of the bovine spongiform encephalopathy (BSE) agent in cattle (*Bos taurus* and *B. indicus*) only.

1. When authorising import or transit of the following *commodities* and any products made from these *commodities* and containing no other tissues from cattle, *Veterinary Administrations* should not require any BSE related conditions, regardless of the BSE risk status of the cattle population of the *exporting country, zone or compartment*:
  - a) *milk* and *milk products*;
  - b) semen and *in vivo* derived cattle embryos collected and handled in accordance with the recommendations of the International Embryo Transfer Society;
  - c) hides and skins;
  - d) gelatine and collagen prepared exclusively from hides and skins;
  - e) protein-free tallow (maximum level of insoluble impurities of 0.15% in weight) and derivatives made from this tallow;
  - f) dicalcium phosphate (with no trace of protein or fat);
  - g) deboned skeletal muscle meat (excluding mechanically separated meat) from cattle 30 months of age or less, which were not subjected to a stunning process prior to slaughter, with a device injecting compressed air or gas into the cranial cavity or to a pithing process, and which passed ante-mortem and post-mortem inspections and which has been prepared in a manner to avoid contamination with tissues listed in Article 2.3.13.13.;
  - h) blood and blood by-products, from cattle which were not subjected to a stunning process, prior to slaughter, with a device injecting compressed air or gas into the cranial cavity, or to a pithing process.
2. When authorising import or transit of other *commodities* listed in this Chapter, *Veterinary Administrations* should require the conditions prescribed in this Chapter relevant to the BSE risk status of the cattle population of the *exporting country, zone or compartment*.

Standards for diagnostic tests are described in the *Terrestrial Manual*.

## Article 2.3.13.2.

The BSE risk status of the cattle population of a country, *zone or compartment* should be determined on the basis of the following criteria:

Appendix IX (contd)

1. the outcome of a *risk assessment*, based on Section 1.3., identifying all potential factors for BSE occurrence and their historic perspective. Countries should review the risk assessment annually to determine whether the situation has changed.

- a) Release assessment

Release assessment consists of assessing, through consideration of the following, the likelihood that the BSE agent has either been introduced into the country, *zone* or *compartment* via *commodities* potentially contaminated with it, or is already present in the country, *zone* or *compartment*.

- i) the presence or absence of the BSE agent in the indigenous ruminant population of the country, *zone* or *compartment* and, if present, evidence regarding its prevalence;
- ii) production of *meat-and-bone meal* or *greaves* from the indigenous ruminant population;
- iii) imported *meat-and-bone meal* or *greaves*;
- iv) imported cattle, sheep and goats;
- v) imported animal feed and feed ingredients;
- vi) imported products of ruminant origin for human consumption, which may have contained tissues listed in Article 2.3.13.13. and may have been fed to cattle;
- vii) imported products of ruminant origin intended for *in vivo* use in cattle.

The results of any epidemiological investigation into the disposition of the *commodities* identified above should be taken into account in carrying out the assessment.

- b) Exposure assessment

If the release assessment identifies a *risk* factor, an exposure assessment should be conducted, consisting of assessing the likelihood of cattle being exposed to the BSE agent, through a consideration of the following:

- i) recycling and amplification of the BSE agent through consumption by cattle of *meat-and-bone meal* or *greaves* of ruminant origin, or other feed or feed ingredients contaminated with these;
  - ii) the use of ruminant carcasses (including from fallen stock), by-products and *slaughterhouse* waste, the parameters of the rendering processes and the methods of animal feed manufacture;
  - iii) the feeding or not of ruminants with *meat-and-bone meal* and *greaves* derived from ruminants, including measures to prevent cross-contamination of animal feed;
  - iv) the level of surveillance for BSE conducted on the cattle population up to that time and the results of that surveillance;
2. on-going awareness programme for veterinarians, farmers, and workers involved in transportation, marketing and slaughter of cattle to encourage reporting of all *cases* showing clinical signs consistent with BSE in target sub-populations as defined in Appendix 3.8.4.;

Appendix IX (contd)

3. the compulsory notification and investigation of all cattle showing clinical signs consistent with BSE;
4. the examination in an *approved laboratory* of brain or other tissues collected within the framework of the aforementioned surveillance and monitoring system.

When the *risk assessment* demonstrates negligible risk, the country should conduct Type B surveillance in accordance with Appendix 3.8.4.

When the *risk assessment* fails to demonstrate negligible risk, the country should conduct Type A surveillance in accordance with Appendix 3.8.4.

## Article 2.3.13.3.

**Negligible BSE risk**

*Commodities* from the cattle population of a country, *zone* or *compartment* pose a negligible risk of transmitting the BSE agent if the following conditions are met:

1. a *risk assessment*, as described in point 1 of Article 2.3.13.2., has been conducted in order to identify the historical and existing risk factors, and the country has demonstrated that appropriate specific measures have been taken for the relevant period of time defined below to manage each identified risk;
2. the country has demonstrated that Type B surveillance in accordance with Appendix 3.8.4. is in place and the relevant points target, in accordance with Table 1, has been met;
3. EITHER:
  - a) there has been no *case* of BSE or, if there has been a *case*, every *case* of BSE has been demonstrated to have been imported and has been completely destroyed, and
    - i) the criteria in points 2 to 4 of Article 2.3.13.2. have been complied with for at least 7 years; and
    - ii) it has been demonstrated through an appropriate level of control and audit that for at least 8 years neither *meat-and-bone meal* nor *greaves* derived from ruminants has been fed to ruminants;

OR

- b) if there has been an indigenous *case*, every indigenous *case* was born more than 11 years ago; and
  - i) the criteria in points 2 to 4 of Article 2.3.13.2. have been complied with for at least 7 years; and
  - ii) it has been demonstrated through an appropriate level of control and audit that for at least 8 years neither *meat-and-bone meal* nor *greaves* derived from ruminants has been fed to ruminants; and
  - iii) all BSE cases, as well as:
    - all cattle which, during their first year of life, were reared with the BSE *cases* during their first year of life, and which investigation showed consumed the same potentially contaminated feed during that period, or

Appendix IX (contd)

- if the results of the investigation are inconclusive, all cattle born in the same herd as, and within 12 months of the birth of, the BSE *cases*,

if alive in the country, *zone* or *compartment*, are permanently identified, and their movements controlled, and, when slaughtered or at death, are completely destroyed.

Article 2.3.13.4.

**Controlled BSE risk**

*Commodities* from the cattle population of a country, *zone* or *compartment* pose a controlled risk of transmitting the BSE agent if the following conditions are met:

1. a *risk assessment*, as described in point 1 of Article 2.3.13.2., has been conducted in order to identify the historical and existing risk factors, and the country has demonstrated that appropriate measures are being taken to manage all identified risks, but these measures have not been taken for the relevant period of time;
2. the country has demonstrated that Type A surveillance in accordance with Appendix 3.8.4. has been carried out and the relevant points target, in accordance with Table 1, has been met; Type B surveillance may replace Type A surveillance once the relevant points target is met;
3. EITHER:
  - a) there has been no *case* of BSE or, if there has been a *case*, every *case* of BSE has been demonstrated to have been imported and has been completely destroyed, the criteria in points 2 to 4 of Article 2.3.13.2. are complied with, and it can be demonstrated through an appropriate level of control and audit that neither *meat-and-bone meal* nor *greaves* derived from ruminants has been fed to ruminants, but at least one of the following two conditions applies:
    - i) the criteria in points 2 to 4 of Article 2.3.13.2. have not been complied with for 7 years;
    - ii) it cannot be demonstrated that controls over the feeding of *meat-and-bone meal* or *greaves* derived from ruminants to ruminants have been in place for 8 years;

OR

- b) there has been an indigenous *case* of BSE, the criteria in points 2 to 4 of Article 2.3.13.2. are complied with, and it can be demonstrated through an appropriate level of control and audit that neither *meat-and-bone meal* nor *greaves* derived from ruminants has been fed to ruminants, but at least one of the following two conditions applies:
  - i) the criteria in points 2 to 4 of Article 2.3.13.2. have not been complied with for 7 years;
  - ii) it cannot be demonstrated that controls over the feeding of *meat-and-bone meal* and *greaves* derived from ruminants to ruminants have been in place for 8 years;

AND

- iii) all BSE *cases*, as well as:
  - all cattle which, during their first year of life, were reared with the BSE *cases* during their first year of life, and which investigation showed consumed the same potentially contaminated feed during that period, or

Appendix IX (contd)

- if the results of the investigation are inconclusive, all cattle born in the same herd as, and within 12 months of the birth of, the BSE cases,

if alive in the country, *zone* or *compartment*, are permanently identified, and their movements controlled, and, when slaughtered or at death, are completely destroyed.

Article 2.3.13.5.

**Undetermined BSE risk**

The cattle population of a country, *zone* or *compartment* poses an undetermined BSE risk if it cannot be demonstrated that it meets the requirements of another category.

Article 2.3.13.6.

When importing from a country, *zone* or *compartment* posing a negligible BSE risk, *Veterinary Administrations* should require:

for all commodities from cattle not listed in point 1 of Article 2.3.13.1.

the presentation of an *international veterinary certificate* attesting that the country, *zone* or *compartment* complies with the conditions in Article 2.3.13.3.

Article 2.3.13.6.a

When importing from a country, *zone* or *compartment* posing a negligible BSE risk, *Veterinary Administrations* should require:

for cattle selected for export

the presentation of an *international veterinary certificate* attesting that the animals:

1. are identified by a permanent identification system enabling them to be traced back to the dam and herd of origin, and are not exposed cattle as described in point 3) b) iii) of Article 2.3.13.3.;
2. were born after the date from which the ban on the feeding of ruminants with *meat-and-bone meal* and *greaves* derived from ruminants had been effectively enforced.

Article 2.3.13.7.

When importing from a country, *zone* or *compartment* posing a controlled BSE risk, *Veterinary Administrations* should require:

for cattle

the presentation of an *international veterinary certificate* attesting that:

1. the country, *zone* or *compartment* complies with the conditions referred to in Article 2.3.13.4.;
2. cattle selected for export are identified by a permanent identification system enabling them to be traced back to the dam and herd of origin, and are not exposed cattle as described in point 3b)iii) of Article 2.3.13.4.;

Appendix IX (contd)

3. ~~in the case of a country, zone or compartment where there has been an indigenous case~~, cattle selected for export were born after the date from which the ban on the feeding of ruminants with *meat-and-bone meal and greaves* derived from ruminants was effectively enforced.

## Article 2.3.13.8.

When importing from a country, *zone* or *compartment* with an undetermined BSE risk, *Veterinary Administrations* should require:

for cattle

the presentation of an *international veterinary certificate* attesting that:

1. the feeding of ruminants with *meat-and-bone meal* and *greaves* derived from ruminants has been banned and the ban has been effectively enforced;
2. all BSE *cases*, as well as:
  - a) all cattle which, during their first year of life, were reared with the BSE *cases* during their first year of life, and, which investigation showed consumed the same potentially contaminated feed during that period, or
  - b) if the results of the investigation are inconclusive, all cattle born in the same herd as, and within 12 months of the birth of, the BSE *cases*,

if alive in the country, *zone* or *compartment*, are permanently identified, and their movements controlled, and, when slaughtered or at death, are completely destroyed;

3. cattle selected for export:
  - a) are identified by a permanent identification system enabling them to be traced back to the dam and herd of origin and are not the progeny of BSE suspect or confirmed females;
  - b) were born at least 2 years after the date from which the ban on the feeding of ruminants with *meat-and-bone meal* and *greaves* derived from ruminants was effectively enforced.

## Article 2.3.13.9.

When importing from a country, *zone* or *compartment* posing a negligible BSE risk, *Veterinary Administrations* should require:

for fresh meat and meat products from cattle (other than those listed in point 1 of Article 2.3.13.1.)

the presentation of an *international veterinary certificate* attesting that:

1. the country, *zone* or *compartment* complies with the conditions in Article 2.3.13.3.;
2. the cattle from which the *fresh meat* and *meat products* were derived passed ante-mortem and post-mortem inspections.

## Article 2.3.13.10.

When importing from a country, *zone* or *compartment* with an undetermined BSE risk, *Veterinary Administrations* should require:

Appendix IX (contd)

for fresh meat and meat products from cattle (other than those listed in point 1 of Article 2.3.13.1.)

the presentation of an *international veterinary certificate* attesting that:

1. the country, *zone* or *compartment* complies with the conditions referred to in Article 2.3.13.4.;
2. the cattle from which the *fresh meat* and *meat products* were derived passed ante-mortem and post-mortem inspections;
3. cattle from which the *fresh meat* and *meat products* destined for export were derived were not subjected to a stunning process, prior to slaughter, with a device injecting compressed air or gas into the cranial cavity, or to a pithing process;
4. the *fresh meat* and *meat products* were produced and handled in a manner which ensures that such products do not contain and are not contaminated with:
  - a) the tissues listed in points 1 and 2 of Article 2.3.13.13.,
  - b) mechanically separated meat from the skull and vertebral column from cattle over 30 months of age.

## Article 2.3.13.11.

When importing from a country, *zone* or *compartment* with an undetermined BSE risk, *Veterinary Administrations* should require:

for fresh meat and meat products from cattle (other than those listed in point 1 of Article 2.3.13.1.)

the presentation of an *international veterinary certificate* attesting that:

1. the cattle from which the *fresh meat* and *meat products* originate:
  - a) have not been fed *meat-and-bone meal* or *greaves* derived from ruminants;
  - b) passed ante-mortem and post-mortem inspections;
  - c) were not subjected to a stunning process, prior to slaughter, with a device injecting compressed air or gas into the cranial cavity, or to a pithing process;
2. the *fresh meat* and *meat products* were produced and handled in a manner which ensures that such products do not contain and are not contaminated with:
  - a) the tissues listed in points 1 and 3 of Article 2.3.13.13.;
  - b) nervous and lymphatic tissues exposed during the deboning process;
  - c) mechanically separated meat from the skull and vertebral column from cattle over 12 months of age.

Appendix IX (contd)

## Article 2.3.13.12.

1. Ruminant-derived meat-and-bone meal or greaves, or any commodities containing such products, which originate from a country, zone or compartment defined in Article 2.3.13.3. should not be traded if such products were derived from cattle born before the date from which the ban on the feeding of ruminants with meat-and-bone meal and greaves derived from ruminants had been enforced.
- ~~4.2.~~ Ruminant-derived meat-and-bone meal or greaves, or any commodities containing such products, which originate from a country, zone or compartment defined in Articles 2.3.13.4. and 2.3.13.5. should not be traded between countries.

## Article 2.3.13.13.

1. From cattle of any age originating from a country, zone or compartment defined in Articles 2.3.13.4. and 2.3.13.5., the following commodities, and any commodity contaminated by them, should not be traded for the preparation of food, feed, fertilisers, cosmetics, pharmaceuticals including biologicals, or medical devices: tonsils and distal ileum. Protein products, food, feed, fertilisers, cosmetics, pharmaceuticals or medical devices prepared using these commodities (unless covered by other Articles in this Chapter) should also not be traded.
2. From cattle that were at the time of slaughter over 30 months of age originating from a country, zone or compartment defined in Article 2.3.13.4., the following commodities, and any commodity contaminated by them, should not be traded for the preparation of food, feed, fertilisers, cosmetics, pharmaceuticals including biologicals, or medical devices: brains, eyes, spinal cord, skull and vertebral column. Protein products, food, feed, fertilisers, cosmetics, pharmaceuticals or medical devices prepared using these commodities (unless covered by other Articles in this Chapter) should also not be traded.
3. From cattle that were at the time of slaughter over 12 months of age originating from a country, zone or compartment defined in Article 2.3.13.5., the following commodities, and any commodity contaminated by them, should not be traded for the preparation of food, feed, fertilisers, cosmetics, pharmaceuticals including biologicals, or medical devices: brains, eyes, spinal cord, skull and vertebral column. Protein products, food, feed, fertilisers, cosmetics, pharmaceuticals or medical devices prepared using these commodities (unless covered by other Articles in this Chapter) should also not be traded.

## Article 2.3.13.14.

*Veterinary Administrations of importing countries* should require:

for gelatine and collagen prepared from bones and intended for food or feed, cosmetics, pharmaceuticals including biologicals, or medical devices

the presentation of an *international veterinary certificate* attesting that:

## Appendix IX (contd)

1. the *commodities* came from a country, *zone* or *compartment* posing a negligible BSE risk;

OR

2. they originate from a country, *zone* or *compartment* posing a controlled or undetermined BSE risk and are derived from cattle which have passed ante-mortem and post-mortem inspections; and that

a) ~~skulls from cattle over 30 months of age at the time of slaughter have been excluded;~~

b) ~~a) the bones have been subjected to a process which includes all of the following steps:~~

i) pressure washing (degreasing),

ii) acid demineralisation,

iii) acid or alkaline treatment,

iv) filtration,

v) sterilisation at >138°C for a minimum of 4 seconds,

or to an equivalent or better process in terms of infectivity reduction (such as high pressure heating);

OR

~~3. they originate from a country, *zone* or *compartment* posing an undetermined BSE risk and are derived from cattle which have passed ante-mortem and post-mortem inspections; and that~~

~~a) skulls and vertebrae (except tail vertebrae) from cattle over 12 months of age at the time of slaughter have been excluded;~~

~~b) the bones have been subjected to a process which includes all of the following steps:~~

~~i) pressure washing (degreasing);~~

~~ii) acid demineralisation,~~

~~iii) acid or alkaline treatment,~~

~~iv) filtration,~~

~~v) sterilisation at >138°C for a minimum of 4 seconds,~~

~~or to an equivalent or better process in terms of infectivity reduction (such as high pressure heating);~~

Article 2.3.13.15.

*Veterinary Administrations of importing countries* should require:

for tallow and dicalcium phosphate (other than as defined in Article 2.3.13.1.) intended for food, feed, fertilisers, cosmetics, pharmaceuticals including biologicals, or medical devices

the presentation of an *international veterinary certificate* attesting that:

Appendix IX (contd)

1. the *commodities* came from a country, *zone* or *compartment* posing a negligible BSE risk; or
2. they originate from a country, *zone* or *compartment* posing a controlled BSE risk, are derived from cattle which have passed ante-mortem and post-mortem inspections, and have not been prepared using the tissues listed in points 1 and 2 of Article 2.3.13.13.

Article 2.3.13.16.

*Veterinary Administrations of importing countries* should require:

for tallow derivatives (other than those made from protein-free tallow as defined in Article 2.3.13.1.) intended for food, feed, fertilisers, cosmetics, pharmaceuticals including biologicals, or medical devices

the presentation of an *international veterinary certificate* attesting that:

1. they originate from a country, *zone* or *compartment* posing a negligible BSE risk; or
2. they are derived from tallow meeting the conditions referred to in Article 2.3.13.15.; or
3. they have been produced by hydrolysis, saponification or transesterification using high temperature and pressure.

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## CHAPTER 2.5.5.

### EQUINE INFLUENZA

#### Article 2.5.5.1.

For the purposes of the *Terrestrial Code*, equine influenza (EI) is defined as an infection of domestic horses, ~~which shall include~~ donkeys and mules.

For the purposes of *international trade*, this Chapter deals not only with the occurrence of clinical signs caused by equine influenza virus (EIV), but also with the presence of infection with EIV in the absence of clinical signs.

For the purposes of this chapter, isolation is defined as ‘the separation of horses from horses of a different equine influenza health status, utilising appropriate biosecurity measures, with the purpose of preventing the transmission of infection’.

For the purposes of the *Terrestrial Code*, the *infective period* for equine influenza is 21 days.

Standards for diagnostic tests and vaccines are described in the *Terrestrial Manual*. ~~For the purposes of this chapter, a primary vaccination course for an inactivated vaccine comprises two vaccine doses given at an interval specified by the manufacturer; in the case of a live vaccine, one dose constitutes the primary course. Subsequent doses are classified as booster doses.~~

#### Article 2.5.5.2.

The EI status of a country, a *zone* or a *compartment* can be determined on the basis of the following criteria:

1. the outcome of a *risk assessment* identifying all potential factors for EI occurrence and their historic perspective;
2. whether EI is notifiable in the whole country, an on-going EI awareness programme is in place, and all notified suspect occurrences of EI are subjected to field and, where applicable, laboratory investigations;
3. appropriate surveillance is in place to demonstrate the presence of infection in the absence of clinical signs in horses; ~~this may be achieved through an EI surveillance programme.~~

#### Article 2.5.5.3.

#### **Equine influenza free country, zone or compartment**

A country or *zone* or *compartment* may be considered free from EI provided it shows evidence of an effective surveillance programme, planned and implemented according to the general principles in Appendix 3.8.1. The surveillance may need to be adapted to parts of the country, *zone* or *compartment* depending on historical or geographical factors, industry structure, population data, movements of equids into the country, zone or compartment, wild equid populations or proximity to recent *outbreaks*.

~~For a country, zone or compartment in which vaccination is not practised or is practised at a moderate to low level, the absence of clinical equine influenza in the country, zone or compartment for the past 12 months should be demonstrated.~~

Appendix X (contd)

A country, *zone* or *compartment* seeking freedom from EI, in which vaccination is practised ~~at a high level~~, should also demonstrate that EIV has not been circulating in the domestic horse population during the past 12 months, through surveillance at a level sufficient to provide at least a 95% level of confidence of detecting infection if it is present at a prevalence rate exceeding 1%. ~~The level of population immunity required to prevent transmission will depend on the size, composition and density of the susceptible population, but the aim should be to vaccinate at least 80% of the susceptible population. Based on the epidemiology of EI in the country, *zone* or *compartment*, a decision may be reached to vaccinate only certain subsets of the total susceptible horse population.~~ In a country in which vaccination is not practised surveillance could be conducted using serological testing. In countries where vaccination is practiced, the surveillance should include methods of virus detection.

If an outbreak of clinical equine influenza occurs in a previously free country, *zone* or *compartment*, free status can be regained 12 months after the last clinical case, providing that surveillance for evidence of infection has been carried out during that 12-month period at a level sufficient to provide at least a 95% level of confidence of detecting infection if it is present at a prevalence rate exceeding 1%.

Article 2.5.5.4.

**Country, zone or compartment not free of undetermined from equine influenza status**

A country, *zone* or *compartment* may be considered not free from equine influenza ~~of undetermined status~~ when it does not meet the conditions for free status.

Article 2.5.5.5. (under study)

Regardless of the EI status of the *exporting country*, *zone* or *compartment*, the *Veterinary Administration* of a country, *zone* or *compartment* should authorise without restriction on account of EI the importation into their *territory* of the following *commodities*:

- a) semen;
- b) *in vivo* derived equine embryos collected, processed and stored in conformity with the provisions of Appendix 3.3.1.

Article 2.5.5.6.

When importing horses for immediate slaughter, the *Veterinary Administrations* ~~of an EI free country, *zone* or *compartment*~~ should require:

the presentation of an *international veterinary certificate* attesting that the horses:

1. came from an EI free country, *zone* or *compartment* in which they had been resident for at least 21 days; or
2. came from a country, *zone* or *compartment* not known of undetermined to be EI free status and had been subjected to pre-export isolation for 21 days, and showed no clinical sign of EI during isolation nor on the day of shipment.

Article 2.5.5.7.

~~When importing horses for immediate slaughter, the *Veterinary Administration* of a country, *zone* or *compartment* of undetermined EI status should require:~~

## Appendix X (contd)

the presentation of an *international veterinary certificate* attesting that the horses:

1. ~~came from an EI free country, *zone or compartment* in which they had been resident for at least 21 days;~~  
~~or~~
2. ~~came from a country, *zone or compartment* of undetermined EI status and showed no clinical sign of EI on the day of shipment.~~

## Article 2.5.5.8.7.

When importing horses for unrestricted movement, ~~the *Veterinary Administrations* of an EI free country, *zone or compartment*~~ should require:

the presentation of an *international veterinary certificate* attesting that the horses:

1. came from an EI free country, *zone or compartment* in which they had been resident for at least 21 days; in the case of a vaccinated horse, information on its vaccination status should be included in the veterinary certificate;

OR

2. came from a country, *zone or compartment* not known to be free from ~~of undetermined EI status~~, were subjected to pre-export isolation for 21 days and showed no clinical sign of EI during isolation nor on the day of shipment; and
3. were vaccinated according to the manufacturer's instructions. ~~between 14 and 90 days before shipment either with a primary course or a booster.~~

## Article 2.5.5.9.8.

~~When importing horses for unrestricted movement, the *Veterinary Administration* of a country, *zone or compartment* of undetermined EI status should require:~~

~~the presentation of an *international veterinary certificate* attesting that the horses:~~

1. ~~came from an EI free country, *zone or compartment* in which they had been resident for at least 21 days; in the case of a vaccinated horse, information on its vaccination status should be included in the veterinary certificate;~~

~~OR~~

2. ~~came from a country, *zone or compartment* of undetermined EI status and showed no clinical sign of EI on the day of shipment; and~~
3. ~~were vaccinated between 14 and 180 days before shipment either with a primary course or a booster.~~

## Article 2.5.5.10.9.

When importing horses which will be kept in isolation, ~~the *Veterinary Administrations* of an EI free country, *zone or compartment*~~ should require:

Appendix X (contd)

the presentation of an *international veterinary certificate* attesting that the horses:

1. came from an EI free country, *zone* or *compartment* in which they had been resident for at least 21 days; in the case of a vaccinated horse, information on its vaccination status should be included in the veterinary certificate;

OR

2. showed no clinical sign of EI in any premises in which the horses had been resident for the ~~30~~ 21 days prior to shipment nor on the day of shipment; and
3. were vaccinated according to the manufacturer's instructions ~~between 14 and 180 days before shipment either with a primary course or a booster;~~
4. ~~(where applicable) had been kept in isolation except during competition.~~

~~Article 2.5.5.11.~~

~~When importing horses which will be kept in isolation, the *Veterinary Administration* of a country, *zone* or *compartment* of undetermined EI status should require:~~

~~the presentation of an *international veterinary certificate* attesting that the horses:~~

1. ~~came from an EI free country, *zone* or *compartment* in which they had been resident for at least 21 days; in the case of a vaccinated horse, information on its vaccination status should be included in the veterinary certificate;~~

~~OR~~

2. ~~showed no clinical sign of EI in any premises in which the horses had been resident for the 30 days prior to shipment nor on the day of shipment; and~~
3. ~~were vaccinated between 14 and 180 days before shipment either with a primary course or a booster;~~
4. ~~(where applicable) had been kept in isolation except during competition.~~

~~Article 2.5.5.12-10.~~

~~When importing *fresh horse meat*, the *Veterinary Administrations* of a country, *zone* or *compartment* should require:~~

~~the presentation of an *international veterinary certificate* attesting that the *fresh meat*:~~

1. came from an EI free country, *zone* or *compartment* in which the horses from which the meat was derived had been resident for at least 21 days; or
2. came from horses which had been subjected to ante-mortem and post-mortem inspections as described in the Codex Alimentarius Code of Hygienic Practice for Meat Hygiene.

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CHAPTER 2.5.4.  
**EQUINE INFECTIOUS ANAEMIA**

Article 2.5.4.1.

Standards for diagnostic tests are described in the *Terrestrial Manual*.

Article 2.5.4.2.

*Veterinary Administrations of importing countries* should require:

for equines

the presentation of an *international veterinary certificate* attesting that:

1. the animals showed no clinical sign of equine infectious anaemia (EIA) on the day of shipment and during the 48 hours prior to shipment;
2. no *case* of EIA has been associated with any premises where the animals were kept during the 3 months prior to shipment;
3. the animals were subjected to a diagnostic test for EIA with negative results on blood samples collected during the 30 days prior to shipment or the animals are imported on a temporary basis and the blood samples were collected within 90 days of export.



CHAPTER 2.5.6.

**EQUINE PIROPLASMOSIS**

Article 2.5.6.1.

Standards for diagnostic tests are described in the *Terrestrial Manual*.

Article 2.5.6.2.

*Veterinary Administrations of importing countries* should require:

for equines

the presentation of an *international veterinary certificate* attesting that the animals:

1. showed no clinical sign of equine piroplasmosis on the day of shipment;
2. were subjected to diagnostic tests for equine piroplasmosis (*Theileria equi* and *Babesia caballi*) with negative results during the 30 days prior to shipment;
3. were maintained free from ticks, by treatment where necessary, during the 30 days prior to shipment.

Article 2.5.6.3.

*Veterinary Administrations of importing countries* should consider the possibility of importing competition horses on a temporary basis and which are positive to the testing procedure referred to in point 2 of Article 2.5.6.2. under the following safeguards:

1. the horses are accompanied by a passport in conformity with the model contained in Appendix 4.1.5.;
  2. the *Veterinary Administrations of importing countries* require the presentation of an *international veterinary certificate* attesting that the animals:
    - a) showed no clinical sign of equine piroplasmosis on the day of shipment;
    - b) were treated against ticks within the 7 days prior to shipment;
  3. the horses are kept in an area where necessary precautions are taken to control ticks and that is under the direct supervision of the *Veterinary Authority*;
  4. the horses are regularly examined for the presence of ticks under the direct supervision of the *Veterinary Authority*.
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## CHAPTER 2.5.7.

**EQUINE RHINOPNEUMONITIS**  
(Equine herpes virus infection)

## Article 2.5.7.1.

Standards for diagnostic tests are described in the *Terrestrial Manual*.

## Article 2.5.7.2.

*Veterinary Administrations of importing countries* should require:

for equines

the presentation of an *international veterinary certificate* attesting that the animals:

1. showed no clinical sign of equine ~~rhinopneumonitis~~ herpes virus infection, on the day of shipment and during the 21 days prior to shipment;
2. were kept for the 21 days prior to shipment in an *establishment* where no *case* of equine ~~rhinopneumonitis~~ herpes virus infection, was reported during that period.

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## CHAPTER 2.5.8.

## GLANDERS

## Article 2.5.8.1.

For the purposes of this *Terrestrial Code*, the *incubation period* for glanders shall be 6 months.

Standards for diagnostic tests are described in the *Terrestrial Manual*.

## Article 2.5.8.2.

**Glanders free country**

A country may be considered free from glanders when:

1. glanders is notifiable in the country;
2. no *case* of glanders has been reported during ~~confirmed for at least the past 3~~ last 2 years, or no case has been reported for a period of at least 6 months and a surveillance programme is in place demonstrating the absence of the disease in accordance with general guidelines for animal health surveillance (Appendix 3.8.1.).

~~When importing equines for immediate slaughter from an infected country (see Article 2.5.8.5.), a glanders free country will not be considered as infected if one of the imported equines is found infected.~~

~~The conditions for such imports will require direct transport of the animals from the place of disembarkation to a designated abattoir and completion of cleansing and *disinfection* of the means of transport, the lairages and the abattoir immediately after use. These conditions should be prescribed and enforced by the *Veterinary Administration*.~~

## Article 2.5.8.3.

When importing from glanders free countries, *Veterinary Administrations* should require:

for equines

the presentation of an *international veterinary certificate* attesting that the animals:

1. showed no clinical signs ~~evidence~~ of glanders on the day of shipment;
2. were kept ~~since birth, or~~ for the past 6 months prior to shipment, or since birth if less than 6 months of age, in the *exporting country*; ~~or~~
3. ~~were subjected to a test as prescribed in the *Terrestrial Manual* the mallein test and/or the complement fixation test for glanders with negative results, during the 15 days prior to shipment.~~

## Article 2.5.8.4.

When importing from countries considered infected with glanders, *Veterinary Administrations* should require:

for equines

Appendix XIV (contd)

the presentation of an *international veterinary certificate* attesting that the animals:

1. showed no clinical sign of glanders on the day of shipment;
2. were kept for the 6 months prior to shipment in an *establishment* where no *case* of glanders was ~~officially~~ reported during that period;
3. were subjected to a test as prescribed in the *Terrestrial Manual* ~~the mallein test and the complement fixation test~~ for glanders with negative results, during the ~~15-30~~ 30 days prior to shipment.

~~Article 2.5.8.5.~~

~~When importing from countries considered infected with glanders, *Veterinary Administrations* should require:~~

~~for equines for immediate slaughter~~

~~the presentation of an *international veterinary certificate* attesting that the animals showed no clinical sign of glanders on the day of shipment. (See also Article 2.5.8.2.)~~

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## CHAPTER 2.5.10.

### EQUINE VIRAL ARTERITIS

#### Article 2.5.10.1.

The *infective period* for equine viral arteritis (EVA) shall be 28 days for ~~mares, and geldings, and all categories of equine except uncastrated sexually immature equines.~~ Because the infective period may be extended in the case of virus shedding in semen, ~~The health~~ status of seropositive stallions should be checked to ensure that they do not shed ~~equine arteritis~~ virus in their semen.

Standards for diagnostic tests and vaccines are described in the *Terrestrial Manual*.

#### Article 2.5.10.2.

*Veterinary Administrations of importing countries* should require:

for uncastrated male equines imported on a temporary basis for breeding or on a permanent basis

the presentation of an *international veterinary certificate* attesting that the animals:

1. showed no clinical sign of EVA on the day of shipment and during the 28 days prior to shipment;
2. were subjected to two tests for EVA as prescribed in the *Terrestrial Manual* ~~diagnostic~~ on blood samples collected at least 14 days apart with negative results, during the 28 days prior to shipment; or
3. ~~were subjected between 6 and 12 months of age to a diagnostic test for EVA as prescribed in the *Terrestrial Manual* on a blood sample with negative results, immediately vaccinated for EVA and regularly revaccinated; or~~  
were subjected between 6 and 9 months of age to a test for EVA as prescribed in the *Terrestrial Manual* carried out on two blood samples collected at least 10 days apart with stable or decreasing titre, immediately vaccinated for EVA and regularly revaccinated according to the manufacturer's instructions; or
4. were subjected to a test for EVA as prescribed in the *Terrestrial Manual* on a blood sample with negative results, immediately vaccinated for EVA, kept for 21 days following vaccination separated from other equidae and regularly revaccinated according to the manufacturer's instructions; or
45. have been subjected to a ~~diagnostic~~ test for EVA as prescribed in the *Terrestrial Manual* on a blood sample with positive results and then: either
  - a) were subsequently test mated to two mares within 12 months prior to shipment which were subjected to two tests for EVA as prescribed in the *Terrestrial Manual* ~~diagnostic~~ with negative results on blood samples collected at the time of test mating and again 28 days after the mating; or
  - b) were subjected to a ~~virus isolation~~ test for EVA equine arteritis virus as prescribed in the *Terrestrial Manual* with negative results ~~(under study)~~, carried out on semen collected during the 28 days prior to shipment.

Appendix XV (contd)

## Article 2.5.10.3.

*Veterinary Administrations of importing countries* should require:

for uncastrated male equines imported on a temporary basis other than for breeding, and for equines other than uncastrated males

the presentation of an *international veterinary certificate* attesting that the animals:

1. showed no clinical sign of EVA on the day of shipment and were kept in an establishment where no animals have shown any signs of EVA for during the 28 days prior to shipment;
2. were subjected, during the 28 days prior to shipment, to two ~~diagnostic~~ tests for EVA as prescribed in the *Terrestrial Manual* on blood samples collected at least 14 days apart, which demonstrated negative results or a stable or declining antibody titres;
3. were subjected, between 6 and 12 months of age, to a ~~diagnostic~~ test for EVA as prescribed in the *Terrestrial Manual* on a blood sample, with negative results, and immediately vaccinated for EVA and regularly revaccinated.

## Article 2.5.10.4.

*Veterinary Administrations of importing countries* should require:

for fresh semen

the presentation of an *international veterinary certificate* attesting that the donor animals:

1. were kept for the 28 ~~30~~ days prior to semen collection in an *establishment* where no equine has shown any clinical sign of EVA during that period;
2. showed no clinical sign of EVA on the day of semen collection;
3. were subjected between 6 and ~~12~~ 9 months of age to a ~~diagnostic~~ test for EVA as prescribed in the *Terrestrial Manual* on a blood sample with ~~negative results, stable or decreasing titre, and~~ immediately vaccinated for EVA and regularly revaccinated according to the manufacturer's instructions; or
4. were subjected to a test for EVA as prescribed in the *Terrestrial Manual* on a blood sample with negative results, immediately vaccinated for EVA, kept for 21 days following vaccination separated from other equidae and regularly revaccinated according to the manufacturer's instructions; or
45. were subjected to a ~~diagnostic~~ test for EVA as prescribed in the *Terrestrial Manual* on a blood sample with negative results within 14 days prior to semen collection, and had ~~not been used for natural breeding~~ been separated from other equidae from the time of the taking of the blood sample to the time of semen collection; or
56. have been ~~were~~ subjected to a ~~diagnostic~~ test for EVA as prescribed in the *Terrestrial Manual* on a blood sample with positive results and then: either

## Appendix XV (contd)

- a) were ~~subsequently~~ test mated ~~to two mares~~ within ~~12 months~~ ~~one year~~ prior to semen collection, ~~to two mares which showed negative results to two diagnostic tests~~ were subjected to two tests for EVA as prescribed in the *Terrestrial Manual* with negative results on blood samples collected at the time of test mating and again 28 days after the test mating, or
- b) were subjected to a ~~virus isolation~~ test for equine arteritis virus as prescribed in the *Terrestrial Manual* with negative results ~~(under study)~~, carried out on semen collected within one year prior to collection of the semen to be exported.

## Article 2.5.10.5.

~~Veterinary Administrations of importing countries should require:~~

for frozen semen

~~the presentation of an international veterinary certificate attesting that the donor animals:~~

- 1. ~~showed no clinical sign of EVA on the day of semen collection;~~
- 2. ~~were subjected to a diagnostic test for EVA as prescribed in the *Terrestrial Manual* on a blood sample with negative results not less than 14 days after semen collection; or~~
- 3. ~~were subjected, between 6 and 12 months of age, to a diagnostic test for EVA as prescribed in the *Terrestrial Manual* on a blood sample with negative results, and immediately vaccinated for EVA and regularly revaccinated; or~~
- 4. ~~were subjected to a diagnostic test for EVA as prescribed in the *Terrestrial Manual* on a blood sample with positive results and then: either~~
  - a) ~~were test mated, within 12 months one year prior to or as soon as possible after semen collection, to two mares which showed negative results to two diagnostic tests as prescribed in the *Terrestrial Manual* on blood samples collected at the time of test mating and again 28 days after the test mating; or~~
  - b) ~~were subjected to a virus isolation test as prescribed in the *Terrestrial Manual* with negative results (under study), carried out on semen collected within one year prior to collection of the semen to be exported.~~

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## CHAPTER 2.6.7.

### CLASSICAL SWINE FEVER

#### Article 2.6.7.1.

The pig is the only natural host for classical swine fever (CSF) virus. The definition of pig includes all varieties of *Sus scrofa*, both domestic breeds and wild boar. For the purposes of this chapter, a distinction is made between domestic pigs (permanently captive and owned free-range pigs) and wild pigs (including feral pigs).

Pigs exposed to CSF virus prenatally may be persistently infected throughout life and may have an *incubation period* of several months before showing signs of disease. Pigs exposed postnatally have an *incubation period* of 7-10 days, and are usually infective between post-infection days 5 and 14, but up to 3 months in cases of chronic infections.

Standards for diagnostic tests and vaccines are described in the *Terrestrial Manual*.

#### Article 2.6.7.2.

The CSF status of a country, *zone* or *compartment* can only be determined after considering the following criteria in domestic and wild pigs, as applicable:

1. a *risk assessment* has been conducted, identifying all potential factors for CSF occurrence and their historic perspective;
2. CSF should be notifiable in the whole country, and all clinical signs suggestive of CSF should be subjected to field and/or laboratory investigations;
3. an on-going awareness programme should be in place to encourage reporting of all *cases* suggestive of CSF;
4. the *Veterinary Administration* should have current knowledge of, and authority over, all domestic pigs in the country, *zone* or *compartment*;
5. the *Veterinary Administration* should have current knowledge about the population and habitat of wild pigs in the country or *zone*.

#### Article 2.6.7.3.

#### CSF free country, zone or compartment

1. CSF free status in the absence of an outbreak

#### a) Historically free status

A country, *zone* or *compartment* may be considered free from the disease after conducting a *risk assessment* as referred to in Article 2.6.7.2. but without formally applying a specific surveillance programme, if the provisions of Article 3.8.1.6. are complied with.

Appendix XVI (contd)

b)

2. Free status as a result of a specific surveillance programme

A country, *zone* or *compartment* which does not meet the conditions of point 1 above may be considered free from CSF when a *risk assessment* as referred to in Article 2.6.7.2. has been conducted, surveillance in accordance with Appendix 3.8.8. has been in place for at least 12 months, and when no *outbreak* has been observed for at least 12 months.

3. ~~2. CSF free status following an outbreak~~ Free status as a result of an eradication programme

A country, *zone* or *compartment* which does not meet the conditions of point a) 1. or b) 2. above may be considered free from CSF if surveillance in accordance with Appendix 3.8.8. has been in place and after a *risk assessment* as referred to in Article 2.6.7.2. has been conducted, and

- a) where a *stamping-out policy* without vaccination is practised and no *outbreak* has been observed in domestic pigs for at least 6 months;

OR

- b) where a *stamping-out policy* with vaccination is practised, and either:

- i) vaccinated pigs are slaughtered, and no *outbreak* has been observed in domestic pigs for at least 6 months after the last vaccinated pig was slaughtered; or
- ii) where there are validated means of distinguishing between vaccinated and infected pigs, no *outbreak* has been observed in domestic pigs for at least 6 months;

OR

- c) where a vaccination strategy is practised without a *stamping-out policy*:

- i) vaccination has been banned in all domestic pigs in the country, *zone* or *compartment* for at least 12 months, unless there are validated means of distinguishing between vaccinated and infected pigs;
- ii) if vaccination has been practised within the past 5 years, surveillance in accordance with Appendix 3.8.8. has been in place for at least 6 months to demonstrate the absence of infection within the population of domestic pigs 6 months to one year old; and
- iii) no *outbreak* has been observed in domestic pigs for at least 12 months;

AND

in all cases, based on surveillance in accordance with Appendix 3.8.8., CSF infection is not known to occur in any wild pig population in the country or *zone*.

## Article 2.6.7.4.

**Country or zone free of CSF in domestic pigs but with infection in the a wild pig population**

Requirements in points 23a to 23c of Article 2.6.7.3., as relevant, are complied with. As CSF infection may be present in the wild pig population, the following additional conditions are complied with:

1. a programme for the management of CSF in wild pigs is in place, taking into account the measures in place to manage the disease in the wild pig population, the presence of natural boundaries, the ecology of the wild pig population, and an assessment of the risk of disease spread;
2. ~~zoning or compartmentalisation is applied~~ the domestic pig population must be separated from the infected wild pig population through biosecurity measures to prevent transmission of CSF from wild pigs to domestic pigs.

## Article 2.6.7.5.

**Recovery of free status**

Should a CSF *outbreak* occur in a previously free country, zone or compartment, the status of the country, *zone* or *compartment* may be restored not less than 30 days after completion of a *stamping-out policy* where surveillance in accordance with Appendix 3.8.8. has been carried out with negative results.

If emergency vaccination has been practised within the CSF domestic pig control area, recovery of the free status cannot occur before all the vaccinated pigs have been slaughtered, unless there are validated means of distinguishing between vaccinated and infected pigs.

## Article 2.6.7.6.

**Country or zone free of CSF in wild pigs**

A country or *zone* may be considered free from CSF in wild pigs when:

1. the domestic pig population in the country or *zone* is free from CSF infection;
2. surveillance in accordance with Appendix 3.8.8. has been in place to determine the CSF status of the wild pig population in the country, and in the country or *zone*:
  - a) there has been no clinical evidence, nor virological evidence of CSF in wild pigs during the past 12 months;
  - b) no seropositive wild pigs have been detected in the age class 6-12 months during the past 12 months;
3. there has been no vaccination in wild pigs for the past 12 months;
4. the feeding of swill to wild pigs is forbidden, unless the swill has been treated to destroy any CSF virus that may be present, in conformity with one of the procedures referred to in Article 3.6.4.1.;
5. imported wild pigs comply with the relevant requirements set forth in the present chapter.

Appendix XVI (contd)

## Article 2.6.7.7.

When importing from countries, zones or compartments free of CSF, *Veterinary Administrations* should require:

for domestic pigs

the presentation of an *international veterinary certificate* attesting that the animals:

1. showed no clinical sign of CSF on the day of shipment;
2. were kept in a country, zone or compartment free of CSF since birth or for at least the past 3 months;
3. have not been vaccinated against CSF, nor are they the progeny of vaccinated sows, unless there are validated means of distinguishing between vaccinated and infected pigs.

## Article 2.6.7.8.

When importing from countries free of CSF in domestic pigs but with infection in the wild pig population, *Veterinary Administrations* should require:

for domestic pigs

the presentation of an *international veterinary certificate* attesting that the animals:

1. were kept in a country or zone free of CSF in domestic pigs since birth or for at least the past 3 months;
2. have not been vaccinated against CSF, nor are they the progeny of vaccinated sows, unless there are validated means of distinguishing between vaccinated and infected pigs;
3. come from a CSF free zone or compartment;
4. showed no clinical sign of CSF on the day of shipment.

## Article 2.6.7.9.

When importing from countries or zones with CSF infection in domestic pigs, *Veterinary Administrations* should require:

for domestic pigs

the presentation of an *international veterinary certificate* attesting that the animals:

1. have not been vaccinated against CSF nor are they the progeny of vaccinated sows, unless there are validated means of distinguishing between vaccinated and infected pigs;
2. were kept since birth or for the past 3 months in a CSF free compartment;
3. showed no clinical sign of CSF on the day of shipment.

Appendix XVI (contd)

## Article 2.6.7.10.

When importing from countries or zones free of CSF, *Veterinary Administrations* should require:

for wild pigs

the presentation of an *international veterinary certificate* attesting that the animals:

1. showed no clinical sign of CSF on the day of shipment;
2. have been captured in a country or zone free from CSF;
3. have not been vaccinated against CSF, unless there are validated means of distinguishing between vaccinated and infected pigs;

and, if the *zone* where the animal has been captured is adjacent to a *zone* with infection in wild pigs:

4. were kept in a *quarantine station* for 40 days prior to shipment, and were subjected to a virological test and a serological test performed at least 21 days after entry into the *quarantine station*, with negative results.

## Article 2.6.7.11.

When importing from countries, zones or compartments free of CSF, *Veterinary Administrations* should require:

for semen of domestic pigs

the presentation of an *international veterinary certificate* attesting that:

1. the donor animals:
  - a) were kept in a country, zone or compartment free of CSF since birth or for at least 3 months prior to collection;
  - b) showed no clinical sign of CSF on the day of collection of the semen;
2. the semen was collected, processed and stored in conformity with the provisions of Appendix 3.2.2.

## Article 2.6.7.12.

When importing from countries free of CSF in domestic pigs but with infection in the wild pig population, *Veterinary Administrations* should require:

for semen of domestic pigs

the presentation of an *international veterinary certificate* attesting that:

1. the donor animals:
  - a) were kept in a country, zone or compartment free of CSF in domestic pigs since birth or for at least 3 months prior to collection;

Appendix XVI (contd)

- b) showed no clinical sign of CSF on the day of collection of the semen and for the following 40 days;
2. the semen was collected, processed and stored in conformity with the provisions of Appendix 3.2.2.

## Article 2.6.7.13.

When importing from countries or *zones* considered infected with CSF in domestic pigs, *Veterinary Administrations* should require:

for semen of domestic pigs

the presentation of an *international veterinary certificate* attesting that:

1. the donor animals:
  - a) were kept in a compartment free of CSF in domestic pigs since birth or for at least 3 months prior to collection;
  - b) showed no clinical sign of CSF on the day of collection of the semen and for the following 40 days;
  - c) have not been vaccinated against CSF, and were subjected to a serological test performed at least 21 days after collection, with negative results;
2. the semen was collected, processed and stored in conformity with the provisions of Appendix 3.2.2.

## Article 2.6.7.14.

When importing from countries, zones or compartments free of CSF, *Veterinary Administrations* should require:

for *in vivo* derived embryos of pigs

the presentation of an *international veterinary certificate* attesting that:

1. the donor females showed no clinical sign of CSF on the day of collection of the embryos;
2. the embryos were collected, processed and stored in conformity with the provisions of Appendix 3.3.1.

## Article 2.6.7.15.

When importing from countries free of CSF in domestic pigs but with infection in the wild pig population, *Veterinary Administrations* should require:

for *in vivo* derived embryos of pigs

the presentation of an *international veterinary certificate* attesting that:

1. the donor females:
  - a) were kept in a country, zone or compartment free of CSF in domestic pigs since birth or for at least 3 months prior to collection;

Appendix XVI (contd)

- b) showed no clinical sign of CSF on the day of collection of the embryos;
- 2. the embryos were collected, processed and stored in conformity with the provisions of Appendix 3.3.1.

## Article 2.6.7.16.

When importing from countries or *zones* considered infected with CSF in domestic pigs, *Veterinary Administrations* should require:

for *in vivo* derived embryos of pigs

the presentation of an *international veterinary certificate* attesting that:

- 1. the donor females:
  - a) were kept in a compartment free of CSF in domestic pigs since birth or for at least 3 months prior to collection;
  - b) showed no clinical sign of CSF on the day of collection of the embryos and for the following 40 days;
  - c) have not been vaccinated against CSF and were subjected, with negative results, to a serological test performed at least 21 days after collection;
- 2. the embryos were collected, processed and stored in conformity with the provisions of Appendix 3.3.1.

## Article 2.6.7.17.

When importing from countries, zones or compartments free of CSF, *Veterinary Administrations* should require:

for *fresh meat* of domestic pigs

the presentation of an *international veterinary certificate* attesting that the entire consignment of meat comes from animals which:

- 1. have been kept in a country, zone or compartment free of CSF since birth or for at least the past 3 months;
- 2. have been slaughtered in an *approved abattoir*, have been subjected to ante-mortem and post-mortem inspections and have been found free of any sign suggestive of CSF.

## Article 2.6.7.18.

When importing from countries or zones free of CSF in domestic pigs but with infection in the wild pig population, *Veterinary Administrations* should require:

for *fresh meat* of domestic pigs

the presentation of an *international veterinary certificate* attesting that the entire consignment of meat comes from animals which:

Appendix XVI (contd)

1. were kept in a country, zone or compartment free of CSF in domestic pigs since birth or for at least the past 3 months;
2. have been slaughtered in an *approved abattoir*, have been subjected to ante-mortem and post-mortem inspections as described in the Codex Alimentarius Code of Hygienic Practice for Meat and have been found free of any sign suggestive of CSF.

## Article 2.6.7.19.

When importing from countries or zones free of CSF, *Veterinary Administrations* should require:

for fresh meat of wild pigs

the presentation of an *international veterinary certificate* attesting that:

1. the entire consignment of meat comes from animals which:
  - a) have been killed in a country or zone free of CSF;
  - b) have been subjected to a post-mortem inspection as described in the Codex Alimentarius Code of Hygienic Practice for Meat in an approved examination centre, and have been found free of any sign suggestive of CSF;

and, if the *zone* where the animal has been killed is adjacent to a *zone* with infection in wild pigs:

2. a sample has been collected from every animal shot, and has been subjected to a virological test and a serological test for CSF, with negative results.

## Article 2.6.7.20.

*Veterinary Administrations* of *importing countries* should require:

for meat products of pigs (either domestic or wild), or for products of animal origin (from fresh meat of pigs) intended for use in animal feeding, for agricultural or industrial use, or for pharmaceutical or surgical use, or for trophies derived from wild pigs

the presentation of an *international veterinary certificate* attesting that the products:

1. have been prepared:
  - a) exclusively from *fresh meat* meeting the conditions laid down in Articles 2.6.7.17., 2.6.7.18. or 2.6.7.19., as relevant;
  - b) in a processing establishment:
    - i) approved by the *Veterinary Administration* for export purposes;
    - ii) processing only meat meeting the conditions laid down in Articles 2.6.7.17., 2.6.7.18. or 2.6.7.19., as relevant;

Appendix XVI (contd)

OR

2. have been processed in an establishment approved by the *Veterinary Administration* for export purposes so as to ensure the destruction of the CSF virus in conformity with one of the procedures referred to in Article 3.6.4.2.

Article 2.6.7.21.

*Veterinary Administrations of importing countries* should require:

for products of animal origin (from pigs, but not derived from *fresh meat*) intended for use in animal feeding and for agricultural or industrial use

the presentation of an *international veterinary certificate* attesting that the products:

1. have been prepared:
  - a) exclusively from products meeting the conditions laid down for *fresh meat* in Articles 2.6.7.17., 2.6.7.18. or 2.6.7.19., as relevant;
  - b) in a processing establishment:
    - i) approved by the *Veterinary Administration* for export purposes;
    - ii) processing only products meeting the conditions laid down in point a) above;

OR

2. have been processed in an establishment approved by the *Veterinary Administration* for export purposes so as to ensure the destruction of the CSF virus in conformity with one of the procedures referred to in Article 3.6.4.2.

Article 2.6.7.22.

*Veterinary Administrations of importing countries* should require:

for bristles (from pigs)

the presentation of an *international veterinary certificate* attesting that the products:

1. come from a country, zone or compartment free of CSF; or
2. have been processed in an establishment approved by the *Veterinary Administration* for export purposes so as to ensure the destruction of the CSF virus.

Article 2.6.7.23.

*Veterinary Administrations of importing countries* should require:

Appendix XVI (contd)

for litter and manure (from pigs)

the presentation of an *international veterinary certificate* attesting that the products:

1. come from a country, zone or compartment free of CSF; or
2. have been processed in an establishment approved by the *Veterinary Administration* for export purposes so as to ensure the destruction of the CSF virus.

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## CHAPTER 2.7.12.

## AVIAN INFLUENZA

## Article 2.7.12.1.

1. For the purposes of the *Terrestrial Code*, avian influenza in its notifiable form (NAI) is defined as an infection of poultry caused by any influenza A virus of the H5 or H7 subtypes or by any AI virus with an intravenous pathogenicity index (IVPI) greater than 1.2 (or as an alternative at least 75% mortality) as described below. NAI viruses can be divided into highly pathogenic notifiable avian influenza (HPNAI) and low pathogenicity notifiable avian influenza (LPNAI):
    - a) HPNAI viruses have an IVPI in 6-week-old chickens greater than 1.2 or, as an alternative, cause at least 75% mortality in 4-to 8-week-old chickens infected intravenously. H5 and H7 viruses which do not have an IVPI of greater than 1.2 or cause less than 75% mortality in an intravenous lethality test should be sequenced to determine whether multiple basic amino acids are present at the cleavage site of the haemagglutinin molecule (HA0); if the amino acid motif is similar to that observed for other HPNAI isolates, the isolate being tested should be considered as HPNAI;
    - b) LPNAI are all influenza A viruses of H5 and H7 subtype that are not HPNAI viruses.
  2. Poultry is defined as 'all domesticated birds, including backyard poultry, used for the production of meat or eggs for consumption, for the production of other commercial products, for restocking supplies of game, or for breeding these categories of birds, as well as fighting cocks used for any purpose'.
- Birds that are kept in captivity for any reason other than those reasons referred to in point 2, including those that are kept for shows, races, exhibitions, competitions, breeding or selling, are not considered to be poultry.
3. For the purpose of *international trade*, this chapter deals not only with the occurrence of clinical signs caused by NAI virus, but also with the presence of infection with NAI virus in the absence of clinical signs.
  4. For the purposes of *international trade*, a country should interpret an occurrence of infection with HPNAI virus in birds other than poultry according to the *Terrestrial Code* and should not impose immediate trade bans.
  5. Antibodies to H5 or H7 subtype of NAI virus, which have been detected in poultry and are not a consequence of vaccination, have to be further investigated. In the case of isolated serological positive results, NAI infection may be ruled out on the basis of a thorough epidemiological investigation that does not demonstrate further evidence of NAI infection.

Appendix XVII (contd)

4.6 The following defines the occurrence of infection with NAI virus:

- a) HPNAI virus has been isolated and identified as such or viral RNA specific for HPNAI has been detected in poultry or a product derived from poultry; or
- b) LPNAI virus has been isolated and identified as such or viral RNA specific for LPNAI has been detected in poultry or a product derived from poultry; ~~or~~
- ~~e) antibodies to H5 or H7 subtype of NAI virus that are not a consequence of vaccination have been detected in poultry. In the case of isolated serological positive results, NAI infection may be ruled out on the basis of a thorough epidemiological investigation that does not demonstrate further evidence of NAI infection.~~

For the purposes of the *Terrestrial Code*, 'NAI free establishment' means an *establishment* in which the poultry have shown no evidence of NAI infection, based on surveillance in accordance with Appendix 3.8.9.

For the purposes of the *Terrestrial Code*, the *incubation period* for NAI shall be 21 days.

Standards for diagnostic tests, including pathogenicity testing, are described in the *Terrestrial Manual*. Any vaccine used should comply with the standards described in the *Terrestrial Manual*.

## Article 2.7.12.2.

The NAI status of a country, a *zone* or a *compartment* can be determined on the basis of the following criteria:

1. the outcome of a *risk assessment* identifying all potential factors for NAI occurrence and their historic perspective;
2. NAI is notifiable in the whole country, an on-going NAI awareness programme is in place, and all notified suspect occurrences of NAI are subjected to field and, where applicable, laboratory investigations;
3. appropriate surveillance is in place to demonstrate the presence of infection in the absence of clinical signs in poultry, and the risk posed by birds other than poultry; this may be achieved through an NAI surveillance programme in accordance with Appendix 3.8.9.

## Article 2.7.12.3.

**NAI free country, zone or compartment**

A country, *zone* or *compartment* may be considered free from NAI when it has been shown that neither HPNAI nor LPNAI infection has been present in the country, *zone* or *compartment* for the past 12 months, based on surveillance in accordance with Appendix 3.8.9. The surveillance may need to be adapted to parts of the country or existing *zones* or *compartments* depending on historical or geographical factors, industry structure, population data, or proximity to recent outbreaks.

Appendix XVII (contd)

If infection has occurred in a previously free country, zone or compartment, NAI free status can be regained:

1. In the case of HPNAI infections, 3 months after a *stamping-out policy* (including *disinfection* of all affected *establishments*) is applied, providing that surveillance in accordance with Appendix 3.8.9. has been carried out during that three-month period.
2. In the case of LPNAI infections, poultry may be kept for slaughter for human consumption subject to conditions specified in Article 2.7.12.19. or 2.7.12.20. or a *stamping-out policy* may be applied; in either case, 3 months after the *disinfection* of all affected *establishments*, providing that surveillance in accordance with Appendix 3.8.9. has been carried out during that three-month period.

Article 2.7.12.4.

### **HPNAI free country, zone or compartment**

A country, *zone* or *compartment* may be considered free from HPNAI when it has been shown that HPNAI infection has not been present in the country, *zone* or *compartment* for the past 12 months, although its LPNAI status may be unknown, or when, based on surveillance in accordance with Appendix 3.8.9., it does not meet the criteria for freedom from NAI but any NAI virus detected has not been identified as HPNAI virus. The surveillance may need to be adapted to parts of the country or existing *zones* or *compartments* depending on historical or geographical factors, industry structure, population data, or proximity to recent *outbreaks*.

If infection has occurred in a previously free country, *zone* or *compartment*, HPNAI free status can be regained 3 months after a *stamping-out policy* (including *disinfection* of all affected *establishments*) is applied, providing that surveillance in accordance with Appendix 3.8.9. has been carried out during that three-month period.

Article 2.7.12.5.

When importing from an NAI free country, zone or compartment, *Veterinary Administrations* should require:

#### for live poultry (other than day-old poultry)

the presentation of an *international veterinary certificate* attesting that:

1. the poultry showed no clinical sign of NAI on the day of shipment;
2. the poultry were kept in an NAI free country, zone or compartment since they were hatched or for at least the past 21 days;

Appendix XVII (contd)

3. the required surveillance has been carried out on the *establishment* within at least the past 21 days;
4. if vaccinated, the poultry have been vaccinated in accordance with Appendix 3.8.9., and the relevant information is attached.

## Article 2.7.12.6.

Regardless of the NAI status of the country, *zone* or *compartment* of origin, *Veterinary Administrations* should require:

for live birds other than poultry

the presentation of an *international veterinary certificate* attesting that:

1. the birds showed no clinical sign of infection with a virus which would be considered NAI in poultry on the day of shipment;
2. the birds were kept in isolation approved by the *Veterinary Services* since they were hatched or for at least the 21 days prior to shipment and showed no clinical sign of infection with a virus which would be considered NAI in poultry during the isolation period;
3. the birds were subjected to a diagnostic test 7 to 14 days prior to shipment to demonstrate freedom from infection with a virus which would be considered NAI in poultry;
4. the birds are transported in new containers.

If the birds have been vaccinated, the relevant information should be attached to the certificate.

## Article 2.7.12.7.

When importing from an NAI free country, *zone* or *compartment*, *Veterinary Administrations* should require:

for day-old live poultry

the presentation of an *international veterinary certificate* attesting that:

1. the poultry were kept in an NAI free country, *zone* or *compartment* since they were hatched;
2. the poultry were derived from parent flocks which had been kept in an NAI free country, *zone* or *compartment* for at least 21 days prior to and at the time of the collection of the eggs;
3. if the poultry or the parent flocks were vaccinated, vaccination was carried out in accordance with Appendix 3.8.9., and the relevant information is attached.

## Article 2.7.12.8.

When importing from an HPNAI free country, *zone* or *compartment*, *Veterinary Administrations* should require:

for day-old live poultry

Appendix XVII (contd)

the presentation of an *international veterinary certificate* attesting that:

1. the poultry were kept in an HPNAI free country, zone or compartment since they were hatched;
2. the poultry were derived from parent flocks which had been kept in an NAI free *establishment* for at least 21 days prior to and at the time of the collection of the eggs;
3. the poultry are transported in new containers;
4. if the poultry or the parent flocks were vaccinated, vaccination was carried out in accordance with Appendix 3.8.9., and the relevant information is attached.

## Article 2.7.12.9.

When importing from an NAI free country, zone or compartment, *Veterinary Administrations* should require:

for *hatching eggs*

the presentation of an *international veterinary certificate* attesting that:

1. the eggs came from an NAI free country, zone or compartment;
2. the eggs were derived from parent flocks which had been kept in an NAI free country, zone or compartment for at least 21 days prior to and at the time of the collection of the eggs;
3. if the parent flocks were vaccinated, vaccination was carried out in accordance with Appendix 3.8.9., and the relevant information is attached.

## Article 2.7.12.10.

When importing from an HPNAI free country, zone or compartment, *Veterinary Administrations* should require:

for *hatching eggs*

the presentation of an *international veterinary certificate* attesting that:

1. the eggs came from an HPNAI free country, zone or compartment;
2. the eggs were derived from parent flocks which had been kept in an NAI free *establishment* for at least 21 days prior to and at the time of the collection of the eggs;
3. the eggs have had their surfaces sanitised (in accordance with Article 3.4.1.7) and are transported in new packing material;
4. if the parent flocks were vaccinated, vaccination was carried out in accordance with Appendix 3.8.9., and the relevant information is attached.

Appendix XVII (contd)

## Article 2.7.12.11.

When importing from an NAI free country, zone or compartment, *Veterinary Administrations* should require:

for eggs for human consumption

the presentation of an *international veterinary certificate* attesting that the eggs come from an NAI free country, zone or compartment.

## Article 2.7.12.12.

When importing from an HPNAI free country, zone or compartment, *Veterinary Administrations* should require:

for eggs for human consumption

the presentation of an *international veterinary certificate* attesting that the eggs:

1. come from an HPNAI free country, zone or compartment;
2. have had their surfaces sanitised (in accordance with Article 3.4.1.7) and are transported in new packing material.

## Article 2.7.12.13.

When importing from an NAI free country, zone or compartment, *Veterinary Administrations* should require:

for egg products

the presentation of an *international veterinary certificate* attesting that the egg products come from, and were processed in, an NAI free country, zone or compartment.

## Article 2.7.12.14.

Regardless of the NAI status of the country, *zone* or *compartment* of origin, *Veterinary Administrations* should require:

for egg products

the presentation of an *international veterinary certificate* attesting that:

1. the egg products are derived from eggs which meet the requirements of Articles 2.7.12.9., 2.7.12.10., 2.7.12.11. or 2.7.12.12.; or
2. the egg products were processed to ensure the destruction of NAI virus in accordance with Appendix 3.6.5.;
3. the necessary precautions were taken after processing to avoid contact of the *commodity* with any source of NAI virus.

## Article 2.7.12.15.

When importing from an NAI free country, zone or compartment, *Veterinary Administrations* should require:

Appendix XVII (contd)for poultry semen

the presentation of an *international veterinary certificate* attesting that the donor poultry:

1. showed no clinical sign of NAI on the day of semen collection;
2. were kept in an NAI free country, zone or compartment for at least the 21 days prior to and at the time of semen collection.

## Article 2.7.12.16.

When importing from an HPNAI free country, zone or compartment, *Veterinary Administrations* should require:

for poultry semen

the presentation of an *international veterinary certificate* attesting that the donor poultry:

1. showed no clinical sign of HPNAI on the day of semen collection;
2. were kept in an HPNAI free country, zone or compartment for at least the 21 days prior to and at the time of semen collection.

## Article 2.7.12.17.

Regardless of the NAI status of the country, *zone* or *compartment* of origin, *Veterinary Administrations* should require:

for semen of birds other than poultry

the presentation of an *international veterinary certificate* attesting that the donor birds:

1. were kept in isolation approved by the *Veterinary Services* for at least the 21 days prior to semen collection;
2. showed no clinical sign of infection with a virus which would be considered NAI in poultry during the isolation period;
3. were tested between 7 and 14 days prior to semen collection and shown to be free of NAI infection.

## Article 2.7.12.18.

When importing from an NAI free country, zone or compartment, *Veterinary Administrations* should require:

for fresh meat of poultry

the presentation of an *international veterinary certificate* attesting that the entire consignment of *fresh meat* comes from birds:

Appendix XVII (contd)

1. which have been kept in an NAI free country, zone or compartment since they were hatched or for at least the past 21 days;
2. which have been slaughtered in an *approved abattoir* and have been subjected to ante-mortem and post-mortem inspections for NAI with favourable results.

## Article 2.7.12.19.

When importing from an HPNAI free country, zone or compartment, *Veterinary Administrations* should require:

for fresh meat of poultry

the presentation of an *international veterinary certificate* attesting that the entire consignment of *fresh meat* comes from birds:

1. which have been kept in an HPNAI free country, zone or compartment since they were hatched or for at least the past 21 days;
2. which have been slaughtered in an *approved abattoir* and have been subjected to ante-mortem and post-mortem inspections for NAI with favourable results.

## Article 2.7.12.20.

Regardless of the NAI status of the country, *zone* or *compartment* of origin, *Veterinary Administrations* should require:

for meat products of poultry

the presentation of an *international veterinary certificate* attesting that:

1. the *commodity* is derived from *fresh meat* which meet the requirements of Articles 2.7.12.18. or 2.7.12.19.; or
2. the *commodity* has been processed to ensure the destruction of NAI virus in accordance with Appendix 3.6.5.;
3. the necessary precautions were taken to avoid contact of the *commodity* with any source of NAI virus.

## Article 2.7.12.21.

Regardless of the NAI status of the country, *zone* or *compartment* of origin, *Veterinary Administrations* should require:

for products of poultry origin intended for use in animal feeding, or for agricultural or industrial use

the presentation of an *international veterinary certificate* attesting that:

1. these *commodities* come from poultry which have been kept in an NAI free country, zone or compartment since they were hatched or for at least the past 21 days; or
2. these *commodities* have been processed to ensure the destruction of NAI virus (under study);

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3. the necessary precautions were taken to avoid contact of the *commodity* with any source of NAI virus.

## Article 2.7.12.22.

Regardless of the NAI status of the country, *zone* or *compartment* of origin, *Veterinary Administrations* should require:

for feathers and down (from poultry)

the presentation of an *international veterinary certificate* attesting that:

1. these *commodities* come from poultry which have been kept in an NAI free country, zone or compartment since they were hatched or for at least the past 21 days; or
2. these *commodities* have been processed to ensure the destruction of NAI virus (under study);
3. the necessary precautions were taken to avoid contact of the *commodity* with any source of NAI virus.

## Article 2.7.12.23.

Regardless of the NAI status of the country, *zone* or *compartment*, *Veterinary Administrations* should require for the importation of:

meat or other products from birds other than poultry

the presentation of an *international veterinary certificate* attesting that:

1. the *commodity* has been processed to ensure the destruction of NAI virus (under study);
2. the necessary precautions were taken after processing to avoid contact of the *commodity* with any source of NAI virus.

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## APPENDIX 3.8.9.

## GUIDELINES FOR THE SURVEILLANCE OF AVIAN INFLUENZA

## Article 3.8.9.1.

**Introduction**

This Appendix defines the principles and provides a guide for the surveillance of notifiable avian influenza (NAI) in accordance with Appendix 3.8.1., applicable to countries seeking recognition for a declared NAI status, with or without the use of vaccination. This may be for the entire country, *zone* or *compartment*. Guidance for countries seeking free status following an *outbreak* and for the maintenance of NAI status are provided. This Appendix complements Chapter 2.7.12.

The presence of avian influenza viruses in wild birds creates a particular problem. In essence, no country can declare itself free from avian influenza (AI) in wild birds. However, the definition of NAI in Chapter 2.7.12. refers to the infection in poultry only, and this Appendix was developed under this definition.

The impact and epidemiology of NAI differ widely in different regions of the world and therefore it is impossible to provide specific guidelines for all situations. It is axiomatic that the surveillance strategies employed for demonstrating freedom from NAI at an acceptable level of confidence will need to be adapted to the local situation. Variables such as the frequency of contacts of poultry with wild birds, different biosecurity levels and production systems and the commingling of different susceptible species including domestic waterfowl require specific surveillance strategies to address each specific situation. It is incumbent upon the country to provide scientific data that explains the epidemiology of NAI in the region concerned and also demonstrates how all the risk factors are managed. There is therefore considerable latitude available to Member Countries to provide a well-reasoned argument to prove that absence of NAI virus (NAIV) infection is assured at an acceptable level of confidence.

Surveillance for NAI should be in the form of a continuing programme designed to establish that the country, *zone* or *compartment*, for which application is made, is free from NAIV infection.

## Article 3.8.9.2.

**General conditions and methods**

1. A surveillance system in accordance with Appendix 3.8.1. should be under the responsibility of the *Veterinary Administration*. In particular:
  - a) a formal and ongoing system for detecting and investigating *outbreaks of disease* or NAI *infection* should be in place;
  - b) a procedure should be in place for the rapid collection and transport of samples from suspect cases of NAI to a laboratory for NAI diagnosis as described in the *Terrestrial Manual*;
  - c) a system for recording, managing and analysing diagnostic and surveillance data should be in place.

Appendix XVIII (contd)

## 2. The NAI surveillance programme should:

- a) include an early warning system throughout the production, marketing and processing chain for reporting suspicious cases. Farmers and workers, who have day-to-day contact with poultry, as well as diagnosticians, should report promptly any suspicion of NAI to the *Veterinary Authority*. They should be supported directly or indirectly (e.g. through private veterinarians or *veterinary para-professionals*) by government information programmes and the *Veterinary Administration*. All suspected cases of NAI should be investigated immediately. As suspicion cannot be resolved by epidemiological and clinical investigation alone, samples should be taken and submitted to an *approved laboratory*. This requires that sampling kits and other equipment are available for those responsible for surveillance. Personnel responsible for surveillance should be able to call for assistance from a team with expertise in NAI diagnosis and control. In cases where potential public health implications are suspected, notification to the appropriate public health authorities is essential;
- b) implement, when relevant, regular and frequent clinical inspection, serological and virological testing of high-risk groups of animals, such as those adjacent to an NAI infected country, *zone* or *compartment*, places where birds and poultry of different origins are mixed, such as live bird markets, poultry in close proximity to waterfowl or other sources of NAIV.

An effective surveillance system will periodically identify suspicious cases that require follow-up and investigation to confirm or exclude that the cause of the condition is NAIV. The rate at which such suspicious cases are likely to occur will differ between epidemiological situations and cannot therefore be predicted reliably. Applications for freedom from NAIV infection should, in consequence, provide details of the occurrence of suspicious cases and how they were investigated and dealt with. This should include the results of laboratory testing and the control measures to which the animals concerned were subjected during the investigation (quarantine, movement stand-still orders, etc.).

Article 3.8.9.3.

**Surveillance strategies**1. Introduction

The target population for surveillance aimed at identification of *disease* and *infection* should cover all the susceptible poultry species within the country, *zone* or *compartment*. Active and passive surveillance for NAI should be ongoing. The frequency of active surveillance should be at least every 6 months. Surveillance should be composed of random and targeted approaches using virological, serological and clinical methods.

The strategy employed may be based on randomised sampling requiring surveillance consistent with demonstrating the absence of NAIV infection at an acceptable level of confidence. The frequency of sampling should be dependent on the epidemiological situation. Random surveillance is conducted using serological tests described in the *Terrestrial Manual*. Positive serological results should be followed up with virological methods.

Targeted surveillance (e.g. based on the increased likelihood of *infection* in particular localities or species) may be an appropriate strategy. Virological and serological methods should be used concurrently to define the NAI status of high risk populations.

Appendix XVIII (contd)

A country should justify the surveillance strategy chosen as adequate to detect the presence of NAIIV infection in accordance with Appendix 3.8.1. and the prevailing epidemiological situation. It may, for example, be appropriate to target clinical surveillance at particular species likely to exhibit clear clinical signs (e.g. chickens). Similarly, virological and serological testing could be targeted to species that may not show clinical signs (e.g. ducks).

If a Member Country wishes to declare freedom from NAIIV infection in a specific *zone* or *compartment*, the design of the survey and the basis for the sampling process would need to be aimed at the population within the *zone* or *compartment*.

For random surveys, the design of the sampling strategy will need to incorporate epidemiologically appropriate design prevalence. The sample size selected for testing will need to be large enough to detect *infection* if it were to occur at a predetermined minimum rate. The sample size and expected disease prevalence determine the level of confidence in the results of the survey. The applicant country must justify the choice of design prevalence and confidence level based on the objectives of surveillance and the epidemiological situation, in accordance with Appendix 3.8.1. Selection of the design prevalence in particular clearly needs to be based on the prevailing or historical epidemiological situation.

Irrespective of the survey approach selected, the sensitivity and specificity of the diagnostic tests employed are key factors in the design, sample size determination and interpretation of the results obtained. Ideally, the sensitivity and specificity of the tests used should be validated for the vaccination/infection history and the different species in the target population.

Irrespective of the testing system employed, surveillance system design should anticipate the occurrence of false positive reactions. If the characteristics of the testing system are known, the rate at which these false positives are likely to occur can be calculated in advance. There needs to be an effective procedure for following up positives to ultimately determine with a high level of confidence, whether they are indicative of infection or not. This should involve both supplementary tests and follow-up investigation to collect diagnostic material from the original sampling unit as well as flocks which may be epidemiologically linked to it.

The principles involved in surveillance for *disease / infection* are technically well defined. The design of surveillance programmes to prove the absence of NAIIV infection/circulation needs to be carefully followed to avoid producing results that are either insufficiently reliable, or excessively costly and logistically complicated. The design of any surveillance programme, therefore, requires inputs from professionals competent and experienced in this field.

## 2. Clinical surveillance

Clinical surveillance aims at the detection of clinical signs of NAI at the flock level. Whereas significant emphasis is placed on the diagnostic value of mass serological screening, surveillance based on clinical inspection should not be underrated. Monitoring of production parameters, such as increased mortality, reduced feed and water consumption, presence of clinical signs of a respiratory disease or a drop in egg production, is important for the early detection of NAIIV infection. In some cases, the only indication of LPNAIV infection may be a drop in feed consumption or egg production.

Appendix XVIII (contd)

Clinical surveillance and laboratory testing should always be applied in series to clarify the status of NAI suspects detected by either of these complementary diagnostic approaches. Laboratory testing may confirm clinical suspicion, while clinical surveillance may contribute to confirmation of positive serology. Any sampling unit within which suspicious animals are detected should be classified as infected until evidence to the contrary is produced.

Identification of suspect flocks is vital to the identification of sources of NAIV and to enable the molecular, antigenic and other biological characteristics of the virus to be determined. It is essential that NAIV isolates are sent regularly to the regional Reference Laboratory for genetic and antigenic characterization.

### 3. Virological surveillance

Virological surveillance using tests described in the *Terrestrial Manual* should be conducted:

- a) to monitor at risk populations;
- b) to confirm clinically suspect cases;
- c) to follow up positive serological results;
- d) to test 'normal' daily mortality, to ensure early detection of infection in the face of vaccination or in *establishments* epidemiologically linked to an *outbreak*.

### 4. Serological surveillance

Serological surveillance aims at the detection of antibodies against NAIV. Positive NAIV antibody test results can have four possible causes:

- a) natural infection with NAIV;
- b) vaccination against NAI;
- c) maternal antibodies derived from a vaccinated or infected parent flock are usually found in the yolk and can persist in progeny for up to 4 weeks;
- d) positive results due to the lack of specificity of the test.

It may be possible to use serum collected for other survey purposes for NAI surveillance. However, the principles of survey design described in these guidelines and the requirement for a statistically valid survey for the presence of NAIV should not be compromised.

The discovery of clusters of seropositive flocks may reflect any of a series of events, including but not limited to the demographics of the population sampled, vaccinal exposure or infection. As clustering may signal infection, the investigation of all instances must be incorporated in the survey design. Clustering of positive flocks is always epidemiologically significant and therefore should be investigated.

Appendix XVIII (contd)

If vaccination cannot be excluded as the cause of positive serological reactions, diagnostic methods to differentiate antibodies due to infection or vaccination should be employed.

The results of random or targeted serological surveys are important in providing reliable evidence that no NAIIV infection is present in a country, *zone* or *compartment*. It is therefore essential that the survey be thoroughly documented.

5. Virological and serological surveillance in vaccinated populations

The surveillance strategy is dependent on the type of vaccine used. The protection against AI is haemagglutinin subtype specific. Therefore, two broad vaccination strategies exist: 1) inactivated whole AI viruses, and 2) haemagglutinin expression-based vaccines.

In the case of vaccinated populations, the surveillance strategy should be based on virological and/or serological methods and clinical surveillance. It may be appropriate to use sentinel birds for this purpose. These birds should be unvaccinated, AI virus antibody free birds and clearly and permanently identified. The interpretation of serological results in the presence of vaccination is described in Article 3.8.9.7.

Article 3.8.9.4.

**Documentation of NAI or HPNAI free status**

1. Countries declaring freedom from NAI or HPNAI for the country, zone or compartment

In addition to the general conditions described in the *Terrestrial Code*, a Member Country declaring freedom from NAI or highly pathogenic notifiable avian influenza (HPNAI) for the entire country, or a *zone* or a *compartment* should provide evidence for the existence of an effective surveillance programme. The strategy and design of the surveillance programme will depend on the prevailing epidemiological circumstances and should be planned and implemented according to general conditions and methods described in this Appendix, to demonstrate absence of NAIIV or HPNAIV infection, during the preceding 12 months in susceptible poultry populations (vaccinated and non-vaccinated). This requires the support of a laboratory able to undertake identification of NAIIV or HPNAIV infection through virus detection and antibody tests described in the *Terrestrial Manual*. This surveillance may be targeted to poultry population at specific risks linked to the types of production, possible direct or indirect contact with wild birds, multi-age flocks, local trade patterns including live bird markets, use of possibly contaminated surface water, and the presence of more than one species on the holding and poor biosecurity measures in place.

2. Additional requirements for countries, zones or compartments that practise vaccination

Vaccination to prevent the transmission of HPNAI virus may be part of a disease control programme. The level of flock immunity required to prevent transmission will depend on the flock size, composition (e.g. species) and density of the susceptible poultry population. It is therefore impossible to be prescriptive. The vaccine must also comply with the provisions stipulated for NAI vaccines in the *Terrestrial Manual*. Based on the epidemiology of NAI in the country, *zone* or *compartment*, it may be that a decision is reached to vaccinate only certain species or other poultry subpopulations.

Appendix XVIII (contd)

In all vaccinated flocks there is a need to perform virological and serological tests to ensure the absence of virus circulation. The use of sentinel poultry may provide further confidence of the absence of virus circulation. The tests have to be repeated at least every 6 months or at shorter intervals according to the risk in the country, *zone* or *compartment*.

Evidence to show the effectiveness of the vaccination programme should also be provided.

Article 3.8.9.5.

**Countries, zones or compartments declaring that they have regained ~~regained~~ freedom from NAI or HPNAI following an outbreak**

In addition to the general conditions described in Chapter 2.7.12., a country declaring that it has regained ~~regained~~ country, *zone* or *compartment* freedom from NAI or HPNAI virus infection should show evidence of an active surveillance programme depending on the epidemiological circumstances of the *outbreak* to demonstrate the absence of the infection. This will require surveillance incorporating virus detection and antibody tests described in the *Terrestrial Manual*. The use of sentinel birds may facilitate the interpretation of surveillance results.

A Member Country declaring freedom of country, *zone* or *compartment* after an *outbreak* of NAI or HPNAI (with or without vaccination) should report the results of an active surveillance programme in which the NAI or HPNAI susceptible poultry population undergoes regular clinical examination and active surveillance planned and implemented according to the general conditions and methods described in these guidelines. The surveillance should at least give the confidence that can be given by a randomized representative sample of the populations at risk.

Article 3.8.9.6.

**NAI free establishments within HPNAI free compartments**

The declaration of NAI free *establishments* requires the demonstration of absence of NAIV infection. Birds in these *establishments* should be randomly tested using virus detection or isolation tests, and serological methods, following the general conditions of these guidelines. The frequency of testing should be based on the risk of infection and at a maximum interval of 21 days.

Article 3.8.9.7.

**The use and interpretation of serological and virus detection tests**

Poultry infected with NAI virus produce antibodies to haemagglutinin (HA), neuraminidase (NA), nonstructural proteins (NSPs), nucleoprotein/matrix (NP/M) and the polymerase complex proteins. Detection of antibodies against the polymerase complex proteins will not be covered in this Appendix. Tests for NP/M antibodies include direct and blocking ELISA, and agar gel immunodiffusion (AGID) tests. Tests for antibodies against NA include the neuraminidase inhibition (NI), indirect fluorescent antibody and direct ELISA tests. For the HA, antibodies are detected in haemagglutination inhibition (HI) and neutralization (SN) tests. The HI test is reliable in avian species but not in mammals. The SN test can be used to detect subtype specific antibodies to the haemagglutinin and is the preferred test for mammals and some avian species. The AGID test is reliable for detection of NP/M antibodies in chickens and turkeys, but not in other avian species. As an alternative, blocking ELISA tests have been developed to detect NP/M antibodies in all avian species.

Appendix XVIII (contd)

The HI and NI tests can be used to subtype AI viruses into 16 haemagglutinin and 9 neuraminidase subtypes. Such information is helpful for epidemiological investigations and in categorization of AI viruses.

Poultry can be vaccinated with a variety of AI vaccines including inactivated whole AI virus vaccines, and haemagglutinin expression-based vaccines. Antibodies to the haemagglutinin confer subtype specific protection. Various strategies can be used to differentiate vaccinated from infected birds including serosurveillance in unvaccinated sentinel birds or specific serological tests in the vaccinated birds.

AI virus infection of unvaccinated birds including sentinels is detected by antibodies to the NP/M, subtype specific HA or NA proteins, or NSP. Poultry vaccinated with inactivated whole AI vaccines containing an influenza virus of the same H sub-type but with a different neuraminidase may be tested for field exposure by applying serological tests directed to the detection of antibodies to the NA of the field virus. For example, birds vaccinated with H7N3 in the face of a H7N1 epidemic may be differentiated from infected birds (DIVA) by detection of subtype specific NA antibodies of the N1 protein of the field virus. Alternatively, in the absence of DIVA, inactivated vaccines may induce low titres of antibodies to NSP and the titre in infected birds would be markedly higher. Encouraging results have been obtained experimentally with this system, but it has not yet been validated in the field. In poultry vaccinated with haemagglutinin expression-based vaccines, antibodies are detected to the specific HA, but not any of the other AI viral proteins. Infection is evident by antibodies to the NP/M or NSP, or the specific NA protein of the field virus. Vaccines used should comply with the standards of the *Terrestrial Manual*.

All flocks with seropositive results should be investigated. Epidemiological and supplementary laboratory investigation results should document the status of NAI infection/circulation for each positive flock.

A confirmatory test should have a higher specificity than the screening test and sensitivity at least equivalent than that of the screening test.

Information should be provided on the performance characteristics and validation of tests used.

1. The follow-up procedure in case of positive test results if vaccination is used

In case of vaccinated populations, one has to exclude the likelihood that positive test results are indicative of virus circulation. To this end, the following procedure should be followed in the investigation of positive serological test results derived from surveillance conducted on NAI-vaccinated poultry. The investigation should examine all evidence that might confirm or refute the hypothesis that the positive results to the serological tests employed in the initial survey were not due to virus circulation. All the epidemiological information should be substantiated, and the results should be collated in the final report.

Knowledge of the type of vaccine used is crucial in developing a serological based strategy to differentiate infected from vaccinated animals.

- a) Inactivated whole AI virus vaccines can use either homologous or heterologous neuraminidase subtypes between the vaccine and field strains. If poultry in the population have antibodies to NP/M and were vaccinated with inactivated whole AI virus vaccine, the following strategies should be applied:
  - i) sentinel birds should remain NP/M antibody negative. If positive for NP/M antibodies, indicating AI virus infection, specific HI tests should be performed to identify H5 or H7 AI virus infection;

Appendix XVIII (contd)

- ii) if vaccinated with inactivated whole AI virus vaccine containing homologous NA to field virus, the presence of antibodies to NSP could be indicative of infection. Sampling should be initiated to exclude the presence of NAIV by either virus isolation or detection of virus specific genomic material or proteins;
  - iii) if vaccinated with inactivated whole AI virus vaccine containing heterologous NA to field virus, presence of antibodies to the field virus NA or NSP would be indicative of infection. Sampling should be initiated to exclude the presence of NAIV by either virus isolation or detection of virus specific genomic material or proteins.
- b) Haemagglutinin expression-based vaccines contain the HA protein or gene homologous to the HA of the field virus. Sentinel birds as described above can be used to detect AI infection. In vaccinated or sentinel birds, the presence of antibodies against NP/M, NSP or field virus NA is indicative of infection. Sampling should be initiated to exclude the presence of NAIV by either virus isolation or detection of virus specific genomic material or proteins.
2. The follow-up procedure in case of positive test results indicative of infection for determination of infection due to HPNAI or LPNAI virus

The detection of antibodies indicative of a NAI virus infection as indicated in point a)i) above will result in the initiation of epidemiological and virological investigations to determine if the infections are due to HPNAI or LPNAI viruses.

Virological testing should be initiated in all antibody-positive and at risk populations. The samples should be evaluated for the presence of AI virus, by virus isolation and identification, and/or detection of influenza A specific proteins or nucleic acids (Figure 2). Virus isolation is the gold standard for detecting infection by AI virus and the method is described in the *Terrestrial Manual*. All AI virus isolates should be tested to determine HA and NA subtypes, and *in vivo* tested in chickens and/or sequencing of HA proteolytic cleavage site of H5 and H7 subtypes for determination of classification as HPNAI, LPNAI or LPAI (not notifiable) viruses. As an alternative, nucleic acid detection tests have been developed and validated; these tests have the sensitivity of virus isolation, but with the advantage of providing results within a few hours. Samples with detection of H5 and H7 HA subtypes by nucleic acid detection methods should either be submitted for virus isolation, identification, and *in vivo* testing in chickens, or sequencing of nucleic acids for determination of proteolytic cleavage site as HPNAI or LPNAI viruses. The antigen detection systems, because of low sensitivity, are best suited for screening clinical field cases for infection by Type A influenza virus looking for NP/M proteins. NP/M positive samples should be submitted for virus isolation, identification and pathogenicity determination.

Laboratory results should be examined in the context of the epidemiological situation. Corollary information needed to complement the serological survey and assess the possibility of viral circulation includes but is not limited to:

- a) characterization of the existing production systems;
- b) results of clinical surveillance of the suspects and their cohorts;
- c) quantification of vaccinations performed on the affected sites;

Appendix XVIII (contd)

- d) sanitary protocol and history of the affected *establishments*;
- e) control of animal identification and movements;
- f) other parameters of regional significance in historic NAIIV transmission.

The entire investigative process should be documented as standard operating procedure within the epidemiological surveillance programme.

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Fig. 1. Schematic representation of laboratory tests for determining evidence of NAI infection through or following serological surveys

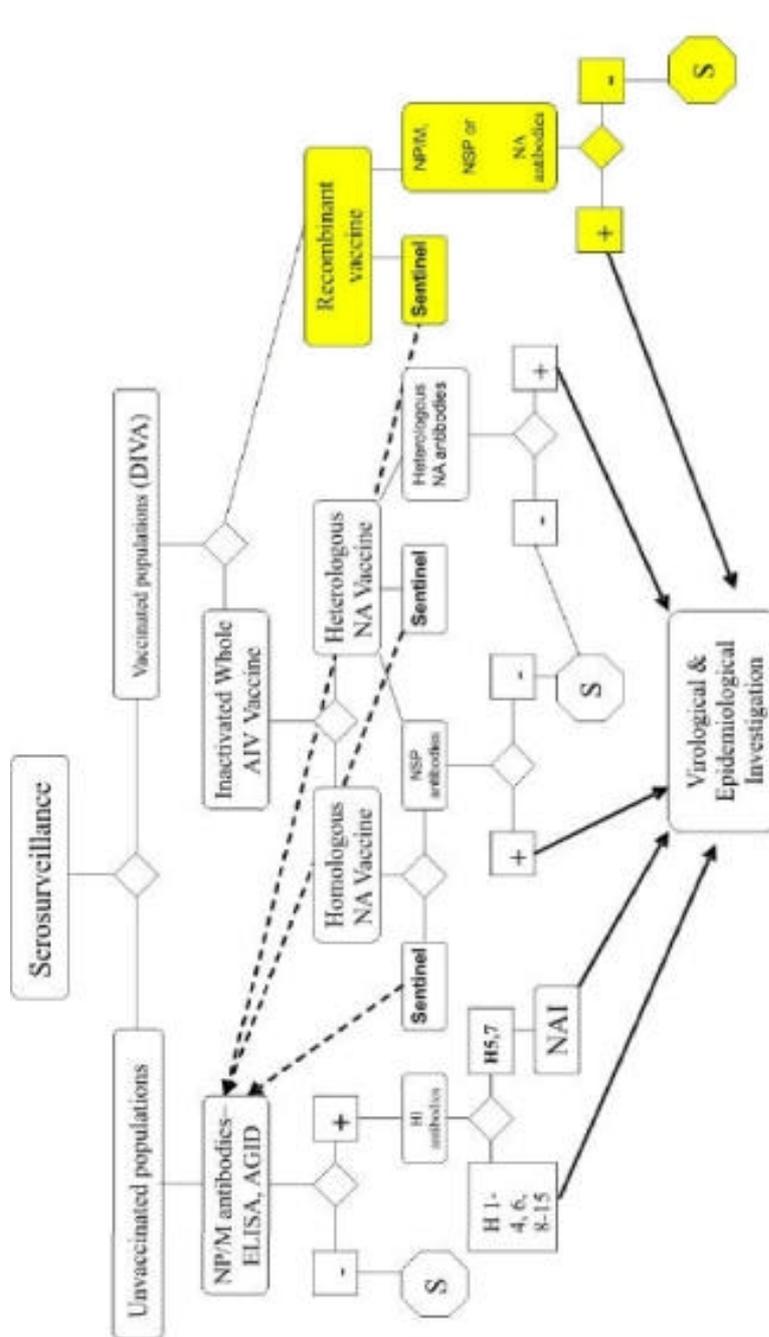
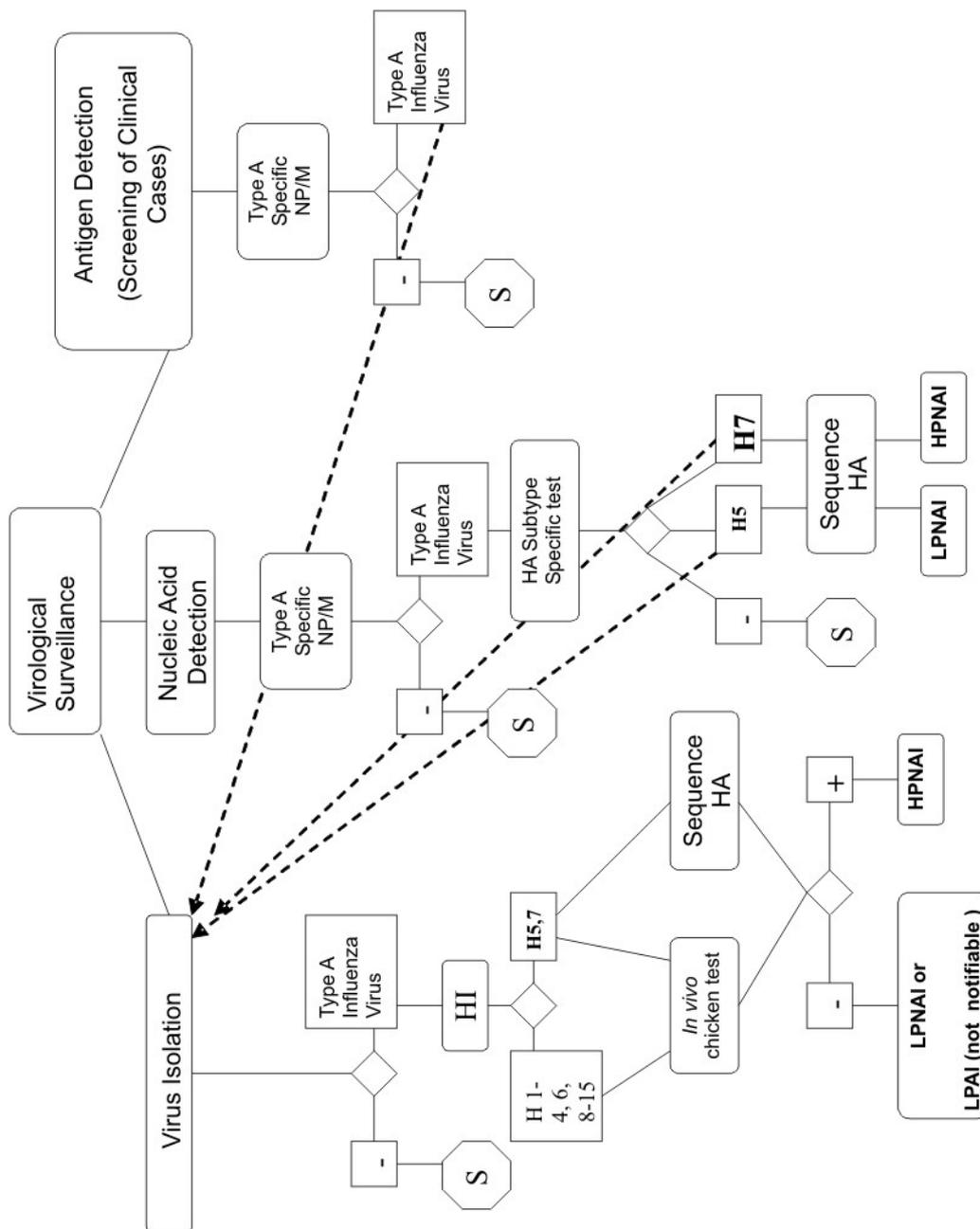


Figure 2. - Schematic representation of laboratory tests for determining evidence of NAI infection using virological methods



Appendix XVIII (contd)

The above diagram indicates the tests which are recommended for use in the investigation of poultry flocks.

Key:

AGID	Agar gel immunodiffusion
DIVA	Differentiating infected from vaccinated animals
ELISA	Enzyme-linked immunosorbant assay
HA	Haemagglutinin
HI	Haemagglutination inhibition
NA	Neuraminidase
NP/M	Nucleoprotein and matrix protein
NSP	Nonstructural protein
S	No evidence of NAIV

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## APPENDIX 3.6.5.

## GUIDELINES FOR THE INACTIVATION OF THE AVIAN INFLUENZA VIRUS

## Article 3.6.5.1.

**Eggs and egg products**

The following times for industry standard temperatures are suitable for the inactivation of highly pathogenic notifiable avian influenza (HPNAI) virus present in eggs and egg products:

	<b>Temperature (°C)</b>	<b>Time</b>
Whole egg	60	188 seconds
Whole egg blends	60	188 seconds
Whole egg blends	61.1	94 seconds
Liquid egg white	55.6	<del>256</del> <u>870</u> seconds
Liquid egg white	56.7	<del>228</del> <u>232</u> seconds
10% salted yolk	62.2	138 seconds
Dried egg white	67	0.83 days
Dried egg white	54.4	21.38 days

## Article 3.6.5.2.

**Meat**

A procedure which produces a core temperature of 70°C for ~~one~~ 3.5 seconds is suitable for the inactivation of HPNAI virus present in meat.

	<b><u>Temperature (°C)</u></b>	<b><u>Time</u></b>
<u>Poultry meat</u>	<u>60.0</u>	<u>507 seconds</u>
	<u>65.0</u>	<u>42 seconds</u>
	<u>70.0</u>	<u>3.5 seconds</u>
	<u>73.9</u>	<u>0.51 seconds</u>

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## APPENDIX 3.5.1.

**GENERAL PRINCIPLES**

## Article 3.5.1.1.

1. There is a strong ~~critical~~ relationship between *animal identification* and the traceability of animals and products of animal origin.
2. *Animal traceability* and traceability of products of animal origin should have the capability to be linked to achieve traceability throughout the food chain taking into account relevant OIE and Codex Alimentarius standards.
3. *Animal identification* and *animal traceability* are tools for addressing animal health (including zoonoses) and food safety issues. These tools may significantly improve the effectiveness of activities such as: the management of disease outbreaks and food safety incidents, vaccination programmes, herd/flock husbandry, zoning/compartmentalisation, surveillance, early response and notification systems, animal movement controls, inspection, certification, fair practices in trade and the utilisation of veterinary drugs, feed and pesticides at farm level.
4. The objective(s) ~~and outcomes~~ of *animal identification* and *animal traceability* for a particular country, *zone* or *compartment* and the approach used should be clearly defined following an assessment of the risks to be addressed and a consideration of the factors listed below. They should be defined through consultation between the *Veterinary Administration* and relevant sectors/stakeholders prior to implementation, and periodically reviewed.
5. There are various factors which may determine the system chosen ~~system~~ for *animal identification* and *animal traceability*. Factors such as the outcomes of the risk assessment, the animal and public health situation (including zoonoses) and related programmes, animal population parameters (such as species and breeds, numbers and distribution), types of production, animal movement patterns, available technologies, trade in animals and animal products, cost/benefit analysis and other economic, geographical and environmental considerations, and cultural aspects, should be taken into account when designing the system. Whatever system is used, it should comply with relevant OIE standards to ensure that the defined objectives are able to be achieved.
6. *Animal identification* and *animal traceability* should be under the responsibility of the *Veterinary Administration*, notwithstanding the responsibilities of other Competent Authorities having jurisdiction throughout the food chain.
7. The *Veterinary Administration*, with relevant governmental agencies and in consultation with the private sector, should establish a legal framework for the implementation and enforcement of *animal identification* and *animal traceability* in the country. In order to facilitate compatibility and consistency, relevant international standards and obligations should be taken into account. This legal framework should include elements such as the objectives, scope, organisational arrangements including the choice of technologies used for identification and *registration*, obligations of all the parties involved including third parties implementing traceability systems, confidentiality, accessibility issues and the efficient exchange of information.

Appendix XX (contd)

8. Whatever the specific objectives of the chosen *animal identification system* and *animal traceability*, there is a series of common basic factors, and these must be considered before implementation, such as the legal framework, procedures, the *Competent Authority*, identification of *establishments/owners*, *animal identification* and animal movements.
  9. The equivalent outcomes (performance criteria) rather than identical systems (design criteria) should be the basis for comparison of *animal identification systems* and *animal traceability*.
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## APPENDIX 3.6.6.

**GENERAL GUIDELINES FOR THE  
DISPOSAL OF DEAD ANIMALS**

## Article 3.6.6.1.

**Introduction**

The mass disposal of dead animals associated with an animal *disease outbreak* is often subject to intense public and media scrutiny thereby obligating the *Veterinary Administration* of a Member Country to not only conduct disposal operations within acceptable scientific principles to destroy the causative pathogen but also to address public and environmental concerns.

The guidelines in this Appendix are general in nature. The choice of one or more of the recommended methods should be in compliance with relevant local and national legislation and be attainable with the resources available. The guidelines should also be applied in conjunction with the procedures described for the killing of animals in Appendix 3.7.6.

Strategies for the disposal of dead animals (entire animals or parts thereof) should be prepared well in advance of any emergency. Major issues related to the disposal of dead animals include the number of animals involved, biosecurity concerns over the movement of infected or exposed animals, people and equipment, environmental concerns, and the psychological distress experienced by farmers and animal handlers.

## Article 3.6.6.2.

**Regulations and jurisdiction**

The legislation regulating animal health and the organisation of the *Veterinary Administration* should give the *Veterinary Services* the authority and the legal powers to carry out the activities necessary for the efficient and effective disposal of dead animals. Cooperation between the *Veterinary Service* and other relevant government bodies is necessary to developing a coherent set of legal measures for the disposal of dead animals in advance of any emergency. In this context the following aspects should be regulated:

1. Powers of *Veterinary Services* (inspectors, veterinary officers, etc.) to effect controls and direct persons as well as the right of entry to an *establishment* for the *Veterinary Services* and associated personnel;
2. movement controls and the authority to make exemptions under certain biosecurity conditions, for example for transport of dead animals to another location for disposal;
3. the obligation on the involved farmer and *animal handlers* to cooperate with the *Veterinary Services*;
4. any need to transfer the ownership of animals to the competent authority;
5. the determining of the method and location of disposal, and the necessary equipment and facilities, by the *Veterinary Services*, in consultation with other involved authorities including national and local governmental organisations competent for the protection of human health and of the environment.

Appendix XXI (contd)

Should the chosen option for the disposal of dead animals be applied near the border of a neighbouring country, the competent authorities of that country should be consulted.

Article 3.6.6.3.

**Preparedness**

The mass killing and disposal of animals in the event of a *disease outbreak* or disposal of animals in the event of natural disasters such as floods, usually must proceed with the minimum delay. The success is determined by the structures, policies and infrastructure established in advance:

1. Technical preparedness

Standard operating procedures (including documented decision-making processes, training of staff). A relationship with industry is essential to obtain compliance with animal health policies - farmer associations, commodity representatives, animal welfare organisations, support structures such as security services, relevant government agencies, the media and consumer representatives.

2. Financial preparedness

Financial preparedness means a compensation or insurance mechanism, an access to emergency funding and an access to personnel through agreements with private veterinarians

3. Communication plan

Information sharing with officials involved in the *outbreak*, affected farmers, professional organizations, politicians and the media is essential. A well informed spokesperson should be available at all times to answer enquiries.

4. Resources

The management of resources should address such items as personnel, transport, storage facilities, equipment (such as mobile handling facilities for animals, disinfection equipment), fuel, protective and disposable material and logistical support.

5. Heavy Special equipment

~~Heavy~~ Availability of special equipment including trucks, tractors, bulldozers, and front-end loaders.

Article 3.6.6.4.

**Critical elements**

Critical elements which need to be taken into account in planning and implementation include: ~~The list of critical elements, which has not the pretension to be complete, needs to be taken into account in planning and implementation.~~

Appendix XXI (contd)1. Timeliness

Early detection of new infections, immediate killing of infected animals and rapid removal of the dead animals with inactivation of the pathogen are important. Spread of the pathogen from the dead animals and their surroundings should be blocked as soon and as effectively as possible.

2. Occupational health and safety

Disposal should be organised in such a way that the workers are safeguarded against the risks of handling decomposing dead animals. Special attention should be given to zoonotic aspects. Workers should receive appropriate training and be sufficiently protected against infection with protective clothing, gloves, face masks, respirators, spectacles, vaccination, anti viral medicines and regular health checks.

3. Pathogen inactivation

The disposal procedure should be selected to result in inactivation of the pathogen.

4. Environmental concerns

Different methods of the disposal of dead animals have different effects on the environment. For instance, pyre burning will produce smoke and smells; burial might lead to gas and leachate production resulting in potential ~~and also a risk of~~ contamination of air, soil, surface and sub surface water.

5. Availability of capacity

An assessment of capacities of different methods of disposal should be made prior to any emergency. Temporary storage of dead animals in cold stores may relieve a lack of processing capacity.

6. ~~Ina~~ Adequate funding

Adequacy of funding for the options chosen must be ascertained and committed at the earliest possible stage.

7. Staff resources

For extended and /or large operations. Particularly important for technical and inspectorial personnel who are usually in short supply

7.8. Public reaction Societal acceptance

Societal acceptance is an important point in choosing the method to use.

8.9. Acceptance by farmers

Farmers will be sensitive to the safety measures taken to prevent spread of the disease by disposal method selected and the transport of the dead animals to the disposal site. Adequate compensation of owners for the loss of animals or for burial or burning sites will improve acceptability.

Appendix XXI (contd)9.10. Equipment

Equipment used in the disposal of dead animals can transfer infection to other premises. The cleaning and disinfection of the outside surfaces of equipment such as cranes, containers and trucks, and the departure of vehicles from the farm should receive special attention. Trucks transporting dead animals should be leak proof.

4.11. Wildlife Scavengers and vectors

When disposing of dead animals, full attention should be given to preventing scavengers and vectors gaining access to dead animals, which might cause spread of disease.

12. Economic impact (short and long term including recovery)

The method of disposal has the potential to influence significantly many aspects economically. This excludes operational costs, subsequent monitoring and re establishment.

Article 3.6.6.5.

**Practical considerations**1. Selection of disposal site

Sufficient top soil to cover the site; water drainage; prevailing wind conditions; easy access to transport; availability of meteorological data; separation from sensitive public sites, and the effect on future use.

2. Selection of Contractors for transport

~~Selection of Contractors for transport~~ — availability; can they supply in all the needs; exclusive use of vehicles or would they also be used for other purposes (risk of disease transmission); access to available roads; suitable for the purpose to be used.

3. Logistical preparedness for the appropriate technology

Availability of fuel (~~wood, old tyres~~); sufficient manual labour available; sites and availability of disinfection tents for personnel; storage and disposal of protective clothing; housing for personnel to minimise the spread of infection; facilities for entry and exit control; availability of electricity for night operations; personal facilities for personnel such as toilets, drinking water; availability of communication — mobile phone reception; protection (e.g. vaccination) of personnel; rendering capacity at rendering plants; ~~arms and ammunition~~; additional cold storage and holding facilities at rendering plants and abattoirs.

4. Procedures and policies for disposal of other possibly contaminated products Animal products such as litter, Manure, wool, eggs and milk; non-animal products; animal feed; non-animal products such as protective clothing.

5. Wildlife

Need to address risk posed; expertise availability for capture/culling of wildlife.

Article 3.6.6.6.

### **Recommended methods for the disposal of dead animals**

The method(s) chosen should be based on local conditions and ~~circumstances~~ the required capacity and speed of outcome.

Some of the methods below may require on-farm pre-processing prior to transportation of dead animals to central facilities for rendering or incineration. Preprocessing could include the grinding of dead animals which can then be transported in sealed containers, or be subjected to fermentation, composting or freezing.

1. Rendering

This is a closed system for mechanical and thermal treatment of animal tissues leading to stable, sterilized products, e.g. animal fat and dried animal protein. The technology exists in dedicated facilities. It produces an effective inactivation of all pathogens with the exception of prions where infectivity is reduced. The availability of the capacity should be determined in advance.

2. Incineration in a dedicated facility

In such a facility, whole dead animals or parts of animals can be completely burned and reduced to ash, often in conjunction with other substances (such as municipal waste, hazardous waste or hospital waste). Effective inactivation of pathogens, including spores, occurs. Fixed facility incineration is wholly contained and has some advantages from the environmental viewpoint as the exhausts may be fitted with afterburner chambers to completely burn hydrocarbon gases and particulate matter from the main combustion chamber.

3. Rendering and incineration

These may be combined for improved security and to provide additional fuel for furnaces in facilities used for other purposes such as in cement kilns and electricity generation plants.

4. Air curtain incineration

This process fan-forces a mass of air through a manifold, thereby creating a turbulent environment in which incineration is accelerated up to six times for example in a burn-pit. The equipment can be mobile and, because it can be used on site, there is no requirement for transportation of the animal material. It also produces effective inactivation of pathogens.

5. Pyre burning

This open system of burning dead animals is a well established procedure that can be conducted on site with no requirement for transportation of animal material. However, it takes an extended period of time and has no way of verifying pathogen inactivation, and there may be particulate dissemination from incomplete combustion. Further, because the process is open to view, there may be a lack of acceptance by the public.

Appendix XXI (contd)6. Composting

Composting is a natural biological decomposition process that takes place in the presence of oxygen. In the first phase, the temperature of the compost pile increases, organic materials break down into relatively small compounds, soft tissue decomposes, and bones soften partially. In the second phase, the remaining materials, mainly bones, break down fully to a dark brown or black humus containing primarily non-pathogenic bacteria and plant nutrients. However, some viruses and spore forming bacteria, such as *Bacillus anthracis*, and other pathogens such as *Mycobacterium tuberculosis* may survive.

7. Trench b-Burial

In this method, whole dead animals are buried and covered by soil. Burial is an established procedure which may be conducted on site. It may not inactivate all pathogens. In some circumstances, dead animals may be disposed of by mounding whereby they are covered by a layer of soil above ground.

8. Biogas production

This is a closed system of anaerobic fermentation which would require for the disposal of dead animals or their parts prior mechanical and thermal treatment of the input material (such as the liquid product of rendering plants). This process may not inactivate all pathogens.

9. Alkaline hydrolysis

This method uses sodium hydroxide or potassium hydroxide to catalyse the hydrolysis of biological material into a sterile aqueous solution consisting of small peptides, amino acids, sugars, and soaps. Heat is applied (150°C) to accelerate the process. The only solid byproducts are the mineral constituents of bones and teeth. This residue (2% of the original weight of the animal) is sterile and easily crushed into a powder. The temperature and alkali conditions of the process destroy the protein coats of viruses and the peptide bonds of prions. Both lipids and nucleic acids are degraded. The process is carried out in an insulated steam-jacketed, stainless steel pressure vessel.

10. Bio-refining

This is a high pressure, high temperature hydrolytic process, conducted in a sealed pressurised vessel. The waste material is treated at 180°C at 12 bar pressure for 40 minutes, heated by the indirect application of steam kj, other compostable material, paper and comparable materials, and cereal straws either alone or in combination. The process inactivates all microbiological agents.

11. Dead animal disposal at sea

International Conventions define the conditions to be met for the disposal of dead animals at sea.

Article 3.6.6.7.

**Guidelines for decision-making for the disposal of dead animals**

~~Strategies for dead animal disposal require preparation well in advance of an emergency in order to maximize the efficiency of the response. Major issues related to dead animal disposal can include the number of animals involved, bio-security concerns over movement of infected and exposed animals, people and equipment, environmental concerns, and the extreme psychological distress and anxiety experienced by producers and emergency workers.~~

Appendix XXI (contd)

The disposal of large numbers of dead animals will be expensive. As well, fixed and variable costs will vary with the choice of the disposal method. Each method used will result in indirect costs on the environment, local economies, producers, and the livestock industry. Decision makers, in addition to biosecurity considerations, need to understand the economic, social and aesthetic impact of various disposal technologies.

A disposal option hierarchy may be incapable of fully capturing and systematizing the relevant dimensions at stake, and decision makers may be forced to consider the least preferred means. It therefore requires a comprehensive understanding of any array of dead animal disposal technologies and must reflect a balance between the scientific, economic, and social issues at stake. Timely slaughter, maintenance of security and prevention of further spread of disease, are the essential considerations in terms of disease control.

The following is an example of a possible process for aiding decision-making by comparing the suitability of various disposal options against factors that are considered important for the specific disposal event in question:

1. Step 1 - Define the factors to be considered. Include all relevant factors and allow enough flexibility to permit modifications for different situations and locations. Examples of possible factors include operator safety, community concerns, international acceptance, transport availability, industry standards, cost effectiveness and speed of resolution. These factors can be modified or changed, as is shown in the following example, to best fit the situation of event involved.
2. Step 2 - Assess the relative importance of the factors by weighting each on their considered importance to addressing the event in question. The sum of all the weightings, regardless of the number of factors, must total 100.
3. Step 3 - Identify and list all disposal options under consideration. Rate each disposal option against each factor and assign a Utility Rating of between 1 to 10 to each comparison. The Utility Rating (U) is a number between 1 and 10 which is allocated according to how well the option achieves the ideal with respect to each factor (eg 1 = the worst possible fit, and 10 = the best fit).
4. Step 4 - For each factor and each disposal option, multiply the Factor Weight (F) x Utility Rating (U) to yield a numeric Balanced Value (V), (eg  $V = F \times U$ ).
5. Step 5 - By adding the Balanced Values to a sum for each disposal option, it is possible to compare the suitability of disposal options by numerically ranking the sums of the Balanced Values for each disposal option. The largest sum would suggest that disposal option is the best balanced choice.

An example of the use of this process follows in Table 1. In this example, rendering achieved the highest sum and would be considered as the best balanced choice and the most suitable disposal option for the factors considered.

## Appendix XXI (contd)

Table 1: Decision Making Process

Method	Rendering		Fixed Incineration		Pyre Burning		Composting		Mass Burial		On-Farm Burial		Commercial Landfill		
	Weight	Utility	Value	Utility	Value	Utility	Value	Utility	Value	Utility	Value	Utility	Value	Utility	Value
Factors															
Operator Safety	20	7	140	4	80	8	160	3	60	7	140	8			
Speed of Resolution	20	8	160	8	160	2	40	5	100	5	100	6			
Pathogen Inactivation	15	10	150	10	150	8	120	5	75	4	60	4			
Impact on Environment	10	10	100	8	80	3	30	10	100	3	30	3			
Reaction of the Public	10	10	100	7	70	1	10	9	90	3	30	4			
Transport Availability	5	1	5	1	5	8	40	5	25	3	15	8			
Acceptable to Industry	5	7	35	7	35	7	35	7	35	6	30	7			
Cost	5	4	20	1	5	6	30	9	45	8	40	9			
Risk to Wildlife	5	10	50	10	50	5	25	4	20	5	25	5			
Capacity to Meet Requirements	5	5	25	3	15	9	45	9	45	9	45	9			
Total Weight to Equal 100 Units	100	sum	785	sum	650	sum	535	sum	595	sum	515	sum		sum	

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 — text deleted

***Animal handler***

means a person with a knowledge of the behaviour and needs of *animals* who ~~which~~, with appropriate experience and a professional and positive response to an *animal's* needs, ~~results in~~ can achieve effective management and good welfare. ~~Their competence should be demonstrated through independent assessment and certification from the Competent Authority or from an independent body accredited by the Competent Authority. (under study)~~ Competence should be gained through formal training and/or practical experience.

## APPENDIX 3.7.2.

GUIDELINES FOR THE TRANSPORT  
OF ANIMALS BY SEA

**Preamble:** These guidelines apply to the following live domesticated animals: cattle, buffalo, deer, camelids, sheep, goats, pigs and equines. They may also be applicable to other domesticated animals.

## Article 3.7.2.1.

The amount of time animals spend on a *journey* should be kept to the minimum.

Article 3.7.2.1. bis1. Animal behaviour

Animal handlers should be experienced and competent in handling and moving farm livestock and understand the behaviour patterns of animals and the underlying principles necessary to carry out their tasks.

The behaviour of individual animals or groups of animals will vary, depending on their breed, sex, temperament and age and the way in which they have been reared and handled. Despite these differences, the following behaviour patterns which are always present to some degree in domestic animals, should be taken into consideration in handling and moving the animals.

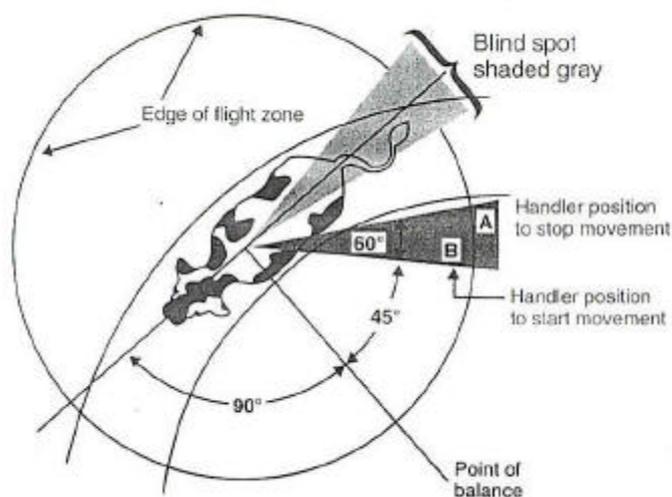
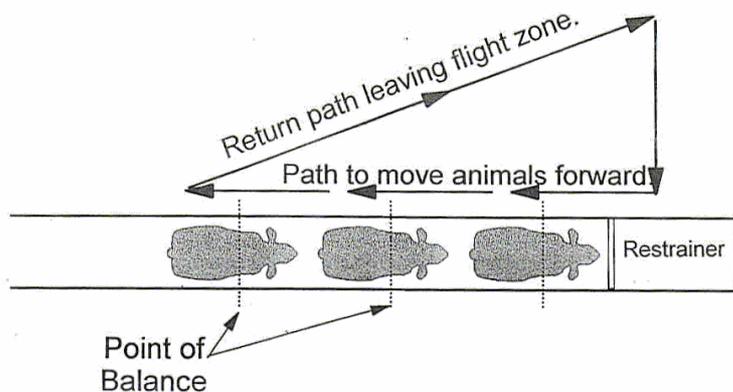
Most domestic livestock are kept in herds and follow a leader by instinct.

Animals which are likely to be hostile to each other in a group situation should not be mixed.

The desire of some animals to control their personal space should be taken into account in designing loading and unloading facilities, transport vessels and containers.

Domestic animals will try to escape if any person approaches closer than a certain distance. This critical distance, which defines the flight zone, varies among species and individuals of the same species, and depends upon previous contact with humans. Animals reared in close proximity to humans (i.e. tame) have a smaller flight zone, whereas those kept in free range or extensive systems may have flight zones which may vary from one metre to many metres. Animal handlers should avoid sudden penetration of the flight zone which may cause a panic reaction which could lead to aggression or attempted escape.

## Appendix XXII (contd)

An example of a flight zone (cattle)Animal handler movement pattern to move cattle forward

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

Domestic animals have wide-angle vision but only have limited forward binocular vision and poor perception of depth. This means that they can detect objects and movements beside and behind them, but can only judge distances directly ahead.

Although all domestic animals have a highly sensitive sense of smell, they may react differently to the smells encountered during travel. Smells which cause fear or other negative responses should be taken into consideration when managing animals.

## Appendix XXII (contd)

Domestic animals can hear over a greater range of frequencies than humans and are more sensitive to higher frequencies. They tend to be alarmed by constant loud noise and by sudden noises, which may cause them to panic. Sensitivity to such noises should also be taken into account when handling animals.

## 2. Distractions and their removal

Distractions that may cause approaching animals to stop, baulk or turn back should be designed out from new *loading* and *unloading* facilities or removed from existing ones. Below are examples of common distractions and methods for eliminating them:

- a) reflections on shiny metal or wet floors - move a lamp or change lighting;
- b) dark entrances - illuminate with indirect lighting which does not shine directly into the eyes of approaching animals;
- c) animals seeing moving people or equipment up ahead - install solid sides on chutes and races or install shields;
- d) chains or other loose objects hanging in chutes or on fences - remove them;
- e) uneven floors or a sudden drop in floor levels – avoid uneven floor surfaces or install a solid false floor to provide an illusion of a solid and continuous walking surface;
- f) sounds of air hissing from pneumatic equipment - install silencers or use hydraulic equipment or vent high pressure to the external environment using flexible hosing;
- g) clanging and banging of metal objects - install rubber stops on gates and other devices to reduce metal to metal contact;
- h) air currents from fans or air curtains blowing into the face of animals - redirect or reposition equipment.

Article 3.7.2.2.

## **Responsibilities**

Once the decision to transport the animals by sea has been made, the welfare of the animals during their *journey* is the paramount consideration and is the joint responsibility of all people involved, ~~with~~ The individual responsibilities of ~~those~~ those persons involved being ~~will be~~ described in more detail in this Article. These guidelines may also be applied to the transport of animals by water within a country.

The management of animals at post-discharge facilities is outside the scope of this Appendix.

~~The roles of each of those responsible are defined below:~~

### 1. General considerations

- ~~1-a)~~ Exporters, importers, owners of animals, business or buying/selling agents, shipping companies, masters of *vessels* and managers of facilities are jointly responsible for the general health of the animals and their fitness for the *journey*, and for their overall welfare during the *journey*, regardless of whether duties are subcontracted to other parties during transport.

Appendix XXII (contd)

~~5.b)~~ The Exporters, the shipping companies, business or buying/selling agents, and the masters of the vessels are jointly responsible for planning the *journey* to ensure the care of the animals, including:

~~i)a)~~ choosing appropriate vessels and ensuring that animal handlers are available to care for the animals;

~~ii)b)~~ developing and keeping up to date contingency plans to address emergencies (including adverse weather conditions) and minimise stress during transport;

~~iii)c)~~ correct loading of the ship, regular inspections during the journey and for appropriate responses to problems arising;

~~iv)d)~~ disposal of carcasses according to international law.

~~6.c)~~ To carry out these the above mentioned responsibilities, the people parties involved should be competent regarding transport regulations, equipment usage, and the humane handling and care of animals.

~~2- The exporter has overall responsibility for the organisation, carrying out and completion of the journey, regardless of whether duties are subcontracted to other parties during transport. The exporter is also responsible for ensuring that equipment and medication are provided as appropriate for the species and journey, and for the presence during the journey of at least one animal handler competent for the species being transported. The exporter is also responsible for ensuring compliance of the animals with any required veterinary certification and, in the case of animals for export, any other requirements of the importing and exporting countries.~~

2. Specific considerations

a) The responsibilities of the exporters include:

i) the organisation, carrying out and completion of the journey, regardless of whether duties are subcontracted to other parties during transport;

ii) ensuring that equipment and medication are provided as appropriate for the species and the journey;

iii) securing the presence of the appropriate number of animal handlers competent for the species being transported;

iv) ensuring compliance of the animals with any required veterinary certification, and their fitness to travel;

v) in case of animals for export, ensuring compliance with any requirements of the importing and exporting countries.

b) The responsibilities of the importers include:

(under study)

c) The responsibilities of the owners of the animals include the selection of animals that are fit to travel based on veterinary recommendations.

## Appendix XXII (contd)

3. ~~Business or buying/selling agents have a joint responsibility with owners for the selection of animals that are fit to travel. They have a joint responsibility with masters of vessels and managers of facilities at the start and at the end of the journey for the availability of suitable facilities for the assembly, loading, transport, unloading and holding of animals, and for emergencies.~~
- d) The responsibilities of the business or buying/selling agent include:
- i) selection of animals that are fit to travel based on veterinary recommendations;
- ii) availability of suitable facilities for the assembly, loading, transport, unloading and holding of animals at the start and at the end of the journey, and for emergencies.
- e) The responsibilities of shipping companies include:
- (under study)
- f) The responsibilities of masters of vessels include the provision of suitable premises for animals on the vessel.
- g) The responsibilities of managers of facilities during loading include:
7. ~~Managers of facilities during loading of the animals are responsible for:~~
- i) a) providing suitable premises for loading the animals;
- ii) b) providing an appropriate number of animal handlers to load the animals with minimum stress and the avoidance of injury;
- iii) minimising the opportunities for disease transmission while the animals are in the facilities;
- iv) e) providing appropriate facilities for emergencies;
- v) d) providing facilities, veterinarians or animal handlers capable of killing animals humanely when required.
- h) The responsibilities of managers of facilities during unloading include:
8. ~~Managers of facilities at the end of the journey are responsible for:~~
- i) a) providing suitable facilities for unloading the animals onto transport vehicles for immediate movement or securely holding the animals in lairage, with shelter, water and feed, when required, for transit;
- ii) b) providing animal handlers to unload the animals with minimum stress and injury;
- iii) e) minimising the opportunities for disease transmission while the animals are in the facilities;
- iv) d) providing appropriate facilities for emergencies;
- v) e) providing facilities, and veterinarians or animal handlers capable of killing animals humanely when required.
4. ~~Animal handlers are responsible for the humane handling and care of animals, especially during loading and unloading. To carry out these responsibilities, they should have the authority to take prompt action.~~

Appendix XXII (contd)

i) The responsibilities of the *animal handlers* include humane handling and care of the animals, especially during *loading and unloading*.

9-i) The responsibilities of the *Competent Authority* of the *exporting country* include:

i)a) establishing minimum standards for animal welfare, including requirements for inspection of animals before and during their travel, and for certification and record keeping;

ii)b) approving facilities, *containers, vehicles/vessels* for the holding and transport of animals, including that of the *importing country*;

iii)c) setting competence standards for *animal handlers* and managers of facilities;

d) ensuring that the vessel transporting animals meets the required standards, including those of the *importing country*;

e) implementation of the standards, including through accreditation of / interaction with other organisations and *Competent Authorities*;

f) monitoring and evaluating health and welfare performance, including the use of any veterinary medications.

10-k) The responsibilities of the *Competent Authority* of the *importing country* include:

i)a) establishing minimum standards for animal welfare, including requirements for inspection of animals after their travel, and for certification and record keeping;

ii)b) approving facilities, *containers, vehicles/vessels* for the holding and transport of animals;

iii)c) setting competence standards for *animal handlers* and managers of facilities;

d) implementation of the standards, including through accreditation of / interaction with other organisations and *Competent Authorities*;

e) ensuring that the *exporting country* is aware of the required standards for the *vessel* transporting the animals;

f) monitoring and evaluating health and welfare performance, including the use of any veterinary medications.

11. When travelling on vessels with the animals, veterinarians are responsible for the humane handling and treatment of the animals during the journey. To carry out these responsibilities, they should have the authority to act and report independently. The veterinarian should meet with the Master, Chief Officer and the *senior animal handler* on a daily basis.

m) The responsibilities of *veterinarians* travelling on the *vessel* with the animals include:

i) humane handling and treatment of animals during the *journey*, including in emergencies, such as *euthanasia*;

- ii) possess ability to report and act independently;
  - iii) meet daily with the master of the vessel to obtain up-to-date information on animal health and welfare status.
- 12.n) The receiving *Competent Authority* should report back to the sending *Competent Authority* on significant animal welfare problems which occurred during the *journey*.

#### Article 3.7.2.3.

### Competence

1. All people responsible for animals during *journeys*, should be competent ~~according to their~~ to carry out the relevant responsibilities listed in Article 3.7.2.2. Competence in areas other than animal welfare would need to be addressed separately. Competence may be gained through formal training and/or practical experience.
2. ~~The competence of animal handlers should be demonstrated through a current certificate from the Competent Authority or from an independent body accredited by the Competent Authority. The certificate should be in one of the OIE official languages if the international transport of animals is involved.~~
3. The assessment of competence of *animal handlers* should at a minimum address knowledge, and ability to apply that knowledge, in the following areas:
  - a) planning a journey, including appropriate space allowance, feed, water and ventilation requirements;
  - b) responsibilities for the welfare of animals during the journey, including loading and unloading;
  - c) sources of advice and assistance;
  - d) animal behaviour, general signs of disease, and indicators of poor animal welfare such as stress, pain and fatigue, and their alleviation;
  - e) ~~assessment of fitness to travel; if fitness to travel is in doubt, the animal should be examined by a veterinarian;~~
  - f) relevant authorities and applicable transport regulations, and associated documentation requirements;
  - g) general disease prevention procedures, including cleaning and *disinfection*;
  - h) appropriate methods of animal handling during transport and associated activities such as assembling, *loading*, and *unloading*;
  - i) methods of inspecting animals, managing situations frequently encountered during transport such as adverse weather conditions, and dealing with emergencies, including euthanasia;
  - j) species-specific aspects and age-specific aspects of animal handling and care, including feeding, watering and inspection; and
  - k) maintaining a *journey* log and other records.

Appendix XXII (contd)

4.5. Assessment of competence for exporters should at a minimum address knowledge, and ability to apply that knowledge, in the following areas:

- a) planning a *journey*, including appropriate *space allowances*, and feed, water and ventilation requirements;
- b) relevant authorities and applicable transport regulations, and associated documentation requirements;
- c) appropriate methods of animal handling during transport and associated activities such as cleaning and *disinfection*, assembling, *loading*, and *unloading*;
- d) species-specific aspects of animal handling and care, including appropriate equipment and medication;
- e) sources of advice and assistance;
- f) appropriate record keeping; and
- g) managing situations frequently encountered during transport, such as adverse weather conditions, and dealing with emergencies.

Article 3.7.2.4.

**Planning the journey**1. General considerations

- a) Adequate planning is a key factor affecting the welfare of animals during a *journey*.
- b) Before the *journey* starts, plans should be made in relation to:
  - i) preparation of animals for the *journey*;
  - ii) type of transport *vessel* required;
  - iii) route, taking into account distance, expected weather and sea conditions;
  - iv) nature and duration of *journey*;
  - v) daily care and management of the animals, including the appropriate number of *animal handlers*, to help ensure the health and welfare of all the animals;
  - vi) avoiding the mixing of animals from different sources in a single pen group;
  - vii) provision of appropriate equipment and medication for the numbers and species carried; and
  - viii) emergency response procedures.

2. Preparation of animals for the journey

- a) When animals are to be provided with a novel diet or unfamiliar methods of supplying of feed or water, they should be preconditioned.

Appendix XXII (contd)

- b) There should be planning for water and feed availability during the *journey*. Feed should be of appropriate quality and composition for the species, age, condition of the animals, etc.
- c) Extreme weather conditions are hazards for animals undergoing transport and require appropriate *vessel* design to minimise risks. Special precautions should be taken for animals that have not been acclimatised or which are unsuited to either hot or cold conditions. In some extreme conditions of heat or cold, animals should not be transported at all.
- d) Animals more accustomed to contact with humans and with being handled are likely to be less fearful of being loaded and transported. Animals should be handled and loaded in a manner that reduces their fearfulness and improves their approachability.
- e) Behaviour-modifying (such as tranquillisers) or other medication should not be used routinely during transport. Such medicines should only be administered when a problem exists in an individual animal, and should be administered by a *veterinarian* or other person who has been instructed in their use by a *veterinarian*. Treated animals should be placed in a dedicated area.

3. Control of disease

As animal transport is often a significant factor in the spread of infectious diseases, *journey* planning should take into account the following:

- a) When possible and agreed by the *Veterinary Authority* of the *importing country*, animals should be vaccinated against diseases to which they are likely to be exposed at their destination.
- b) Medications used prophylactically or therapeutically should only be administered by a *veterinarian* or other person who has been instructed in their use by a *veterinarian*.
- c) Mixing of animals from different sources in a single consignment should be minimized.

4. Vessel and container design and maintenance

- a) *Vessels* used for the sea transport of animals should be designed, constructed and fitted as appropriate to the species, size and weight of the animals to be transported. Special attention should be paid to the avoidance of injury to animals through the use of secure smooth fittings free from sharp protrusions and the provision of non-slip flooring. The avoidance of injury to *animal handlers* while carrying out their responsibilities should be emphasised.
- b) *Vessels* should be properly illuminated to allow animals to be observed and inspected.
- ~~b)c)~~ *Vessels* should be designed to permit thorough cleaning and *disinfection*, and the management of faeces and urine.
- ~~e)d)~~ *Vessels* and their fittings should be maintained in good mechanical and structural condition.
- ~~d)e)~~ *Vessels* should have adequate ventilation to meet variations in climate and the thermo-regulatory needs of the animal species being transported. The ventilation system should be effective when the *vessel* is stationary. An emergency power supply should be available to maintain ventilation in the case of primary machinery breakdown.

Appendix XXII (contd)

- e)f) The feeding and watering system should be designed to permit adequate access to feed and water appropriate to the species, size and weight of the animals, and to minimise soiling of pens.
- f)g) *Vessels* should be designed so that the faeces or urine from animals on upper levels do not soil animals on lower levels, or their feed or water.
- g)h) *Loading* and stowage of feed and bedding should be carried out in such a way to ensure protection from fire hazards, the elements and sea water.
- h)i) Where appropriate, suitable bedding, such as straw or sawdust, should be added to *vessel* floors to assist absorption of urine and faeces, provide better footing for animals and protect animals (especially young animals) from hard or rough flooring surfaces and adverse weather conditions.
- i)j) The above principles apply also to *containers* used for the transport of animals.
5. Special provisions for transport in road vehicles on roll-on/roll-off vessels or for containers
- a) Road *vehicles* and *containers* should be equipped with a sufficient number of adequately designed, positioned and maintained securing points enabling them to be securely fastened to the *vessel*.
  - b) Road *vehicles* and *containers* should be secured to the ship before the start of the sea *journey* to prevent them being displaced by the motion of the *vessel*.
  - c) *Vessels* should have adequate ventilation to meet variations in climate and the thermo-regulatory needs of the animal species being transported, especially where the animals are transported in a secondary *vehicle/container* on enclosed decks.
  - d) Due to the risk of limited airflow on certain ~~vessels~~<sup>2</sup> decks of a vessel, a road *vehicle* or *container* may require a forced ventilation system of greater capacity than that provided by natural ventilation.
6. Nature and duration of the journey
- The maximum duration of a *journey* should be determined ~~according to~~ taking into account factors that determine the overall welfare of animals, such as:
- a) the ability of the animals to cope with the stress of transport (such as very young, old, lactating or pregnant animals);
  - b) the ~~animals~~<sup>2</sup> previous transport experience of the animals;
  - c) the likely onset of fatigue;
  - d) the need for special attention;
  - e) the need for feed and water;
  - f) the increased susceptibility to injury and disease;
  - g) *space allowance* and *vessel* design;
  - h) weather conditions.

Appendix XXII (contd)7. Space allowance

- a) The number of animals which should be transported on a *vessel* and their allocation to different pens on the *vessel* should be determined before *loading*.
- b) The amount of space required, including headroom, depends on the species of animal and should allow the necessary thermoregulation. Each animal should be able to assume its natural position for transport (including during *loading* and *unloading*) without coming into contact with the roof or upper deck of the *vessel*. When animals lie down, there should be enough space for every animal to adopt a normal lying posture.
- c) Calculations for the *space allowance* for each animal should be carried out, using the figures given in Appendix X.X.X. or, in their absence, in a relevant national or international document. The size of pens will affect the number of animals in each.
- d) The same principles apply when animals are transported in *containers*.

8. Ability to observe animals during the journey

Animals should be positioned to enable each animal to be observed regularly and clearly by *animal handler* or other responsible person, during the *journey* to ensure their safety and good welfare.

9. Emergency response procedures

There should be an emergency management plan that identifies the important adverse events that may be encountered during the *journey*, the procedures for managing each event and the action to be taken in an emergency. For each important event, the plan should document the actions to be undertaken and the responsibilities of all parties involved, including communications and record keeping.

Article 3.7.2.5.

**Documentation**

1. Animals should not be loaded until the documentation required to that point is complete.
2. The documentation accompanying the consignment should include:
  - a) *journey* travel plan (~~including~~ and an emergency management plan);
  - b) time, date and place of *loading*;
  - c) the *journey* log – a daily record of inspection and important events which includes records of morbidity and mortality and actions taken, climatic conditions, food and water consumed, medication provided, mechanical defects;
  - d) expected time, date and place of arrival and *unloading*;
  - e) veterinary certification, when required;

Appendix XXII (contd)

- f) *animal identification* to allow ~~traceback~~ animal traceability of individual animals to the premises of departure, and, where possible, to the premises of origin;
  - g) details of any animals considered ~~'at risk'~~ at particular risk of suffering poor welfare during transport (point 3e) of Article 3.7.2.6.;
  - h) number of *animal handlers* on board, and their competencies; and
  - i) *stocking density* estimate for each load in the consignment.
3. When veterinary certification is required to accompany consignments of animals, it should address:
- a) when required, details of *disinfection* carried out;
  - b) fitness of the animals to travel;
  - c) *animal identification* (description, number, etc.); and
  - d) health status including any tests, treatments and vaccinations carried out.

Article 3.7.2.6.

**Pre-journey period**1. General considerations

- a) Before each *journey*, *vessels* should be thoroughly cleaned and, if necessary, treated for animal and public health purposes, using chemicals approved by the *Competent Authority*. When cleaning is necessary during a *journey*, this should be carried out with the minimum of stress to the animals.
- b) In some circumstances, animals may require *pre-journey* assembly. In these circumstances, the following points should be considered:
  - i) *Pre-journey* rest is necessary if the welfare of animals has become poor during the collection period because of the physical environment or the social behaviour of the animals.
  - ii) For animals such as pigs which are susceptible to motion sickness, and in order to reduce urine and faeces production during the *journey*, a species-specific short period of feed deprivation prior to *loading* is desirable.
  - iii) When animals are to be provided with a novel diet or unfamiliar methods of supplying feed or water, they should be preconditioned.
- c) Where an *animal handler* believes that there is a significant risk of disease among the animals to be loaded or significant doubt as to their fitness to travel, the animals should be examined by a *veterinarian*.
- d) *Pre-journey* assembly / holding areas should be designed to:
  - i) securely contain the animals;

Appendix XXII (contd)

- ii) maintain an environment safe from hazards, including predators and disease;
- iii) protect animals from exposure to adverse weather conditions;
- iv) allow for maintenance of social groups; and
- v) allow for rest, watering and feeding.

2. Selection of compatible groups

Compatible groups should be selected before transport to avoid adverse animal welfare consequences. The following guidelines should be applied when assembling groups of animals:

- a) animals of different species should not be mixed unless they are judged to be compatible;
- b) animals of the same species can be mixed unless there is a significant likelihood of aggression; aggressive individuals should be segregated (recommendations for specific species are described in detail in Article 3.7.2.11.). For some species, animals from different groups should not be mixed because poor welfare occurs unless they have established a social structure;
- c) young or small animals may need to be separated from older or larger animals, with the exception of nursing mothers with young at foot;
- d) animals with horns or antlers should not be mixed with animals lacking horns or antlers, unless judged to be compatible; and
- e) animals reared together should be maintained as a group; animals with a strong social bond, such as a dam and offspring, should be transported together.

3. Fitness to travel

- a) Animals should be inspected by a *veterinarian* or an *animal handler* to assess fitness to travel. If its fitness to travel is in doubt, ~~the animal should be examined by a veterinarian~~ it is the responsibility of a veterinarian to determine its ability to travel. Animals found unfit to travel should not be loaded onto a *vessel*.
- b) Humane and effective arrangements should be made by the owner or agent for the handling and care of any animal rejected as unfit to travel.
- c) Animals that are unfit to travel include, but may not be limited to:
  - i) those that are sick, injured, weak, disabled or fatigued;
  - ii) those that are unable to stand unaided or bear weight on each leg;
  - iii) those that are blind in both eyes;
  - iv) those that cannot be moved without causing them additional suffering;
  - v) newborn with an unhealed navel;

Appendix XXII (contd)

- vi) females travelling without young which have given birth within the previous 48 hours;
  - vii) pregnant animals which would be in the final 10% of their gestation period at the planned time of *unloading*.
- d) Risks during transport can be reduced by selecting animals best suited to the conditions of travel and those that are acclimatised to expected weather conditions.
- e) Animals at particular risk of suffering poor welfare during transport and which require special conditions (such as in the design of facilities and *vehicles*, and the length of the *journey*) and additional attention during transport, may include: ~~Animals at risk and requiring better conditions and additional attention during transport include:~~
- i) very large or obese individuals;
  - ii) very young or old animals;
  - iii) excitable or aggressive animals;
  - iv) animals subject to motion sickness;
  - v) animals which have had little contact with humans;
  - vi) females in the last third of pregnancy or in heavy lactation.
- f) Hair or wool length should be considered in relation to the weather conditions expected during transport.

Article 3.7.2.7.

**Loading**1. Competent supervision

- a) *Loading* should be carefully planned as it has the potential to be the cause of poor welfare in transported animals.
- b) *Loading* should be supervised by the *Competent Authority* and conducted by *animal handler(s)*. *Animal handlers* should ensure that animals are loaded quietly and without unnecessary noise, harassment or force, and that untrained assistants or spectators do not impede the process.

2. Facilities

- a) The facilities for *loading*, including the collecting area at the wharf, races and loading ramps should be designed and constructed to take into account ~~of~~ the needs and abilities of the animals with regard to dimensions, slopes, surfaces, absence of sharp projections, flooring, sides, etc.
- b) Ventilation during *loading* and the *journey* should provide for fresh air, and the removal of excessive heat, humidity and noxious fumes (such as ammonia and carbon monoxide). Under warm and hot conditions, ventilation should allow for the adequate convective cooling of each animal. In some instances, adequate ventilation can be achieved by increasing the *space allowance* for animals.

## Appendix XXII (contd)

- c) *Loading* facilities should be properly illuminated to allow the animals to be easily inspected by *animal handlers*, and to allow the ~~animals~~<sup>2</sup> ease of movement of animals at all times. Facilities should provide uniform ~~lighting~~ light levels directly over approaches to sorting pens, chutes, loading ramps, with brighter ~~lighting~~ light levels inside *vehicles/containers*, in order to minimise baulking. Dim ~~lighting~~ light levels may be advantageous for the catching of some animals. Artificial lighting may be required.

3. Goads and other aids

The following principles should apply:

- a) ~~Animals that have little or no room to move should not be subjected to physical force or goads and other aids which compel movement.~~
- b) ~~Useful and permitted goads include panels, flags, plastic paddles, flappers (a length of cane with a short strap of leather or canvas attached), plastic bags and metallic rattles; they should be used in a manner sufficient to encourage and direct movement of the animals.~~
- e) ~~Painful procedures (including whipping, tail twisting, use of nose twitches, pressure on eyes, ears or external genitalia), or the use of unsuitable goads or other aids (including sticks with sharp ends, lengths of metal piping, fencing wire or heavy leather belts), should not be used to move animals.~~
- d) ~~The use of goads which administer electric shocks should be discouraged, and restricted to that necessary to assist movement of the animal. Such use should be limited to battery-powered goads on the hindquarters of pigs and large ruminants, and never on sensitive areas such as the eyes, mouth, ears, anogenital region or belly. Such instruments should not be used on horses, sheep and goats of any age, or on calves or piglets.~~
- e) ~~Shouting or yelling at animals or making loud noises (e.g., through the cracking of whips) to encourage them to move should not occur, as such actions may make the animals agitated, leading to crowding or falling.~~
- f) ~~The use of well trained dogs to help with the *loading* of some species may be acceptable.~~
- g) ~~Manual lifting is permissible for young animals that may have difficulty negotiating ramps, but the lifting of animals by body parts such as their tail, head, horns, ears, limbs, wool or hair should not be permitted. The throwing or dropping of animals should not be permitted.~~
- a) Animals that have little or no room to move should not be subjected to physical force or goads and other aids which compel movement. Electric goads and prods should only be used in extreme cases and not on a routine basis to move animals. The use and the power output should be restricted to that necessary to assist movement of an animal and only when an animal has a clear path ahead to move. Goads and other aids should not be used repeatedly if the animal fails to respond or move. In such cases it should be investigated whether some physical or other impediment is preventing the animal from moving.
- b) The use of such devices should be limited to battery-powered goads on the hindquarters of pigs and large ruminants, and never on sensitive areas such as the eyes, mouth, ears, anogenital region or belly. Such instruments should not be used on horses, sheep and goats of any age, or on calves or piglets.

Appendix XXII (contd)

- c) Useful and permitted goads include panels, flags, plastic paddles, flappers (a length of cane with a short strap of leather or canvas attached), plastic bags and metallic rattles; they should be used in a manner sufficient to encourage and direct movement of the animals without causing undue stress.
- d) Painful procedures (including whipping, tail twisting, use of nose twitches, pressure on eyes, ears or external genitalia), or the use of goads or other aids which cause pain and suffering (including large sticks, sticks with sharp ends, lengths of metal piping, fencing wire or heavy leather belts), should not be used to move animals.
- e) Shouting or yelling at animals or making loud noises (e.g., through the cracking of whips) to encourage them to move should not occur, as such actions may make the animals agitated, leading to crowding or falling.
- f) The use of well trained dogs to help with the *loading* of some species may be acceptable.
- g) Animals should be grasped or lifted in a manner which avoids pain or suffering and physical damage (e.g. bruising, fractures, dislocations). In the case of quadrupeds, manual lifting by a person should only be used in young animals or small species, and in a manner appropriate to the species; grasping or lifting such animals only by their wool, hair, feathers, feet, neck, ears, tails, head, horns, limbs causing pain or suffering should not be permitted, except in an emergency where animal welfare or human safety may otherwise be compromised.
- h) Conscious animals should not be thrown, dragged or dropped.
- i) Performance standards should be established in which numerical scoring is used to evaluate the use of such instruments, and to measure the percentage of animals moved with an electric instrument and the percentage of animals slipping or falling as a result of their usage.

Article 3.7.2.8.

**Travel**1. General considerations

- a) *Animal handler(s)* should check the consignment immediately before departure to ensure that the animals have been loaded according to the load plan. Each consignment should be checked again within 12 hours.
- b) Adjustments should be made to the *stocking density* as appropriate during the *journey*.
- c) Each pen of animals should be observed on a daily basis for normal behaviour, health and welfare, and the correct operation of ventilation, watering and feeding systems. There should also be a night patrol. Any necessary corrective action should be undertaken promptly.
- d) Adequate access to suitable feed and water should be ensured for all animals in each pen.
- e) Where cleaning or *disinfestation* is necessary during travel, it should be carried out with the minimum of stress to the animals.

## 2. Sick and or injured animals

- a) Sick ~~and or~~ injured animals should be segregated ~~if possible~~.
- b) Sick ~~and or~~ injured animals should be appropriately treated or humanely killed, in accordance with a predetermined emergency response plan (Article 3.7.2.4.). Veterinary advice should be sought if necessary. All drugs and products should be used according to recommendations from a veterinarian and in accordance with the manufacturer's ~~or veterinarian's recommendations instructions~~.
- c) A record of treatments carried out and their outcomes should be kept.
- d) When euthanasia is necessary, ~~the person responsible for the animals~~ the veterinarian must ensure that it is carried out humanely. ~~Assistance should be sought from a veterinarian or other person(s) competent in euthanasia procedures.~~ Recommendations for specific species are described in Appendix 3.7.6. on killing of animals for disease control purposes.

Article 3.7.2.9.

## Unloading and post-journey handling

### 1. General considerations

- a) The required facilities and the principles of animal handling detailed in Article 3.7.2.7. apply equally to *unloading*, but consideration should be given to the likelihood that the animals will be fatigued.
- b) *Unloading* should be carefully planned as it has the potential to be the cause of poor welfare in transported animals.
- c) A livestock *vessel* should have priority attention when arriving in port and have priority access to a berth with suitable *unloading* facilities. As soon as possible after the ~~ship's vessel's~~ arrival at the port and acceptance of the consignment by the *Competent Authority*, animals should be unloaded into appropriate facilities.
- d) The accompanying veterinary certificate and other documents should meet the requirements of the *importing country*. Veterinary inspections should be completed as quickly as possible.
- e) *Unloading* should be supervised by the *Competent Authority* and conducted by ~~an~~ *animal handler(s)*. The *animal handlers* should ensure that animals are unloaded as soon as possible after arrival but sufficient time should be allowed for *unloading* to proceed quietly and without unnecessary noise, harassment or force, and that untrained assistants or spectators do not impede the process.

### 2. Facilities

- a) The facilities for *unloading* including the collecting area at the wharf, races and unloading ramps should be designed and constructed to take into account of the needs and abilities of the animals with regard to dimensions, slopes, surfaces, absence of sharp projections, flooring, sides, etc.
- b) All *unloading* facilities should have sufficient lighting to allow the animals to be easily inspected by the *animal handlers*, and to allow the ~~animals'~~ ease of movement of animals at all times.

Appendix XXII (contd)

- c) There should be facilities to provide animals with appropriate care and comfort, adequate space, access to quality feed and clean drinking water, and shelter from extreme weather conditions.
3. Sick and or injured animals
- a) An animal that has become sick, injured or disabled during a *journey* should be appropriately treated or ~~humanely killed~~ euthanised (see Appendix 3.7.6.). When necessary, veterinary advice should be sought in the care and treatment of these animals.
- b) In some cases, where animals are non-ambulatory due to fatigue, injury or sickness, it may be in the best welfare interests of the animal to be treated or euthanised aboard the *vessel*.
- c) If *unloading* is in the best welfare interests of animals that are fatigued, injured or sick, there should be appropriate facilities and equipment for the humane *unloading* of such animals. These animals should be unloaded in a manner that causes the least amount of suffering. After *unloading*, separate pens and other appropriate facilities and treatments should be provided for sick or injured animals.
4. Cleaning and disinfection
- a) *Vessels* and *containers* used to carry the animals should be cleaned before re-use through the physical removal of manure and bedding, by scraping, washing and flushing *vessels* and *containers* with water until visibly clean. This should be followed by *disinfection* when there are concerns about disease transmission.
- b) Manure, litter and bedding should be disposed of in such a way as to prevent the transmission of disease and in compliance with all relevant health and environmental legislation.
- ~~e) Where cleaning or *disinfestation* is necessary during travel, it should be carried out with the minimum of stress to the animals.~~

Article 3.7.2.10.

**Actions in the event of a refusal to allow the importation of a shipment**

1. The welfare of the animals should be the first consideration in the event of a refusal to import.
2. When animals have been refused import, the *Competent Authority* of ~~that~~ the *importing country* should make available suitable isolation facilities to allow the *unloading* of animals from a *vessel* and their secure holding, without posing a risk to the health of the national herd, pending resolution of the situation. In this situation, the priorities should be:
  - a) The *Competent Authority* of the *importing country* should provide urgently in writing the reasons for the refusal.
  - b) In the event of a refusal for animal health reasons, the *Competent Authority* of the *importing country* should provide urgent access to an OIE-appointed *veterinarian(s)* to assess the ~~animals'~~ health status of the animals with regard to the ~~importing country's~~ concerns of the importing country, and the necessary facilities and approvals to expedite the required diagnostic testing.
  - c) The *Competent Authority* of the *importing country* should provide access to allow continued assessment of the ongoing health and welfare situation.

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- d) If the matter cannot be promptly resolved, the *Competent Authority* of the *exporting* and *importing countries* should call on the OIE to mediate.
3. In the event that the animals are required to remain on the *vessel*, the priorities should be:
- a) The *Competent Authority* of the *importing country* should allow ~~reprovision~~ provisioning of the *vessel* with water and feed as necessary.
- b) The *Competent Authority* of the *importing country* should provide urgently in writing the reasons for the refusal.
- c) In the event of a refusal for animal health reasons, the *Competent Authority* of the *importing country* should provide urgent access to an OIE-appointed *veterinarian(s)* to assess the ~~animals'~~ animals' health status of the animals with regard to the ~~importing country's~~ importing country's concerns of the importing country, and the necessary facilities and approvals to expedite the required diagnostic testing.
- d) The *Competent Authority* of the *importing country* should provide access to allow continued assessment of the ongoing health and other aspects of the welfare of the animals, and the necessary actions to deal with any issues which arise.
- e) If the matter cannot be urgently resolved, the *Competent Authorities* of the *exporting* and *importing countries* should call on the OIE to mediate.
4. The OIE should utilise its dispute settlement mechanism to identify a mutually agreed solution which will address the animal health and welfare issues in a timely manner.

## Article 3.7.2.11.

**Species specific issues**

**Cattle** are sociable animals and may become agitated if they are singled out. Social order is usually established at about two years of age. When groups are mixed, social order has to be re-established and aggression may occur until a new order is established. Crowding of cattle may also increase aggression as the animals try to maintain personal space. Social behaviour varies with age, breed and sex; *Bos indicus* and *B. indicus*-cross animals are usually more temperamental than European breeds. Young bulls, when moved in groups, show a degree of playfulness (pushing and shoving) but become more aggressive and territorial with age. Adult bulls have a minimum personal space of six square metres. Cows with young calves can be very protective, and handling calves in the presence of their mothers can be dangerous.

**Goats** should be handled calmly and are more easily led or driven than if they are excited. When goats are moved, their gregarious tendencies should be exploited. Activities which frighten, injure or cause agitation to animals should be avoided. Bullying is particularly serious in goats. Housing strange goats together could result in fatalities, either through physical violence, or subordinate goats being refused access to food and water.

**Sheep** are sociable animals with good eyesight and tend to “flock together”, especially when they are agitated. They should be handled calmly and their tendency to follow each other should be exploited when they are being moved. Sheep may become agitated if they are singled out for attention and will strive to rejoin the group. Activities which frighten, injure or cause agitation to sheep should be avoided. They can negotiate steep ramps.

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**Pigs** have poor eyesight, and may move reluctantly in strange surroundings. They benefit from well lit *loading* bays. Since they negotiate ramps with difficulty, these should be as level as possible and provided with secure footholds. Ideally, a hydraulic lift should be used for greater heights. Pigs also negotiate steps with difficulty. A good ‘rule-of-thumb’ is that no step should be higher than the pig’s front knee. Serious aggression may result if unfamiliar animals are mixed. Pigs are highly susceptible to heat stress.

**Horses** in this context include all solipeds, donkeys, mules, hinnies and zebra. They have good eyesight and a very wide angle of vision. They may have a history of *loading* resulting in good or bad experiences. Good training should result in easier *loading*, but some horses can prove difficult, especially if they are inexperienced or have associated *loading* with poor transport conditions. In these circumstances, two experienced *animal handlers* can load an animal by linking arms or using a strop below its rump. Blindfolding may even be considered. Ramps should be as shallow as possible. Steps are not usually a problem when horses mount a ramp, but they tend to jump a step when descending, so steps should be as low as possible. Horses benefit from being individually stalled, but may be transported in compatible groups. When horses are to travel in groups, their shoes should be removed.

**Camelids** in this context comprise llamas, alpacas, guanaco and vicuna. They have good eyesight and, like sheep, can negotiate steep slopes, though ramps should be as shallow as possible. They load most easily in a bunch as a single animal will strive to rejoin the others. Whilst they are usually docile, they have an unnerving habit of spitting in self-defence. During transport, they usually lie down. They frequently extend their front legs forward when lying, so gaps below partitions should be high enough so that their legs are not trapped when the animals rise.

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***Animal handler***

means a person with a knowledge of the behaviour and needs of *animals* ~~who~~ ~~which~~, with appropriate experience and a professional and positive response to an *animal's* needs, ~~results in~~ can achieve effective management and good welfare. ~~Their competence should be demonstrated through independent assessment and certification from the Competent Authority or from an independent body accredited by the Competent Authority. (under study)~~ Competence should be gained through formal training and/or practical experience.

## APPENDIX 3.7.3.

GUIDELINES FOR THE TRANSPORT  
OF ANIMALS BY LAND

**Preamble:** These guidelines apply to the following live domesticated animals: cattle, buffalo, camels, sheep, goats, pigs, poultry and equines. They will also be largely applicable to some other animals (e.g., deer, other camelids and ratites). Wild, feral and partly domesticated animals may need different conditions.

## Article 3.7.3.1.

The amount of time animals spend on a *journey* should be kept to the minimum.

Article 3.7.3.1. bis1. Animal behaviour

Animal handlers should be experienced and competent in handling and moving farm livestock and understand the behaviour patterns of animals and the underlying principles necessary to carry out their tasks.

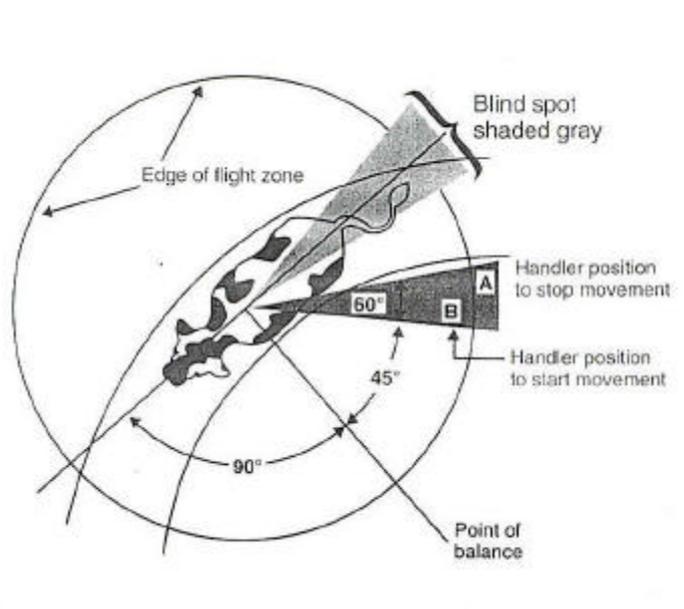
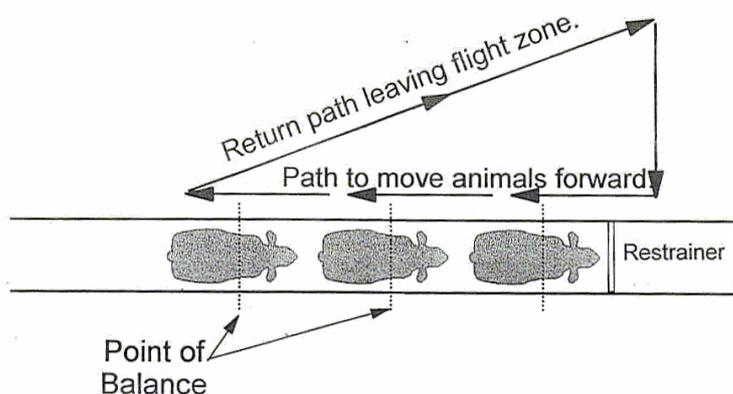
The behaviour of individual animals or groups of animals will vary, depending on their breed, sex, temperament and age and the way in which they have been reared and handled. Despite these differences, the following behaviour patterns which are always present to some degree in domestic animals, should be taken into consideration in handling and moving the animals.

Most domestic livestock are kept in herds and follow a leader by instinct.

Animals which are likely to be hostile to each other in a group situation should not be mixed.

The desire of some animals to control their personal space should be taken into account in designing loading and unloading facilities, transport vehicles and containers.

Domestic animals will try to escape if any person approaches closer than a certain distance. This critical distance, which defines the flight zone, varies among species and individuals of the same species, and depends upon previous contact with humans. Animals reared in close proximity to humans (i.e. tame) have a smaller flight zone, whereas those kept in free range or extensive systems may have flight zones which may vary from one metre to many metres. Animal handlers should avoid sudden penetration of the flight zone which may cause a panic reaction which could lead to aggression or attempted escape.

**An example of a flight zone (cattle)****Animal handler movement pattern to move cattle forward**

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

Domestic animals have wide-angle vision but only have limited forward binocular vision and poor perception of depth. This means that they can detect objects and movements beside and behind them, but can only judge distances directly ahead.

Although all domestic animals have a highly sensitive sense of smell, they may react differently to the smells encountered during travel. Smells which cause fear or other negative responses should be taken into consideration when managing animals.

## Appendix XXIII (contd)

Domestic animals can hear over a greater range of frequencies than humans and are more sensitive to higher frequencies. They tend to be alarmed by constant loud noise and by sudden noises, which may cause them to panic. Sensitivity to such noises should also be taken into account when handling animals.

## 2. Distractions and their removal

Distractions that may cause approaching animals to stop, baulk or turn back should be designed out from new *loading* and *unloading* facilities or removed from existing ones. Below are examples of common distractions and methods for eliminating them:

- a) reflections on shiny metal or wet floors - move a lamp or change lighting;
- b) dark entrances - illuminate with indirect lighting which does not shine directly into the eyes of approaching animals;
- c) animals seeing moving people or equipment up ahead - install solid sides on chutes and races or install shields;
- d) chains or other loose objects hanging in chutes or on fences - remove them;
- e) uneven floors or a sudden drop in floor levels – avoid uneven floor surfaces or install a solid false floor to provide an illusion of a solid and continuous walking surface;
- f) sounds of air hissing from pneumatic equipment - install silencers or use hydraulic equipment or vent high pressure to the external environment using flexible hosing;
- g) clanging and banging of metal objects - install rubber stops on gates and other devices to reduce metal to metal contact;
- h) air currents from fans or air curtains blowing into the face of animals - redirect or reposition equipment.

Article 3.7.3.2.

## **Responsibilities**

Once the decision to transport the animals has been made, the welfare of the animals during their *journey* is the paramount consideration and is the joint responsibility of all people involved, ~~with~~ <sup>T</sup>he individual responsibilities of ~~those~~ <sup>involved</sup> ~~being~~ <sup>will be</sup> described in more detail in this Article.

The roles of each of those responsible are defined below:

1. ~~The owners and managers of the animals are responsible for the general health of the animals and their fitness for the journey, and for their overall welfare during the journey. They are also responsible for ensuring compliance with any required veterinary or other certification, and for the presence during the journey of at least one *animal handler* competent for the species being transported, with the authority to take prompt action. They are also responsible for ensuring that equipment and veterinary assistance are provided as appropriate for the species and journey. These responsibilities should apply regardless of whether duties are subcontracted to other parties during transport.~~

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1. The owners and managers of the animals are responsible for:
  - a) the general health, overall welfare and fitness of the animals for the *journey*;
  - b) ensuring compliance with any required veterinary or other certification;
  - c) the presence of an *animal handler* competent for the species being transported during the *journey* with the authority to take prompt action; in case of transport by individual trucks, the truck driver may be the sole *animal handler* during the *journey*;
  - d) the presence of an adequate number of *animal handlers* during *loading* and *unloading*;
  - e) ensuring that equipment and veterinary assistance are provided as appropriate for the species and the *journey*.
- ~~2. Business agents or buying/selling agents have a joint responsibility with owners for the selection of animals that are fit to travel. They have a joint responsibility with market owners and managers of facilities at the start and at the end of the journey for the availability of suitable facilities for the assembly, *loading*, transport, *unloading* and holding of animals, including for any stops at resting points during the journey and for emergencies.~~
2. Business agents or buying/selling agents are responsible for:
  - a) selection of animals that are fit to travel;
  - b) availability of suitable facilities at the start and at the end of the *journey* for the assembly; *loading*, transport, *unloading* and holding of animals, including for any stops at *resting points* during the *journey* and for emergencies.
3. Animal handlers are responsible for the humane handling and care of the animals, especially during *loading* and *unloading*, and for maintaining a journey log. To carry out their responsibilities, they should have the authority to take prompt action. In the absence of a separate *animal handler*, the driver is the *animal handler*.
4. Transport companies, *vehicle* owners and drivers are responsible for planning the *journey* to ensure the care of the animals, in particular they are responsible for:
  - a) ~~transport companies and vehicle owners are responsible for~~ choosing appropriate *vehicles* for the species transported and the *journey*;
  - b) ~~and~~ ensuring that properly trained staff are available for *loading* ~~and caring for~~ *unloading* of animals;
  - c) ensuring adequate competency of the driver in matters of animal welfare for the species being transported in case a separate *animal handler* is not assigned to the truck;
  - ~~b) transport companies and vehicle owners are responsible for~~ developing and keeping up-to-date contingency plans to address emergencies (including adverse weather conditions) and minimise stress during transport;

## Appendix XXIII (contd)

- e) ~~transport companies and vehicle owners are responsible for~~ producing a *journey* plan which includes a *loading* plan, *journey* duration, itinerary and location of resting places;
- f) ~~drivers are responsible for~~ *loading* only those animals which are fit to travel, for their correct *loading* into the *vehicle* and their inspection during the *journey*, and for appropriate responses to problems arising. If its fitness to travel is in doubt, the animal should be examined by a *veterinarian* in accordance with point 5 a) of Article 3.7.3.6;
- g) welfare of the animals during the actual transport.
5. Managers of facilities at the start and at the end of the *journey* and at *resting points* are responsible for:
- providing suitable premises for *loading*, *unloading* and securely holding the animals, with water and feed when required, until further transport, sale or other use (including rearing or slaughter);
  - providing an adequate number of animal handlers to load, unload, drive and hold animals in a manner that causes minimum stress and injury. In the absence of a separate animal handler, the driver is the animal handler.
  - minimising the opportunities for disease transmission;
  - providing appropriate facilities, with water and feed when required;
  - providing appropriate facilities for emergencies;
  - providing facilities for washing and disinfecting *vehicles* after *unloading*;
  - providing facilities and competent staff to allow the humane killing of animals when required
  - ensuring proper rest times and minimal delay during stops.
6. The responsibilities of *Competent Authorities* include:
- establishing minimum standards for animal welfare, including requirements for inspection of animals before, during and after their travel, defining 'fitness to travel' and appropriate certification and record keeping;
  - setting standards for facilities, *containers* and *vehicles* for the transport of animals;
  - setting standards for the competence of *animal handlers*, drivers and managers of facilities in relevant issues in animal welfare;
  - ensuring appropriate awareness and training of *animal handlers*, drivers and managers of facilities in relevant issues in animal welfare;
  - implementation of the standards, including through accreditation of / interaction with other organisations;
  - monitoring and evaluating the effectiveness of standards of health and other aspects of welfare;

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- g) monitoring and evaluating the use of veterinary medications;
  - h) ~~expediting the passage of animal consignments at frontiers~~ give animal consignments priority at frontiers in order to allow them to pass without unnecessary delay.
7. All individuals, including *veterinarians*, involved in transporting animals and the associated handling procedures should receive appropriate training and be competent to meet their responsibilities.
  8. The receiving *Competent Authority* should report back to the sending *Competent Authority* on significant animal welfare problems which occurred during the *journey*.

## Article 3.7.3.3.

**Competence**

1. All people responsible for animals during *journeys*, should be competent according to their responsibilities listed in Article 3.7.3.2. Competence may be gained through formal training and/or practical experience. Competence in areas other than animal welfare would need to be addressed separately.
2. ~~The competence of *animal handlers* should be demonstrated through a current certificate from the *Competent Authority* or an independent body, accredited by the *Competent Authority*. The certificate should be in one of the OIE official languages if the international transport of animals is involved.~~
3. The assessment of the competence of *animal handlers* should at a minimum address knowledge, and ability to apply that knowledge, in the following areas:
  - a) planning a *journey*, including appropriate *space allowance*, and feed, water and ventilation requirements;
  - b) responsibilities for animals during the *journey*, including *loading* and *unloading*;
  - c) sources of advice and assistance;
  - d) animal behaviour, general signs of disease, and indicators of poor animal welfare such as stress, pain and fatigue, and their alleviation;
  - e) assessment of fitness to travel. If fitness to travel is in doubt, the animal should be examined by a *veterinarian*;
  - f) relevant authorities and applicable transport regulations, and associated documentation requirements;
  - g) general disease prevention procedures, including cleaning and *disinfection*;
  - h) appropriate methods of animal handling during transport and associated activities such as assembling, *loading*, and *unloading*;
  - i) methods of inspecting animals, managing situations frequently encountered during transport such as adverse weather conditions, and dealing with emergencies, including *euthanasia*;

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- j) species-specific aspects and age-specific aspects of animal handling and care, including feeding, watering and inspection; and
- k) maintaining a *journey* log and other records.

## Article 3.7.3.4.

**Planning the journey**1. General considerations

- a) Adequate planning is a key factor affecting the welfare of animals during a *journey*.
- b) Before the *journey* starts, plans should be made in relation to:
  - i) preparation of animals for the *journey*;
  - ii) choice of road, ~~or~~ rail; roll-on roll-off vessels or containers;
  - iii) nature and duration of the *journey*;
  - iv) *vehicle/container* design and maintenance, including roll-on roll-off *vessels*;
  - v) required documentation;
  - vi) *space allowance*;
  - vii) rest, water and feed;
  - viii) observation of animals en route;
  - ix) control of disease; ~~and~~
  - x) emergency response procedures;
  - xi) forecast weather conditions (e.g. conditions being too hot or too cold to travel during certain periods of the day);
  - xii) transfer time when changing mode of transport, and
  - xiii) waiting time at frontiers and inspection points.
- c) Regulations concerning drivers (for example, maximum driving periods) should be harmonised with maximum transport *journey* intervals appropriate for the species.

Appendix XXIII (contd)2. Preparation of animals for the journey

- a) When animals are to be provided with a novel diet or method of water provision during transport, an adequate period of adaptation should be planned. For animals such as pigs which are susceptible to motion sickness, and in order to reduce urine and faeces production during the *journey*, a species-specific short period of feed deprivation prior to *loading* may be desirable.
- b) Animals more accustomed to contact with humans and with being handled are likely to be less fearful of being loaded and transported. ~~People handling animals~~ *Animal handlers* should handle and load animals in a manner that reduces their fearfulness and improves their approachability.
- c) Behaviour-modifying compounds (such as tranquillisers) or other medication should not be used routinely during transport. Such compounds should only be administered when a problem exists in an individual animal, and should be administered by a *veterinarian* or other person who has been instructed in their use by a *veterinarian*.

3. Nature and duration of the journey

The maximum duration of a *journey* should be determined ~~according to~~ taking into account factors that determine the overall welfare of animals, such as:

- a) the ability of the animals to cope with the stress of transport (such as very young, old, lactating or pregnant animals);
- b) the ~~animals'~~ previous transport experience of the animals;
- c) the likely onset of fatigue;
- d) the need for special attention;
- e) the need for feed and water;
- f) the increased susceptibility to injury and disease;
- g) *space allowance*, *vehicle* design, road conditions and driving quality;
- h) weather conditions;
- i) *vehicle* type used, terrain to be traversed, road surfaces and quality, skill and experience of the driver.

4. Vehicle and container design and maintenance

- a) *Vehicles* and *containers* used for the transport of animals should be designed, constructed and fitted as appropriate ~~to~~ for the species, size and weight of the animals to be transported. Special attention should be paid to ~~the avoidance~~ avoid of the injury to animals through the use of secure smooth fittings free from sharp protrusions. The avoidance of injury to drivers, and *animal handlers* while carrying out their responsibilities should be emphasised.
- b) *Vehicles* and *containers* should be designed with the structures necessary to provide protection from adverse weather conditions and to minimise the opportunity for animals to escape.

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- c) In order to minimise the likelihood of the spread of infectious disease during transport, *vehicles* and *containers* should be designed to permit thorough cleaning and *disinfection*, and the containment of faeces and urine during a *journey*.
  - d) *Vehicles* and *containers* should be maintained in good mechanical and structural condition.
  - e) *Vehicles* and *containers* should have adequate ventilation to meet variations in climate and the thermo-regulatory needs of the animal species being transported; the ventilation system (natural or mechanical) should be effective when the *vehicle* is stationary.
  - f) *Vehicles* should be designed so that the faeces or urine from animals on upper levels do not soil animals on lower levels, nor their feed and water.
  - g) When *vehicles* are carried on board ferries, facilities for adequately securing them should be available.
  - h) If feeding or watering while the *vehicle* is moving is required, adequate facilities on the *vehicle* should be available.
  - i) When appropriate, suitable bedding should be added to *vehicle* floors to assist absorption of urine and faeces, to minimise slipping by animals, and protect animals (especially young animals) from hard flooring surfaces and adverse weather conditions.
5. Special provisions for transport in vehicles (road and rail) on roll-on/roll-off vessels or for containers
- a) *Vehicles* and *containers* should be equipped with a sufficient number of adequately designed, positioned and maintained securing points enabling them to be securely fastened to the *vessel*.
  - b) *Vehicles* and *containers* should be secured to the ~~ship~~ *vessel* before the start of the sea *journey* to prevent them being displaced by the motion of the *vessel*.
  - c) Roll-on/roll-off *vessels* should have adequate ventilation to meet variations in climate and the thermo-regulatory needs of the animal species being transported, especially where the animals are transported in a secondary *vehicle/container* on enclosed decks.
6. Space allowance
- a) The number of animals which should be transported on a *vehicle* or in a *container* and their allocation to compartments should be determined before *loading*.
  - b) The space required on a *vehicle* or in a *container* depends upon whether or not the animals need to lie down (for example, pigs, camels and poultry), or to stand (horses). Animals which will need to lie down often stand when first loaded or when the *vehicle* is driven with too much lateral movement or sudden braking.
  - c) When animals lie down, they should all be able to adopt a normal lying posture which allows necessary thermoregulation.
  - d) When animals are standing, they should have sufficient space to adopt a balanced position as appropriate to the climate and species transported (~~Article~~ Appendix X.X.X.).

Appendix XXIII (contd)

- e) The amount of headroom necessary depends on the species of animal. Each animal should be able to assume its natural position for transport (including during *loading* and *unloading*) without coming into contact with the roof or upper deck of the *vehicle*.
- f) Calculations for the *space allowance* for each animal should be carried out using the figures given in Appendix X.X.X. or, in their absence, in a relevant national or international document. The number and size of pens on the *vehicle* should be varied to where possible accommodate already established groups of animals while avoiding group sizes which are too large.
- g) Other factors which may influence *space allowance* include:
  - i) *vehicle/ container* design;
  - ii) length of *journey*;
  - iii) need to provide feed and water on the *vehicle*;
  - iv) quality of roads;
  - v) expected weather conditions;
  - vi) category and sex of the animals.

7. Rest, water and feed

- a) ~~There should be planning for the availability of~~ Suitable water and feed should be available as appropriate and needed for the species, age, and condition of the animals, as well as the duration of the *journey*, climatic conditions, etc.
- b) ~~There should be planning for the resting of animals at~~ Animals should be allowed to rest at resting points at appropriate intervals during the *journey*. The type of transport, the age and species of the animals being transported, and climatic conditions should determine the frequency of rest stops and whether the animals should be unloaded. ~~There should be planning for~~ Water and feed should be available ~~availability~~ during rest stops.

8. Ability to observe animals during the journey

- a) Animals should be positioned to enable each animal to be observed regularly during the *journey* to ensure their safety and good welfare.
- b) If the animals are in crates or on multi-tiered *vehicles* which do not allow free access for observation, for example where the roof of the tier is too low (~~i.e. less than 1.3 m~~), animals cannot be inspected adequately, and serious injury or disease could go undetected. In these circumstances, a shorter *journey* duration should be allowed, and the maximum duration will vary according to the rate at which problems arise in the species and under the conditions of transport.

9. Control of disease

As animal transport is often a significant factor in the spread of infectious diseases, *journey* planning should take the following into account:

Appendix XXIII (contd)

- a) mixing of animals from different sources in a single consignment should be minimised;
- b) contact at *resting points* between animals from different sources should be avoided;
- c) when possible, animals should be vaccinated against diseases to which they are likely to be exposed at their destination;
- d) medications used prophylactically or therapeutically should be approved by the *Veterinary Authority* of the *importing country* and should only be administered by a *veterinarian* or other person who has been instructed in their use by a *veterinarian*.

10. Emergency response procedures

There should be an emergency management plan that identifies the important adverse events that may be encountered during the *journey*, the procedures for managing each event and the action to be taken in an emergency. For each important event, the plan should document the actions to be undertaken and the responsibilities of all parties involved, including communications and record keeping.

11. Other considerations

- a) Extreme weather conditions are hazardous for animals undergoing transport and require appropriate *vehicle* design to minimise risks. Special precautions should be taken for animals that have not been acclimatised or which are unsuited to either hot or cold conditions. In some extreme conditions of heat or cold, animals should not be transported at all.
- b) In some circumstances, transportation during the night may reduce thermal stress or the adverse effects of other external stimuli.

Article 3.7.3.5.

**Documentation**

1. Animals should not be loaded until the documentation required to that point is complete.
2. The documentation accompanying the consignment should include:
  - a) *journey* travel plan (~~including~~ and an emergency management plan);
  - b) date, time, and place of *loading* and *unloading*;
  - c) veterinary certification, when required;
  - d) ~~driver's~~ animal welfare competencies of the driver;
  - e) ~~identities of the~~ animal identification transported to allow ~~traceback~~ animal traceability of individual animals to the premises of departure and, where possible, to the premises of origin;
  - f) details of any animals considered ~~'at risk'~~ at particular risk of suffering poor welfare during transport (point 3e) of Article 3.7.3.6.);

Appendix XXIII (contd)

- g) documentation of the period of rest, and access to feed and water, prior to the *journey*;
  - h) *stocking density* estimate for each load in the consignment;
  - i) the *journey* log - daily record of inspection and important events, including records of morbidity and mortality and actions taken, climatic conditions, rest stops, travel time and distance, feed and water offered and estimates of consumption, medication provided, and mechanical defects.
3. When veterinary certification is required to accompany consignments of animals, it should address:
- a) fitness of animals to travel;
  - b) *animal identification* (description, number, etc.);
  - c) health status including any tests, treatments and vaccinations carried out;
  - d) when required, details of *disinfection* carried out.

At the time of certification, the *veterinarian* should notify *animal handler* or the driver of any factors affecting the ~~animals'~~ fitness of animals to travel for a particular *journey*.

Article 3.7.3.6.

**Pre-journey period**1. General considerations

- a) Pre-*journey* rest is necessary if the welfare of animals has become poor during the collection period because of the physical environment or the social behaviour of the animals. The need for rest should be judged by a veterinarian or other competent person.
- b) Pre-*journey* assembly/holding areas should be designed to:
  - i) securely hold the animals;
  - ii) maintain a safe environment from hazards, including predators and disease;
  - iii) protect animals from exposure to severe weather conditions;
  - iv) allow for maintenance of social groups; ~~and~~
  - v) allow for rest, and appropriate water and feed;
- c) Consideration should be given to ~~an animal's~~ the previous transport experience, training and conditioning of the animals, if known, as these may reduce fear and stress in animals.
- d) Feed and water should be provided pre-*journey* if the *journey* duration is greater than the normal inter-feeding and drinking interval for the animal. Recommendations for specific species are described in detail in Article 3.7.3.11.

Appendix XXIII (contd)

- e) When animals are to be provided with a novel diet or method of feed or water provision during the journey, an adequate period of adaptation should be ~~planned~~ allowed.
- f) Before each *journey*, *vehicles* and *containers* should be thoroughly cleaned and, if necessary, treated for animal health and public health purposes, using methods approved by the *Competent Authority*. When cleaning is necessary during a *journey*, this should be carried out with the minimum of stress to the animals.
- g) Where an *animal handler* believes that there is a significant risk of disease among the animals to be loaded or significant doubt as to their fitness to travel, the animals should be examined by a *veterinarian*.

2. Selection of compatible groups

Compatible groups should be selected before transport to avoid adverse animal welfare consequences. The following guidelines should be applied when assembling groups of animals:

- a) Animals reared together should be maintained as a group; animals with a strong social bond, such as a dam and offspring, should be transported together.
- b) Animals of the same species can be mixed unless there is a significant likelihood of aggression; aggressive individuals should be segregated (recommendations for specific species are described in detail in Article 3.7.3.11.). For some species, animals from different groups should not be mixed because poor welfare occurs unless they have established a social structure.
- c) Young or small animals should be separated from older or larger animals, with the exception of nursing mothers with young at foot.
- d) Animals with horns or antlers should not be mixed with animals lacking horns or antlers unless judged to be compatible.
- e) Animals of different species should not be mixed unless they are judged to be compatible.

3. Fitness to travel

- a) Each animal should be inspected by a *veterinarian* or an *animal handler* to assess fitness to travel. If its fitness to travel is in doubt, the animal should be examined by a *veterinarian*. Animals found unfit to travel should not be loaded onto a *vehicle*, except for transport to receive veterinary treatment.
- b) Humane and effective arrangements should be made by the owner or agent for the handling and care of any animal rejected as unfit to travel.
- c) Animals that are unfit to travel include, but may not be limited to:
  - i) those that are sick, injured, weak, disabled or fatigued;
  - ii) those that are unable to stand unaided and bear weight on each leg;
  - iii) those that are blind in both eyes;

Appendix XXIII (contd)

- iv) those that cannot be moved without causing them additional suffering;
  - v) newborn with an unhealed navel;
  - vi) pregnant animals which would be in the final 10% of their gestation period at the planned time of *unloading*;
  - vii) females travelling without young which have given birth within the previous 48 hours;
  - viii) those whose body condition would result in poor welfare because of the expected climatic conditions.
- d) Risks during transport can be reduced by selecting animals best suited to the conditions of travel and those that are acclimatised to expected weather conditions.
- e) Animals 'at risk' at particular risk of suffering poor welfare during transport and which require special conditions (such as in the design of facilities and *vehicles*, and the length of the *journey*) and additional attention during transport, may include:
- i) large or obese individuals;
  - ii) very young or old animals;
  - iii) excitable or aggressive animals;
  - iv) animals which have had little contact with humans;
  - v) animal subject to motion sickness;
  - vi) females in late pregnancy or heavy lactation, dam and offspring;
  - vii) animals with a history of exposure to stressors or pathogenic agents prior to transport;
  - viii) animals that have recently undergone a surgical procedure, such as dehorning.
4. Specific species requirements

Transport procedures should be able to take account of variations in the behaviour of the species. Flight zones, social interactions and other behaviour vary significantly among species and even within species. Facilities and handling procedures that are successful with one species are often ineffective or dangerous with another.

Recommendations for specific species are described in detail in Article 3.7.3.11.

## Article 3.7.3.7.

**Loading**1. Competent supervision

- a) *Loading* should be carefully planned as it has the potential to be the cause of poor welfare in transported animals.
- b) *Loading* should be supervised and/or conducted by *animal handlers*. ~~These *animal handlers* should ensure that~~ The animals are to be loaded quietly and without unnecessary noise, harassment or force, ~~and that~~ ~~un~~trained assistants or spectators ~~do~~ should not impede the process.
- c) When *containers* are loaded onto a *vehicle*, this should be carried out in such a way to avoid poor animal welfare.

2. Facilities

- a) The facilities for *loading* including the collecting area, races and loading ramps should be designed and constructed to take into account the needs and abilities of the animals with regard to dimensions, slopes, surfaces, absence of sharp projections, flooring, etc.
- b) *Loading* facilities should be properly illuminated to allow the animals to be observed by *animal handler(s)*, and to allow the ~~animals'~~ ease of movement of the animals at all times. Facilities should provide uniform light levels directly over approaches to sorting pens, chutes, loading ramps, with brighter light levels inside *vehicles/containers*, in order to minimise baulking. Dim light levels may be advantageous for the catching of poultry and some other animals. Artificial lighting may be required.
- c) Ventilation during *loading* and the *journey* should provide for fresh air, the removal of excessive heat, humidity and noxious fumes (such as ammonia and carbon monoxide), and the prevention of accumulations of ammonia and carbon dioxide. Under warm and hot conditions, ventilation should allow for the adequate convective cooling of each animal. In some instances, adequate ventilation can be achieved by increasing the *space allowance* for animals.

3. Goads and other aids

The following principles should apply:

- a) ~~Animals which have little or no room to move should not be subjected to physical force or goads and other aids which compel movement.~~
- b) ~~Useful and permitted aids include panels, flags, plastic paddles, flappers (a length of cane with a short strap of leather or canvas attached), plastic bags and metallic rattles; they should be used in a manner sufficient to encourage and direct movement of the animals.~~
- e) ~~Painful procedures (including whipping, tail twisting, use of nose twitches, pressure on eyes, ears or external genitalia), or the use of unsuitable goads or other aids (including sticks with sharp ends, lengths of metal piping, fencing wire or heavy leather belts), should not be used to move animals.~~

## Appendix XXIII (contd)

- d) ~~The use of goads which administer electric shocks should be discouraged, and restricted to that necessary to assist movement of the animal. Such use should be limited to battery-powered goads on the hindquarters of adult pigs and cattle, and never on sensitive areas such as the eyes, mouth, ears, anogenital region or belly. Such instruments should not be used on other animals.~~
- e) ~~The use of well trained dogs to help with the *loading* of some species may be acceptable.~~
- f) ~~The throwing or dropping of animals, or their lifting or dragging by body parts such as their tail, head, horns, ears, limbs, wool, hair or feathers, should not be permitted. The manual lifting of small animals is permissible.~~
- g) ~~Shouting or yelling at animals or making loud noises e.g. through the cracking of whips to encourage them to move should not occur, as such actions may make the animals agitated, leading to crowding or falling.~~
- a) Animals that have little or no room to move should not be subjected to physical force or goads and other aids which compel movement. Electric goads and prods should only be used in extreme cases and not on a routine basis to move animals. The use and the power output should be restricted to that necessary to assist movement of an animal and only when an animal has a clear path ahead to move. Goads and other aids should not be used repeatedly if the animal fails to respond or move. In such cases it should be investigated whether some physical or other impediment is preventing the animal from moving.
- b) The use of such devices should be limited to battery-powered goads on the hindquarters of pigs and large ruminants, and never on sensitive areas such as the eyes, mouth, ears, anogenital region or belly. Such instruments should not be used on horses, sheep and goats of any age, or on calves or piglets.
- c) Useful and permitted goads include panels, flags, plastic paddles, flappers (a length of cane with a short strap of leather or canvas attached), plastic bags and metallic rattles; they should be used in a manner sufficient to encourage and direct movement of the animals without causing undue stress.
- d) Painful procedures (including whipping, tail twisting, use of nose twitches, pressure on eyes, ears or external genitalia), or the use of goads or other aids which cause pain and suffering (including large sticks, sticks with sharp ends, lengths of metal piping, fencing wire or heavy leather belts), should not be used to move animals.
- e) Shouting or yelling at animals or making loud noises (e.g., through the cracking of whips) to encourage them to move should not occur, as such actions may make the animals agitated, leading to crowding or falling.
- f) The use of well trained dogs to help with the *loading* of some species may be acceptable.
- g) Animals should be grasped or lifted in a manner which avoids pain or suffering and physical damage (e.g. bruising, fractures, dislocations). In the case of quadrupeds, manual lifting by a person should only be used in young animals or small species, and in a manner appropriate to the species; grasping or lifting such animals only by their wool, hair, feathers, feet, neck, ears, tails, head, horns, limbs causing pain or suffering should not be permitted, except in an emergency where animal welfare or human safety may otherwise be compromised.

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- h) Conscious animals should not be thrown, dragged or dropped.
- i) Performance standards should be established in which numerical scoring is used to evaluate the use of such instruments, and to measure the percentage of animals moved with an electric instrument and the percentage of animals slipping or falling as a result of their usage.

Article 3.7.3.8.

## Travel

### 1. General considerations

- a) Drivers and *animal handlers* should check the load immediately before departure to ensure that the animals have been properly loaded. Each load should be checked again early in the trip and adjustments made as appropriate. Periodic checks should be made throughout the trip.
- b) Drivers should utilise smooth, defensive driving techniques, without sudden turns or stops, to minimise uncontrolled movements of the animals.

### 2. Methods of restraining or containing animals

- a) Methods of restraining animals should be appropriate to the species and age of animals involved and the training of the individual animal.
- b) Recommendations for specific species are described in detail in Article 3.7.3.11.

### 3. Regulating the environment within vehicles or containers

- a) Animals should be protected against harm from hot or cold conditions during travel. Effective ventilation procedures for maintaining the ~~animals'~~ environment within *vehicles* or *containers* will vary according to whether conditions are cold, hot and dry or hot and humid, but in all conditions a build-up of noxious gases should be prevented. Specific temperature and humidity parameters are described in detail in Appendix X.X.X.
- b) The ~~animals'~~ environment within vehicles or containers in hot and warm weather can be regulated by the flow of air produced by the movement of the *vehicle*. In warm and hot weather, the duration of *journey* stops should be minimised and *vehicles* should be parked under shade, with adequate and appropriate ventilation.
- c) To minimise slipping and soiling, and maintain a healthy environment, urine and faeces should be removed from floors when necessary and disposed of in such a way as to prevent the transmission of disease and in compliance with all relevant health and environmental legislation.

### 4. Sick, injured or dead animals

- a) A driver or *animal handler* finding sick, injured or dead animals should act according to a predetermined emergency response plan.
- b) ~~If possible,~~ Sick or injured animals should be segregated.

Appendix XXIII (contd)

- c) Ferries (roll-on roll-off) should have procedures to treat sick or injured animals during the *journey*.
- d) In order to reduce the likelihood that animal transport will increase the spread of infectious disease, contact between transported animals, or the waste products of the transported animals, and other farm animals should be minimised.
- e) During the *journey*, when disposal of a dead animal becomes necessary, this should be carried out in such a way as to prevent the transmission of disease and in compliance with all relevant health and environmental legislation.
- f) When euthanasia is necessary, ~~the driver or animal handler should ensure that it is~~ should be carried out as quickly as possible and assistance should be sought from a *veterinarian* or other person(s) competent in humane euthanasia procedures. Recommendations for specific species are described in Appendix 3.7.6. on killing of animals for disease control purposes.

5. Water and feed requirements

- a) If *journey* duration is such that feeding or watering is required or if the species requires feed or water throughout, access to suitable feed and water for all the animals (appropriate for their species and age) carried in the *vehicle* should be provided. There should be adequate space for all animals to move to the feed and water sources and due account taken of likely competition for feed.
- b) Recommendations for specific species are described in detail in Article 3.7.3.11.

6. Rest periods and conditions including hygiene

- a) Animals that are being transported should be rested at appropriate intervals during the *journey* and offered feed and water, either on the *vehicle* or, if necessary, unloaded into suitable facilities.
- b) Suitable facilities should be used en route, when resting requires the *unloading* of the animals. These facilities should meet the needs of the particular animal species and should allow access of all animals to feed and water.

7. In-transit observations

- a) Animals being transported by road should be observed soon after a *journey* is commenced and whenever the driver has a rest stop ~~(with a maximum interval of 5 hours)~~. After meal breaks and refuelling stops, the animals should be observed immediately prior to departure.
- b) Animals being transported by rail should be observed at each scheduled stop ~~nearest to 5 hours since the last observation~~. The responsible rail transporter should monitor the progress of trains carrying animals and take all appropriate action to minimise delays.
- c) During stops, it should be ensured that the animals continue to be properly confined, have appropriate feed and water, and their physical condition is satisfactory.

## Article 3.7.3.9.

**Unloading and post-journey handling**1. General considerations

- a) The required facilities and the principles of animal handling detailed in Article 3.7.3.7. apply equally to *unloading*, but consideration should be given to the likelihood that the animals will be fatigued.
- b) *Unloading* should be supervised and/or conducted by an *animal handler* with knowledge and experience of the behavioural and physical characteristics of the species being unloaded. Animals should be unloaded from the *vehicle* into appropriate facilities as soon as possible after arrival at the destination but sufficient time should be allowed for *unloading* to proceed quietly and without unnecessary noise, harassment or force.
- c) Facilities should provide all animals with appropriate care and comfort, adequate space and ventilation, access to feed (if appropriate) and water, and shelter from extreme weather conditions.
- d) For details regarding the *unloading* of animals at a *slaughterhouse*, see Appendix 3.7.5. on slaughter of animals for human consumption.

2. Sick and or injured animals

- a) An animal that has become sick, injured or disabled during a *journey* should be appropriately treated or humanely killed (see Appendix 3.7.6. on killing of animals for disease control purposes). ~~When~~ If necessary, veterinary advice should be sought in the care and treatment of these animals. In some cases, where animals are non-ambulatory due to fatigue, injury or sickness, it may be in the best welfare interests of the animal to be treated or euthanized aboard the *vehicle*. Assistance should be sought from a veterinarian or other person(s) competent in humane euthanasia procedures
- b) At the destination, the *animal handler* or the driver during transit should ensure that responsibility for the welfare of sick, injured or disabled animals is transferred to a veterinarian or other suitable person.
- c) If treatment or euthanasia is not possible aboard the vehicle, there should be appropriate facilities and equipment for the humane *unloading* of animals that are non-ambulatory due to fatigue, injury or sickness. These animals should be unloaded in a manner that causes the least amount of suffering. After *unloading*, separate pens and other appropriate facilities should be available for sick or injured animals.
- d) Feed, if appropriate, and water should be available for each sick or injured animal.

3. Addressing disease risks

The following should be taken into account in addressing the greater risk of disease due to animal transport and the possible need for segregation of transported animals at the destination:

- a) increased contact among animals, including those from different sources and with different disease histories;

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- b) increased shedding of pathogens and increased susceptibility to infection related to stress and impaired defences against disease, including immunosuppression;
  - c) exposure of animals to pathogens which may contaminate *vehicles, resting points, markets*, etc.
4. Cleaning and disinfection
- a) *Vehicles, crates, containers*, etc. used to carry the animals should be cleaned before re-use through the physical removal of manure and bedding by scraping, washing and flushing ~~vehicles and containers~~ with water and detergent. This should be followed by *disinfection* when there are concerns about disease transmission.
  - b) Manure, litter, bedding and the bodies of any animals which die during the *journey* should be disposed of in such a way as to prevent the transmission of disease and in compliance with all relevant health and environmental legislation.
  - c) Establishments like livestock *markets, slaughterhouses, resting sites*, railway stations, etc. where animals are unloaded should be provided with appropriate areas for the cleaning and *disinfection* of *vehicles*.
  - d) ~~Where *disinfestation* is necessary, it should be carried out with the minimum stress to the animals.~~

Article 3.7.3.10.

**Actions in the event of a refusal to allow the completion of the journey**

1. The welfare of the animals should be the first consideration in the event of a refusal to allow the completion of the *journey*.
2. When the animals have been refused import, the *Competent Authority* of ~~that~~ the importing country should make available suitable isolation facilities to allow the *unloading* of animals from a *vehicle* and their secure holding, without posing a risk to the health of national herd or flock, pending resolution of the situation. In this situation, the priorities should be:
  - a) The *Competent Authority* of the *importing country* should provide urgently in writing the reasons for the refusal.
  - b) In the event of a refusal for animal health reasons, the *Competent Authority* of the *importing country* should provide urgent access to a *veterinarian*, where possible an OIE *veterinarian(s)* appointed by the Director General, to assess the ~~animals'~~ health status of the animals with regard to the concerns of the importing country's concerns, and the necessary facilities and approvals to expedite the required diagnostic testing.
  - c) The *Competent Authority* of the *importing country* should provide access to allow continued assessment of the health and other aspects of the welfare of the animals.
  - d) If the matter cannot be promptly resolved, the *Competent Authorities* of the *exporting* and *importing countries* should call on the OIE to mediate.

## Appendix XXIII (contd)

3. In the event that a *Competent Authority* requires the animals to remain on the *vehicle*, the priorities should be:
  - a) ~~The *Competent Authority* should~~ to allow reprovisioning of the *vehicle* with water and feed as necessary.
  - b) ~~The *Competent Authority* should~~ to provide urgently in writing the reasons for the refusal.
  - c) ~~In the event of a refusal for animal health reasons, the *Competent Authority* should~~ to provide urgent access to an independent *veterinarian(s)* to assess the ~~animals'~~ animals' health status of the animals, and the necessary facilities and approvals to expedite the required diagnostic testing in the event of a refusal for animal health reasons.
  - d) ~~The *Competent Authority* should~~ to provide access to allow continued assessment of the health and other aspects of the welfare of the animals, and the necessary actions to deal with any animal issues which arise.
4. The OIE should utilise its dispute settlement mechanism to identify a mutually agreed solution which will address animal health and any other welfare issues in a timely manner.

Article 3.7.3.11.

### Species specific issues

(To be developed)

Cattle are sociable animals and may become agitated if they are singled out. Social order is usually established at about two years of age. When groups are mixed, social order has to be re-established and aggression may occur until a new order is established. Crowding of cattle may also increase aggression as the animals try to maintain personal space. Social behaviour varies with age, breed and sex; *Bos indicus* and *B. indicus*-cross animals are usually more temperamental than European breeds. Young bulls, when moved in groups, show a degree of playfulness (pushing and shoving) but become more aggressive and territorial with age. Adult bulls have a minimum personal space of six square metres. Cows with young calves can be very protective, and handling calves in the presence of their mothers can be dangerous.

Goats should be handled calmly and are more easily led or driven than if they are excited. When goats are moved, their gregarious tendencies should be exploited. Activities which frighten, injure or cause agitation to animals should be avoided. Bullying is particularly serious in goats. Housing strange goats together could result in fatalities, either through physical violence, or subordinate goats being refused access to food and water.

Sheep are sociable animals with good eyesight and tend to “flock together”, especially when they are agitated. They should be handled calmly and their tendency to follow each other should be exploited when they are being moved. Sheep may become agitated if they are singled out for attention and will strive to rejoin the group. Activities which frighten, injure or cause agitation to sheep should be avoided. They can negotiate steep ramps.

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**Pigs** have poor eyesight, and may move reluctantly in strange surroundings. They benefit from well lit *loading* bays. Since they negotiate ramps with difficulty, these should be as level as possible and provided with secure footholds. Ideally, a hydraulic lift should be used for greater heights. Pigs also negotiate steps with difficulty. A good 'rule-of-thumb' is that no step should be higher than the pig's front knee. Serious aggression may result if unfamiliar animals are mixed. Pigs are highly susceptible to heat stress.

**Horses** in this context include all solipeds, donkeys, mules, hinnies and zebra. They have good eyesight and a very wide angle of vision. They may have a history of *loading* resulting in good or bad experiences. Good training should result in easier *loading*, but some horses can prove difficult, especially if they are inexperienced or have associated *loading* with poor transport conditions. In these circumstances, two experienced *animal handlers* can load an animal by linking arms or using a strop below its rump. Blindfolding may even be considered. Ramps should be as shallow as possible. Steps are not usually a problem when horses mount a ramp, but they tend to jump a step when descending, so steps should be as low as possible. Horses benefit from being individually stalled, but may be transported in compatible groups. When horses are to travel in groups, their shoes should be removed.

**Camelids** in this context comprise llamas, alpacas, guanaco and vicuna. They have good eyesight and, like sheep, can negotiate steep slopes, though ramps should be as shallow as possible. They load most easily in a bunch as a single animal will strive to rejoin the others. Whilst they are usually docile, they have an unnerving habit of spitting in self-defence. During transport, they usually lie down. They frequently extend their front legs forward when lying, so gaps below partitions should be high enough so that their legs are not trapped when the animals rise.

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**FUTURE WORK PROGRAMME FOR THE  
TERRESTRIAL ANIMAL HEALTH STANDARDS COMMISSION**

<b>Topic</b>	<b>Action</b>	<b>How to be managed</b>	<b>Status (October 2006)</b>
<b>(New topic)</b> <b>Rinderpest</b>	Revise chapter and pathway	SCAD	TCC waiting recommendation to revise chapter in March 2007
<b>Traceability</b>	<i>Ad hoc</i> Group to develop specific Chapter on animal identification and traceability	Animal Production Food Safety Working Group (APFS WG).	Appendix 3.5.1. part of 2006 Oct report for 2007 revision. MC comments on guidelines to be considered by APFSWG in Nov 2006
<b>Consolidation of Terrestrial and Aquatic Codes</b>	To work with the Aquatic Commission to maximise harmonisation of present Codes, with an ultimate goal of a single Code in three parts: horizontal chapters, terrestrial animal disease chapters and aquatic animal disease chapters.	Trade Dep will continue to harmonise horizontal chapters, and work towards their consolidation. Each Commission to invite other Commission President to its meetings.	Ongoing
<b>Good farming practices</b>	To coordinate with the FAO's work to publish a single guideline on good farming practices for the guidance of Member Countries and the public.	APFS WG	Ongoing
<b>Control of hazards of animal health and public health importance through ante- and post-mortem meat inspection</b>	To develop Code guidelines	APFS WG	Appendix 3.10.1. adopted May 2006. New work (NZ proposal) to be addressed by APFSWG in Nov 2006.
<b>Anthrax</b>	To develop an appendix on the inactivation of the bacillary and spore forms of <i>Bacillus anthracis</i> .	Secretariat	Pending
<b>BSE – safety of gelatine and tallow</b>	To update 'safe commodities' article	<i>ad hoc</i> Group	Modified Chapter 2.3.13. part of 2006 report.
<b>BSE supporting document</b>	To update	expert	Part of Oct 2006 report.
<b>BSE risk assessment</b>	To update	expert	Draft Appendix 3.8.5. with MCs' comments transferred to SCAD for further work based on TOR for BSE categorisation.
<b>Current chapter on Veterinary Services</b>	To revise to better address the role of the Statutory Body, the early detection of disease and greater detail on how the auditing of Veterinary Services could be implemented.	expert	<i>ad hoc</i> Group in Nov 2006

## Appendix XXIV (contd)

<b>Topic</b>	<b>Action</b>	<b>How to be managed</b>	<b>Status (October 2006)</b>
<b>Other Terrestrial Code texts in need of revision</b>	To update chapter on equine influenza	Reference Laboratory	Part of 2006 Oct report for 2007 revision.
	To update chapter on brucellosis	SCAD then APFS WG	With SCAD
	To update chapter on Newcastle disease	SCAD	With SCAD
	To update chapter on African swine fever	SCAD	With SCAD
<b>Terrestrial Code texts identified as priorities by APFS WG</b>	Salmonellosis	SCAD	APFSWG <i>ad hoc</i> Group within 2007
	Cysticercosis	SCAD	Monitor progress
<b>Harmonisation of international health certificates</b>	To finalise with view of replacing existing Code certificates	APFS WG	<i>ad hoc</i> Group within 3 months
<b>Dead animal disposal</b>	To finalise Code appendix	SCAD	Part of 2006 Oct report for 2007 revision.
<b>Animal welfare – companion animals and laboratory animals</b>	To draft new chapters	AW WG	Work programme of this year to produce a draft for the Commission in March 2007
<b>Alternative approaches to providing OIE advice</b>	To develop alternative mechanism for providing guidance to Member Countries on managing certain animal health and welfare issues outside the Code framework	TCC, AW WG and APFS WG	Ongoing
<b>Surveillance for vectors</b>	To develop guidelines for the surveillance of vectors capable of transmitting animal diseases	SCAD	With SCAD



Original: English  
July 2006

## REPORT OF THE THIRD MEETING OF THE OIE *AD HOC* GROUP ON IDENTIFICATION AND TRACEABILITY OF LIVE ANIMALS

Paris, 18-21 July 2006

The OIE *ad hoc* Group on Identification and Traceability of Live Animals (hereinafter referred to as the *ad hoc* Group) met at the OIE Headquarters from 18 to 21 July 2006.

The members of the *ad hoc* Group and other participants are listed at [Appendix I](#); apologies were received from Dr M. Fanikiso. The Agenda adopted is given at [Appendix II](#).

On behalf of the Director General, the Head of the Scientific and Technical Department, Dr Gideon Brückner, welcomed the members and thanked them for their interest in this important topic. He indicated that the work done during the previous meetings had been welcomed by the OIE Delegates during the 74th General Session. He noted that the Delegates had put forward comments on this work and then adopted the definitions and the general principles on animal identification and traceability. He concluded by thanking the members of the *ad hoc* Group for their willingness to be involved in addressing this mandate of the OIE.

The Chair, Dr Luis Barcos, OIE Regional Representative for the Americas, started by updating the participants on the 74th OIE General Session and summarising the discussions held on the general principles on animal identification and traceability prior to their adoption.

Dr Annamaria Bruno, Food Standards Officer of the Codex Alimentarius Secretariat, informed the *ad hoc* Group that the 29th Session of the Codex Alimentarius Commission (CAC), July 2006, had adopted the “Principles for Traceability/Product Tracing as a Tool within a Food Inspection and Certification System”. She highlighted the fact that the CAC had amended the Principles by inserting a reference to the relevant standards of the OIE and the International Plant Protection Convention (IPPC). She concluded by informing the *ad hoc* Group that the CAC did not have any new texts on traceability in its current work plan.

The *ad hoc* Group welcomed the positive approach taken by both the OIE and the CAC in cross-referencing the relevant standards and thus improving control throughout the food chain.

Appendix XXV (contd)**1. General principles on animal identification and traceability**

The *ad hoc* Group addressed the adopted “General principles on animal identification and traceability” and the relevant comments issued by Delegates during the 74th General Session, by the OIE Permanent Animal Production Food Safety Working Group (APFSWG), and by the European Community (EC) on the report of the March 2006 meeting of the OIE Terrestrial Animal Health Standards Commission (the Terrestrial Code Commission). The *ad hoc* Group welcomed these comments and noted the importance of feedback from Member Countries on its work.

The *ad hoc* Group addressed the Australian comment on the need to make clear that the delivery of services for animal identification and traceability could be by a third party, under the control of the Competent Authority, thus clarifying the role of the Veterinary Services. The *ad hoc* Group agreed with the Australian Delegate and referred to adopted principles 6 and 7, which clarify the role of Veterinary Services and the obligations of the parties.

The *ad hoc* Group addressed the comment from the Delegate of Zimbabwe on the importance of not burdening developing countries with excessively detailed registration requirements and the comment from the Delegate of New Zealand on the need for work on future guidelines to be outcome-based and not too specific. The *ad hoc* Group shared concerns over the need to bear in mind the capabilities of all OIE Member Countries while advancing in its work on the “Guidelines for design and implementation of animal traceability” and considered that adopted principle 9 already indicated that the approach is outcome oriented.

The *ad hoc* Group addressed the detailed comments submitted by the EC. With regard to the terms ‘regionalisation’ and ‘region’, the *ad hoc* Group noted that these terms in the OIE *Terrestrial Animal Health Code* (the *Terrestrial Code*) were gradually being replaced by the terms ‘zone’, ‘zoning’, ‘compartment’ and ‘compartmentalisation’ since they were clearly defined and addressed in a specific *Terrestrial Code* chapter. With regard to the suggested addition of a bulleted list with additional examples in principle 3, the *ad hoc* Group disagreed since the principle is not intended to provide an exhaustive list. Furthermore, some of the suggested additions are either outside the scope of the *Terrestrial Code* or already covered in other points. With regard to a suggested new paragraph referring to consumer confidence and proof of the origin of the animal, the *ad hoc* Group felt that this was addressed in principle 3 (fair practices in trade) and that it duplicated the definition of animal traceability. The *ad hoc* Group also considered that consumer confidence was a parameter that was not compatible with principle 9. With regard to the comment on the need to establish, and periodically review, objectives and outcomes in partnership between the Competent Authority and the stakeholders, the *ad hoc* Group considered that this was included in principle 7 with the need to develop the legal framework (this flexible approach enables the suggestion put forward by the EC to be taken into account).

The principles, duly revised to take into account the comments received, are presented in Appendix III.

**2. Draft guidelines for the design and implementation of animal traceability**

The *ad hoc* Group addressed the “Guidelines for animal identification and traceability” and decided to change the title of the document to “Guidelines for the design and implementation of animal traceability”, since the term *animal identification system* is encompassed by the term *animal traceability*. Moreover, the *ad hoc* Group agreed that animal traceability cannot be achieved without an animal identification system. The draft guidelines are presented in Appendix IV.

The *ad hoc* Group examined the comment from the APFSWG and agreed that while the terms *animal identification*, *animal identification system* and *animal traceability* were appropriately used in the general principles, this was not the case in the draft guidelines. These guidelines were revised bearing in mind the comment from the APFSWG.

Appendix XXV (contd)

The *ad hoc* Group noted the importance of covering the entire life of the animal, as stated in the adopted definition of *animal traceability*, but considered that the abattoir was the conjunction point between the live animal and the products obtained from the processing of its carcass. Therefore, it was considered crucial for the identification of the carcass and the animal to be linked. This approach reflected the need to consider the food producing chain in its entirety.

The *ad hoc* Group considered the Codex “Code of Hygienic Practice for Meat” and suggested that the CAC review its Code to ensure that the Codex and OIE texts are complementary, and that traceability is uninterrupted throughout the food chain.

The *ad hoc* Group reiterated that animal identification and animal traceability are tools to achieve the objectives of animal health and public health, and it emphasised that these objectives may evolve in time. The *ad hoc* Group stressed the need to specify how the tools perform in order to keep pace with this evolution. The *ad hoc* Group also noted that importing countries may make traceability a market access issue in the future.

The *ad hoc* Group acknowledged the importance of an economic analysis in the preliminary studies for animal traceability, but considered that the crisis management aspects may be difficult to evaluate. It therefore considered that setting up animal traceability should be seen as a strategic investment.

The *ad hoc* Group addressed the concepts of the “owner of the animals” and the “person handling the animals”. It considered that the definitions in the *Terrestrial Code* do not provide a suitable term for the person who is in charge of the animals and dealing with them on a day-to-day basis. It concluded that the term “person legally responsible for the animals” could constitute a good compromise, but suggested that the Terrestrial Code Commission explore options suitable for the entire *Terrestrial Code*.

In drafting these guidelines, the *ad hoc* Group agreed that defining the minimum requirements for an animal identification system or animal traceability was a very complex issue and that it could be better done in the light of Member Countries’ comments on the proposed guidelines.

### **3. Conclusions**

The *ad hoc* Group suggested holding another meeting to address Member Countries’ comments.

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.../Appendices



**MEETING OF THE OIE AD HOC GROUP ON  
IDENTIFICATION AND TRACEABILITY OF LIVE ANIMALS**

**Paris, 18-21 July 2006**

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Appendix XXV (contd)

Appendix I (contd)

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**MEETING OF THE OIE *AD HOC* GROUP ON  
IDENTIFICATION AND TRACEABILITY OF LIVE ANIMALS**

**Paris, 18-21 July 2006**

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**Adopted Agenda**

- 1. Adoption of the agenda**
- 2. Introduction**
  - a) Adoption of the previous meeting report
  - b) Report on the 74th General Session
  - c) Work in progress at the Codex Alimentarius Commission
- 3. General principles**
  - a) Address Working Group and Member Countries' comments on the adopted principles
- 4. Development of specific guidelines**
  - a) Address Working Group and Member Countries' comments on the specific guidelines
  - b) Resume work on the main points that constitute a good system for identification and traceability of live animals and the required outcomes
  - c) Develop a set of recommendations for a practical implementation of the system
- 5. Conclusions**



## APPENDIX 3.5.1.

## GENERAL PRINCIPLES

## Article 3.5.1.1.

1. There is a critical relationship between *animal identification* and the traceability of animals and products of animal origin.
2. *Animal traceability* and traceability of products of animal origin should have the capability to be linked to achieve traceability throughout the food chain taking into account relevant OIE and Codex Alimentarius standards.
3. *Animal identification* and *animal traceability* are tools for addressing animal health (including zoonoses) and food safety. These may significantly improve the effectiveness of activities such as: the management of disease outbreaks and food safety incidents, vaccination programmes, herd/flock husbandry, zoning/compartmentalisation, surveillance, early response and notification systems, animal movement controls, inspection, certification, fair practices in trade and the utilisation of veterinary drugs, feed and pesticides at farm level.
4. The objective(s) and outcomes of *animal identification* and *animal traceability* for a particular country, *zone* or *compartment* and the approach used should be clearly defined following an assessment of the risks to be addressed and a consideration of the factors listed below. They should be defined through consultation between the *Veterinary Administration* and relevant sectors/stakeholders prior to implementation, and periodically reviewed.
5. There are various factors which may determine the chosen system for *animal identification* and *animal traceability*. Factors such as the outcomes of the risk assessment, the animal and public health situation (including zoonoses) and related programmes, animal population parameters (such as species and breeds, numbers and distribution), types of production, animal movement patterns, available technologies, trade in animals and animal products, cost/benefit analysis and other economic, geographical and environmental considerations, and cultural aspects, should be taken into account when designing the system. Whatever system is used, it should comply with relevant OIE standards to ensure that the defined objectives are able to be achieved.
6. *Animal identification* and *animal traceability* should be under the responsibility of the *Veterinary Administration*.
7. The *Veterinary Administration*, with relevant governmental agencies and in consultation with the private sector, should establish a legal framework for the implementation and enforcement of *animal identification* and *animal traceability* in the country. In order to facilitate compatibility and consistency, relevant international standards and obligations should be taken into account. This legal framework should include elements such as the objectives, scope, organisational arrangements including the choice of technologies used for identification and *registration*, obligations of the parties, confidentiality, accessibility issues and the efficient exchange of information.

Appendix XXV (contd)Appendix III (contd)

8. Whatever the specific objectives of the chosen *animal identification system* and *animal traceability*, there is a series of common basic factors, and these must be considered before implementation, such as the legal framework, procedures, the *Competent Authority*, identification of *establishments/owners*, *animal identification* and animal movements.
  9. The equivalent outcomes (performance criteria) rather than identical systems (design criteria) should be the basis for comparison of *animal identification systems* and *animal traceability*.
-

# GUIDELINES FOR THE DESIGN AND IMPLEMENTATION OF ANIMAL TRACEABILITY

## **Introduction**

These guidelines outline for Member Countries the elements that need to be taken into account during the design and implementation of an *animal identification system* to achieve *animal traceability*.

*Animal traceability* requires an effective *animal identification system* to ensure that animals and their products can be traced.

*Animal traceability* is a basic multipurpose tool that can be used as part of a strategy to address animal health (including zoonoses) and food safety issues. A legal framework is necessary to support its operation.

### **1. Objectives and outcomes**

They should be defined through consultation between the *Veterinary Administration* and relevant sectors/stakeholders prior to the commencement of the preliminary study and should be periodically reviewed during implementation. They may include the improvement of:

- a) animal health (control of disease, disease surveillance, early disease detection and response, vaccination programmes, etc.);
- b) public health (food safety, disease surveillance, control of zoonotic diseases, etc.);
- c) crisis/incident management;
- d) trade (reliable inspection and certification);
- e) animal production programmes.

### **2. Preliminary studies**

#### **a) Assess the current situation**

The *Veterinary Administration*, in collaboration with stakeholders, should assess and evaluate whether the objectives are realistic and achievable, taking into account factors such as:

- Animal populations, species, distribution, herd management
- Farming and industry structures, production and location
- Animal health
- Public health
- Trade issues
- Zoning and compartmentalisation
- Animal movement patterns (including transhumance)

Appendix XXV (contd)Appendix IV (contd)

- Information management and communication
- Availability of resources
- Social and cultural aspects
- Stakeholder knowledge of the issues and expectations
- International experience
- Existing pilot projects.

**b) Scope and performance outcomes**

According to the chosen objectives, the scope and the performance outcomes have to be defined. The scope specifies the targeted species/population within a country, zone, compartment or a particular programme.

**c) Economic analysis**

This analysis should consider benefits, funding mechanisms and sustainability.

**d) Pilot projects**

Pilot projects may form part of the preliminary study.

**3. Legal framework**

The structure of this framework will vary from country to country. The *Veterinary Administration*, with relevant governmental agencies and in consultation with the private sector, should establish a legal framework for the implementation and enforcement of *animal identification system* and *animal traceability* in the country. *Animal identification*, *animal traceability* and animal movement should be under the responsibility of the *Veterinary Administration*. In order to facilitate compatibility and consistency, relevant international standards and obligations should be taken into account. This legal framework should include:

- objectives
- scope
- obligations of the parties (*Veterinary Administration* and other stakeholders)
- organisational arrangements, including the choice of technologies and methods used for the *animal identification system* and *animal traceability*
- management of animal movement
- confidentiality
- accessibility issues
- monitoring, verification and penalties.

The legal framework may also include funding mechanisms, a timetable and performance outcomes.

#### **4. Implementation through an action plan**

Once the legal framework has been established and relevant legislation is in place, it is desirable to commence with a pilot project to test the *animal identification system* and *animal traceability*.

The action plan should specify the timetable for implementation and include the milestones and performance indicators, the human and financial resources, monitoring, enforcement and verification arrangements.

Procedures should be designed to prevent, detect and correct errors.

For implementation, the following activities have to be considered as part of the **action plan**:

##### **a) Communication**

The objectives, benefits, responsibilities, correct identification and movement recording techniques and possible sanctions need to be communicated to industry participants and stakeholders. Communication strategies need to be targeted to the audience, taking into account elements such as the level of literacy (including technology literacy) and spoken languages.

##### **b) Ongoing training programmes**

These should be set up to assist first the *Veterinary Services* and then other stakeholders in the implementation. Training programmes should cover all the different elements to address the objectives and scope of the *animal identification system*, *animal traceability* and the requirements of the *Veterinary Administration*. Training programmes need to be targeted to the audience, taking into account elements such as the level of literacy (including technology literacy) and spoken languages.

##### **c) Operational assistance**

This should be available to address the practical problems raised by individual users on all the different elements of the *animal identification system* and *animal traceability*.

##### **d) Register**

In accordance with the objectives, scope and performance outcomes, information on the animals at each establishment, such as animal movements and changes in stock and species, should be recorded in a timely manner in a register.

##### **e) Registration of establishments/owners**

Establishments where animals are kept should be identified and registered, including at least their physical location and the species kept. The register needs to link the person legally responsible for the animals and the *establishment*. In cases where the registration of establishments is not applicable, the animal owner and the owner's place of residence should be recorded. Depending on the objectives and outcomes of the system, the types of establishments that may need to be registered include holdings, assembly centres (e.g. agriculture shows and fairs, sporting events, transit centres, breeding centres, etc.), *markets*, *abattoirs*, rendering plants, animal incinerators, transhumance areas, pathology centres, zoos, etc.

The *Veterinary Administration* should register for each *market* and assembly centre the species handled and the schedule when the facilities are used.

Appendix XXV (contd)Appendix IV (contd)**f) Means of animal identification**

The choice of a physical animal identifier must take into account elements such as cost, durability, human resources, species and age of the animals to be identified, cultural aspects, technology compatibility and relevant standards, farming practices, animal population, climatic conditions, resistance to tampering, trade considerations, and retention and readability of the identification method, in accordance with the objectives, scope and performance outcomes of *animal identification* and *animal traceability*.

The *Veterinary Administration* is responsible for approving official identification materials and equipment, to ensure that these means of animal identification comply with technical requirements, and for the supervision of their distribution. The *Veterinary Administration* is also responsible for ensuring that identifiers are unique and are used in accordance with the requirements of the animal identification system.

Where group identification without a physical identifier is adequate, documentation must be created specifying at least the number of animals in the group, the species, the date of identification, the person legally responsible for the animals and/or establishment and this documentation would constitute a unique group identifier.

Where all animals in the group are physically identified with a group identifier, documentation must also specify the unique group identifier.

The *Veterinary Administration* should establish procedures to maintain *animal identification* and *animal traceability* in cases where the means of identification is lost or unusable, including replacement procedures and *registration*.

Arrangements for the reuse of identifiers should be regulated under the legal framework.

According to the chosen objectives, scope and performance outcomes, a timeframe for the identification of any given animal needs to be defined.

**g) Movement registration**

The *registration* of animal movements is necessary to achieve *animal traceability*. When an animal leaves an *establishment* or is imported, this constitutes a movement and should be registered.

According to the objectives, scope and performance outcomes, movement records and associated documentation should specify, at least the species, the unique identifier or unique group identifier, the date of the movement, the *establishment* from which the animal or group of animals was dispatched, the number of animals moved, the destination *establishment*, and any transit points in between. When *establishments* are not registered as part of the *animal identification system*, ownership and location changes constitute a movement record. Movement recording may also include *registration* of *establishment* of birth, *slaughter* or death, means of transportation and the vehicle/transportation identifier.

Procedures should be in place to maintain *animal traceability* during transportation and when animals arrive and leave an *establishment*.

**h) Importation of animals**

In order to maintain *animal traceability* and in accordance with the legal framework of the importing country, the *animal identification* assigned to the animal(s) in the exporting country should be linked with the *animal identification* assigned to the said animal(s) in the importing country.

Appendix XXV (contd)

Appendix IV (contd)

**i) Notification**

The notification of relevant information (such as *animal identification*, movement, changes in stock, *establishments*) should take place in accordance with the objectives, scope and performance outcomes for *animal traceability* and the requirements of the *Veterinary Administration*.

**j) Information collection, storage and retrieval**

The collection, compilation, storage and retrieval of information as part of the *animal identification system* and *animal traceability* should:

- i) take place within the context of the objectives, scope and performance outcomes;
- ii) minimise duplication so as to reduce the burden and maximise acceptance and efficiency; and
- iii) have *registration* components that are compatible and able to be linked to allow timely and reliable traceability.

Updating of information (such as animal movements, animal population, *establishments/ownership*) needs to be performed in accordance with the objectives, scope and performance outcomes of *animal traceability* and the requirements of the *Veterinary Administration*.

The *Veterinary Administration* should have unrestricted access to the relevant data.

Information can be collected, stored and managed electronically in a database. If more than one database exists, the databases should be compatible to facilitate exchange of data and the efficient addressing of requests.

Database(s) should be integrated with other, complementary databases such as those for epidemiology, laboratories, quality assurance programmes, certification, transportation, etc.

**k) Documentation**

Documentation should be linked to *animal identification* and address objectives, scope and performance outcomes of the *animal identification system* and *animal traceability*.

Situations where documentation is needed should be specified within the legal framework, and the information required and formats that are acceptable in each circumstance should be standardised.

**l) Laboratories**

The results of diagnostic tests specified by the *Veterinary Administration*, should be linked to *animal identification system* and *animal traceability*.

The diseases, tests, result format and other information required should be identified after discussion between the *Veterinary Administration* and laboratories.

**m) Abattoirs, rendering plants, markets, assembly centres**

Abattoirs, rendering plants, markets and assembly centres should document arrangements for the maintenance of *animal identification* and compliance with the legal framework.

Abattoirs and rendering plants

The components of the *animal identification system* operating within abattoirs should complement and be compatible with arrangements for tracking animal products through to the consumer.

Appendix XXV (contd)Appendix IV (contd)

At an *abattoir* or rendering plant, the last establishment where the animal resided should be verified before processing commences. At an abattoir, *animal identification* should be maintained during the processing of the animal's carcass until the carcass is deemed fit for human consumption. In rendering plants or whether an animal dies before slaughter, *animal identification* should be maintained until the examination of the carcass to determine the cause of death has concluded.

*Animal identification* should be recorded on documents accompanying samples collected for analysis.

*Abattoirs* and rendering plants should ensure that identifiers are collected and disposed of in a manner that minimizes the risk of unauthorized reuse. Arrangements for the reuse of identifiers should be regulated within the legal framework.

Notification of movement by *abattoirs* and rendering plants should occur in accordance with the objectives, scope and performance outcomes of *animal traceability* and the requirements of the *Veterinary Administration*.

**5. Monitoring**

Monitoring should start from the beginning of implementation in order to ensure the reliability and performance of the *animal identification system* and *animal traceability*.

**6. Verification**

Verification should begin after a preliminary period as determined by the *Veterinary Administration* in order to determine compliance with the legal framework.

**7. Auditing**

Auditing should be carried out under the responsibility of the *Veterinary Administration* to detect any problems with the *animal identification system* and *animal traceability* and to identify possible improvements.

**8. Penalties**

Different levels and types of penalties should be defined within the legal framework and be enforced so to ensure the integrity of the *animal identification system* and *animal traceability*.

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Original: English  
August/September

## REPORT OF THE MEETING OF THE OIE *AD HOC* GROUP ON THE REVISION OF THE OIE MODEL CERTIFICATES

Electronic meeting, 9 August – 14 September 2006

The *ad hoc* Group on the Revision of the OIE Model Certificates (hereafter referred to as the *ad hoc* Group) was convened by Dr Bernard Vallat, the OIE Director General, to support the work of the OIE Terrestrial Animal Health Standards Commission (hereafter referred to as the the Terrestrial Code Commission) on this topic.

The Agenda and the List of Participants are given at [Appendices I](#) and [II](#), respectively.

The meeting was chaired by Dr Wolf-Arno Valder, Vice President of the OIE Terrestrial Code Commission. The *ad hoc* Group worked by e-mail exchange.

The members received background information on the current OIE *Terrestrial Animal Health Code* (the *Terrestrial Code*) and on the relevant work of the Terrestrial Code Commission and of the Animal Production Food Safety Working Group.

The *ad hoc* Group was asked to answer the following questions:

- a) Does the OIE need to update the current OIE model certificates?
- b) If yes, what are the key issues that will need to be addressed?

In relation to the first question, the *ad hoc* Group agreed on the need to update the current OIE model certificates in order to keep the pace with the evolving needs of international trade.

In addressing the second question, the *ad hoc* Group listed a number of topics that would need to be addressed. These are here reported in a non-prioritised list:

1. Simplify the certification process by drafting templates with identical headings (information on exporting country, responsible person, identification of the commodity, address of the consignee, etc.), for all model certificates and prepare different attestations as appropriate to the commodity addressed.
2. Address products of animal origin that are not already covered (e.g. products for museums, milk, hides and skins, feathers).

Appendix XXVI (contd)

3. Produce harmonised certificates taking into account different requirements for the various species and commodities.
4. If possible, take an approach that is consistent with that of the Codex Alimentarius Commission (notably Codex Committee on Food Import and Export Inspection and Certification Systems).
5. Consider the recommendations of the Animal Production Food Safety Working Group (endorsed by the Terrestrial Code Commission).
6. Ensure compatibility with electronic certification systems.
7. Provide for linkages between livestock and commodity certificates.

The *ad hoc* Group provided material to assist in continuing work to update the OIE model certificates.

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.../Appendices

**REPORT OF THE MEETING OF THE OIE *AD HOC* GROUP ON THE  
REVISION OF THE OIE MODEL CERTIFICATES**

**Electronic meeting, 9 August – 14 September 2006**

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**Agenda**

1. Need to update the current OIE model certificates.
2. Identify key issues that need to be addressed for this work



**REPORT OF THE MEETING OF THE OIE AD HOC GROUP ON THE  
REVISION OF THE OIE MODEL CERTIFICATES**

**Electronic meeting, 9 August – 14 September 2006**

**List of participants**

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## REPORT OF THE FIFTH MEETING OF THE OIE WORKING GROUP ON ANIMAL WELFARE

Paris, 4-6 July 2006

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The OIE Working Group on Animal Welfare held its fifth meeting at the OIE Headquarters in Paris on 4-6 July 2006.

The members of the Working Group and other participants are listed in [Appendix A](#). The Agenda adopted is given in [Appendix B](#). Dr D. Bayvel chaired the meeting.

On behalf of Dr B. Vallat, Director General of the OIE, Dr A. Thiermann welcomed the members of the Working Group and thanked them for agreeing to continue their work on this important mandate of the OIE.

Dr Thiermann advised that one expert from the OIE Collaborating Centre for Animal Welfare in Teramo (Italy), as well as three industry experts (from the International Dairy Federation [IDF], the International Meat Secretariat [IMS] and the International Federation of Agricultural Producers [IFAP]) had been invited to participate in the meeting on the second day. He also informed the Working Group that Dr Sarah Kahn would assume the post of Head of the International Trade Department as of 1 August, and due to that status she was attending this meeting.

### 1. OIE General Session 2006

#### a) Resolution on Animal Welfare

Dr Bayvel provided feedback to the Working Group on his presentation to the International Committee at the 74<sup>th</sup> General Session in May, and confirmed that a copy of the Power Point Presentation, the Working Group annual report and the draft Resolution had been circulated for information to Working Group members.

The Working Group agreed that recommendations 3, 4 and 5 of the Resolution, which was approved unamended by the International Committee, were of particular strategic significance.

#### b) International Declaration on Animal Welfare

Dr Bayvel reported on the discussions held just prior to the General Session regarding a draft Resolution on the International Declaration on Animal Welfare. This Resolution had been endorsed by the Working Group and Administrative Commission but in the lead up to the General Session, concerns had been raised by some member countries. These concerns were raised again at the Administrative Commission meeting held before the start of the General Session. As a consequence of these concerns, it was decided not to proceed with the Resolution.

Appendix XXVII (contd)

Dr D. Wilkins then reported on other activities regarding the global promotion of the International Declaration on Animal Welfare. A Resolution supporting the principle of a universal Declaration had been put before the June meeting of EU Agriculture Ministers by the Czech Minister of Agriculture. This Resolution had been agreed unanimously by all 25 Member States.

Following discussion, Dr. Wilkins suggested that an Animal Welfare Resolution which could be put before next year's General Session, might include reference to basic animal welfare principles including animal sentience. Dr Wilkins reported that planning was under way to hold a Ministerial Conference in New York during 2007. There was optimism that many countries would agree to participate.

**c) Updating of four chapters on terrestrial animal welfare**

Dr Thiermann reported to the Working Group that revisions on four chapters on animal welfare for terrestrial animals, together with a list of new definitions related to animal welfare, were adopted by the International Committee unamended, except for the definition of "animal handler" of which the second sentence was indicated as "under study" for further consideration of the Working Group.

**d) Other issues**

Dr Bayvel also updated the Working Group on the following specific issues:

- i) Dr Vallat's confirmation at the General Session of the Working Group membership, which would continue unchanged
- ii) An "opportunistic meeting" at which certain Working Group members (Drs A. Gavinelli, Wilkins and Bayvel) met with Drs D. Wilson and J. Pinto during the General Session, with subsequent circulation of meeting minutes to all Working Group members
- iii) Farewell and expression of appreciation to Drs Wilson and Pinto
- iv) CIWF/WSPA presentations on long distance transport and avian influenza.

**2. Revision of adopted standards**

The Working Group examined comments received on, and changes proposed to, the four terrestrial animal welfare standards that had been adopted at the 2006 General Session. Dr T. Ishibashi explained that most of the comments from Member Countries and international organisations had been received in February, prior to the March meeting of the Terrestrial Animal Health Code Commission (the Terrestrial Code Commission). Comments of an editorial nature had been addressed by the Terrestrial Code Commission and reflected in the texts proposed and adopted at the 74<sup>th</sup> General Session, while comments of a technical nature remained in the working document for consideration by the Working Group.

The Working Group reviewed the outstanding comments and recommended that each one be addressed according to one of the following options:

- a) working to be reviewed and incorporated by the Central Bureau;
- b) Working Group to agree a consensus position;
- c) matter to be referred to relevant *ad hoc* Group.

The Working Group agreed that draft chapters reflecting comments classified under 1 or 2 above would be submitted to the Terrestrial Code Commission, while text containing comments classified in 3 above would be examined by the relevant *ad hoc* Group before being sent back to the Working Group for approval then forwarding to the Terrestrial Code Commission.

Appendix XXVII (contd)

With respect to the “under study” status of the definition of “animal handler,” the Working Group reviewed comments from Member Countries as well as the discussion at the General Session, and considered that it might be necessary to define animal handlers according to two specific options, i.e. certified animal handler for high risk situations and animal handler for all other circumstances. The Working Group requested that the Central Bureau examine all references to “animal handler” in the chapters and advise on the appropriateness of adopting this risk-based distinction throughout.

The draft chapters with modifications recommended by the Working Group are at Appendices C-G.

The Working Group requested that the Central Bureau obtain material to update the figures in Article 3.7.5.7. to indicate the exact sites of stunning recommended in the Article.

For future distribution of documents among Working Group members, certain members confirmed their preference to receive the same in both hard and soft copy.

### **3. Development of the chapters on aquatic animal welfare**

Prof. T. Håstein briefed the Working Group on progress with the draft documents “Introduction to OIE guidelines for the welfare of aquatic animals,” “Guidelines for the transport of fish by boat,” “Guidelines for the land transport of fish,” “Guidelines on slaughter of farmed fish for human consumption,” and “Guidelines for the humane killing of fish for disease control purposes.”

The drafts had been slightly amended after the Working Group meeting in September 2005 and the updates were presented to the Aquatic Animal Health Standards Commission (the Aquatic Animal Commission) in March 2006. The Aquatic Animal Commission acknowledged the work and made a few amendments, and the drafts were sent to Member Countries for comments with a deadline of 10 September 2006.

Prof. Hastein noted that no final decision had been taken to establish an ad hoc group on Aquatic Production Standards as referred to in the 2006 Work Programme.

In addition to these drafts, species specific articles on land transport of *Channel Catfish* and *Cyprinids* and a species specific draft on *Salmonids* are being developed.

The Working Group discussed what further work is needed on the drafts in order to seek approval at the General Session 2007 and acknowledged the progress made to date.

It was also noted that a draft on air transport of ornamental fish was planned: discussions would be carried out with experts in that field.

### **4. Comments from non-OIE Delegate sources**

The Working Group discussed the best way to address comments received from non-OIE Delegates, such as animal welfare NGOs and industry organisations. It was confirmed that the formal policy position is available on the OIE website (<http://www.oie.int/tahsc/eng/transparency%20eng.pdf>).

It was noted that the OIE Central Bureau is receiving an ever-increasing volume of international correspondence on animal welfare issues. It was agreed that Working Group members would forward directly to the Central Bureau any such items they may receive. Working Group members also confirmed their availability to prepare responses on specific regional issues or on issues where they possess particular experience or expertise.

Appendix XXVII (contd)**5. 2006-2007 Animal Welfare Working Group Work Plan**

It was agreed that Dr Bayvel would prepare a first draft of the 2007 Work Plan by November 2006 for comment by Working Group members and Central Bureau staff. The OIE International Trade Department will prepare a complementary Central Bureau Work Plan by December 2006. The practice of using two monthly teleconferences to monitor Work Plan implementation will continue, involving Drs Kahn, Bayvel, Thiermann and Ishibashi.

**6. Actions on other issues raised at the meeting in September 2005**

It was agreed that Dr Wilkins will prepare a one-page position paper to support his proposal that OIE develop overarching ethical principles for specific animal welfare issues, e.g. whether, as a matter of principle, animals should be slaughtered as near as possible to the point of production. The position paper will be circulated to Working Group members for consideration and comment. If the Working Group reaches consensus, Dr Thiermann will raise the issue at the next meeting of the Administrative Commission. Otherwise, it will be discussed again at the next Working Group meeting.

Drs Wilkins and Gavinelli will prepare, by mid October, an “issues and options discussion paper” regarding the promulgation and implementation of OIE Guidelines. It was envisaged that Regional Commissions could play an important role in this regard.

**7. Working Group Terms of Reference and Strategy Development**

The paper entitled “Issues and Options Regarding Role Clarity and Strategic Direction” was discussed and it was agreed to develop recommendations for consideration by the Director General based on the experience gained by the Working Group. The following actions were agreed:

- a) All Working Group members to pass comments to Dr Bayvel by end August,
- b) Dr Bayvel to prepare a revised ‘recommendations document’ by end September,
- c) Drs Thiermann and Kahn to discuss an agreed version of this document with the Director General by end November.

**8. Outcome-based versus prescriptive standards**

The Working Group considered country recommendations and discussed how to improve the incorporation of outcome-based recommendations rather than prescriptive standards wherever relevant. Difficulties in choosing between outcome based and prescriptive standards were discussed and it was agreed that outcome-based recommendations are not always the best approach. In cases where prescriptive standards are chosen, it was decided to include an explanation of how the standard could achieve the desired outcome, to provide for consideration of equivalent approaches.

**9. Animal production/housing and management**

Prof. D. Fraser provided background on this issue and on the Discussion Paper entitled “Terrestrial animal welfare – housing/production systems” by Profs H. Aidaros and Fraser. He noted that this will be a challenging area because it includes economic, cultural and political dimensions and a large body of scientific literature.

Appendix XXVII (contd)

The interpretation of scientific information has in some cases created difficulties because various standard-setting organizations have tended to emphasize different criteria for animal welfare. For example, criteria can relate to freedom from pain and distress, the maintenance of basic health, or the ability to live in a “natural” manner. Proponents of certain standards generally claim that their standards are science-based, but because the standards vary, critics may question the interpretation of the science or the involvement of non-scientific considerations. Moreover, there is as yet no basic agreement on whether animal welfare standards should be based on criteria relating to the animal (e.g. survival rate, disease status) or design of the production/management unit (e.g. size of pen).

The Working Group agreed to recommend that the Director General begin by creating an *ad hoc* Group to develop a guidance document that would provide background on relevant issues (including those mentioned above) and suggest a framework for the development of animal production/management guidelines.

The *ad hoc* Group should include scientists experienced in developing animal welfare standards for various species and regulators experienced in the implementation of standards. Membership should be broadly representative of regions and should include representatives of less developed countries.

The *ad hoc* Group should report on the following:

- a) appropriate goals (generic standards) that should be followed in OIE production/management guidelines
- b) the advantages and disadvantages of animal-based and design-based criteria
- c) how to ensure that the process is relevant to all OIE Member Countries
- d) the relationship between animal welfare standards and animal health
- e) a strategy to follow in future, including whether to approach the development of guidelines on the basis of species (e.g. chickens) or production system (e.g. cage systems for laying hens)
- f) areas for priority attention (i.e. species and production system) and a process for undertaking this work.

As a general approach, the Working Group recommends that the development of guidelines and standards begin, in all cases, with a review of the scientific literature and a clear statement of the generic guiding principles.

Upon Dr Vallat joining the meeting, Prof. Fraser outlined the conceptual approach taken by himself and Prof. Aidaros in drafting the discussion paper considered by the group earlier in the meeting. Dr Vallat confirmed his support for the careful and considered approach being adopted and emphasized the following points :

- g) That OIE membership includes around 120 developing or transition countries
- h) That animal protection rather than animal welfare promotion is, at this juncture, the strategic priority in many of those countries
- i) That extensive farming, without housing, is the norm in many countries for the most economically important species

Appendix XXVII (contd)

- j) That the linkage between health and welfare should be stressed in any future Working Group deliberations
- k) That the composition of any future *ad hoc* Group should include a balance of scientific expertise and the experience and perspective of regulators, including veterinary managers with field experience.
- l) It was agreed that Profs Fraser and Aidaros would produce a revised version of the discussion paper, which was likely to recommend the establishment of an *ad hoc* Group to prepare an initial guidance document.

**10. Wildlife and zoo animal welfare**

Dr Wilkins reported that the planned discussion paper on welfare in wildlife would be prepared by Dr S.A. Rahman, Dr W. Masiga and himself for consideration at the next meeting of the Working Group.

**11. Laboratory Animal Welfare: OIE/ICLAS meeting**

Dr Bayvel summarised the sequence of events and dialogue with ICLAS and the Central Bureau leading up to the despatch of the joint invitation letter on 1 July 2006. It was agreed that the OIE Central Bureau is also to be represented at this meeting by Dr Kahn and that the European Community would be represented by either Dr Gavinelli or a US-based representative.

**12. Stray animal control**

Dr Rahman, the Chairman of the *ad hoc* Group on stray animal control, gave a brief report on the outcome of the *ad hoc* Group meeting held on 10-12 May 2006. Dr Rahman expressed some misgivings regarding input from some members and differences in the terms of reference between what was agreed at the Working Group meeting in September 2005 and what was presented to the *ad hoc* Group. Dr Rahman also mentioned that the *ad hoc* Group's expertise focused more on philosophical rather than on practical considerations and because of this the consideration of practical issues associated with stray dog control and zoonotic diseases, especially rabies, was compromised. He also noted that the absence of Dr A. Wandeler (WHO zoonosis expert) from the meeting and his subsequent lack of response to all electronic mails contributed to this imbalance.

The Working Group discussed the report of Dr Rahman and the following recommendations were made:

- a) Report of the *ad hoc* Group to be reviewed and modified by Dr Rahman, Prof. Aidaros and Dr Wilkins
- b) The terms of reference be modified to concentrate on dog population control programmes and not control of all stray animals
- c) The membership of the *ad hoc* Group be modified to include:
  - a) An expert in zoonotic diseases, in particular rabies, be identified and invited as a member
  - b) A public sector veterinarian from a country with experience in controlling a significant canine rabies problem be identified and invited as a member
  - c) Dr P. Dalla Villa be invited as a member
  - d) Dr Rahman to continue as Chairman
  - e) Dr E. Hiby to be retained as an animal welfare expert.

When Dr Vallat joined the meeting, Dr Wilkins reviewed a number of key issues which influenced the outcome of the May meeting of the *ad hoc* Group. It was agreed that Dr Wilkins, Dr Rahman and Prof. Aidaros would review and modify the *ad hoc* Group report and that the Central Bureau would reconstitute the *ad hoc* Group.

Dr Vallat supported this approach and recommended the inclusion of veterinarians with practical regulatory experience in the control of stray dogs and canine rabies. With around 50,000 people dying of rabies, world-wide each year from dog-transmitted rabies, he said that this work and associated liaison with, and input from, the WHO was of the highest priority.

### 13. Draft guidelines for crustaceans

Prof. Håstein presented draft guidelines for slaughter of crustaceans for human consumption and for the humane killing of crustaceans for disease control purposes, both of which had been circulated to Working Group members prior to the meeting. He informed the Working Group that these drafts had been discussed with Prof. D. Lightner (USA) and would be discussed at a meeting with lobster scientists and lobster handlers/producers in Canada in July 2006.

The Working Group discussed these drafts briefly. The Working Group considered the pros and cons of establishing an *ad hoc* Group to review these drafts. In the first instance it was of the view that a physical meeting might not be necessary.

It was agreed that Drs Kahn and Bayvel would discuss further the establishment of such an *ad hoc* group along with the proposed *ad hoc* group for aquatic animal production standards (Refer agenda item 3) and advise by end September. The Working Group acknowledged and supported the quality of the work done so far. It was agreed that comments from Working Group members on these drafts should be provided to Prof. Håstein within approximately one month. It was also noted that a draft report on transport of crustaceans is in progress.

### 14. EU Five-Year Action Plan

A short presentation was given on the European Community Action Plan on the Protection and Welfare of Animals 2006-2010 (AWAP).

The scope of the AWAP is to cover all fields of animal protection as specified in the European Union Treaty, from the protection of animals used in experiments to the protection of farm animals. The action plan contains five main elements and provides a comprehensive map of the Commission's planned animal welfare initiatives in coming years.

The action plan focuses on specific actions to promote and maintain high animal welfare standards in the EU and raise awareness and implementation of animal welfare standards at the international level in particular, taking fully into account the OIE guidelines and their important role in relation to bilateral and multilateral veterinary and trade agreements.

Simplification and clarification of existing European legislation, incorporation of specific measurable farm indicators for animal welfare and the improvement of marketing and communication strategies are some of the main objectives of the Action Plan.

In order to better achieve these objectives the Commission will consider the outcomes of an EU wide research project, 'Welfare Quality'. Welfare Quality ([www.welfarequality.net](http://www.welfarequality.net)) is an EU funded project promoting the integration of animal welfare within the food quality chain. Research projects outside the EU may also be funded to reflect the importance of animal welfare internationally.

Appendix XXVII (contd)**15. EU contribution to the OIE trust fund for the purpose of Animal Welfare training**

In March 2006 a letter was sent from Dr Jaana Husu Kallio, Deputy Director General of DG SANCO in the European Commission, to Dr Vallat, Director General of the OIE, announcing willingness to investigate the possibility of the European Community making a contribution of 200,000 Euros to the Animal Health and Welfare Fund. This contribution would facilitate the Fund's objectives of promoting training, especially with regard to the communication and application of the OIE's agreed Animal Welfare standards for animal slaughter.

The abovementioned letter highlights the importance of the OIE Collaborating Centre for Animal Welfare in Teramo playing an active role in developing training tools, in particular for countries that have experienced difficulties in implementing OIE Animal Welfare guidelines.

The Advisory Committee of the Fund consisting of the representatives of donors is scheduled in October. The Working Group will be kept informed of developments and consulted on the specifications related to the funding initiative in order to provide appropriate assistance to the Advisory Committee of the Fund.

**16. Education resources in the area of Animal Welfare**

## a) Michigan State University E-Learning Course

Dr Bayvel referred to a recent MSU request for assistance in promoting its OIE E-learning course, in which animal welfare is one of ten modules. It was agreed that Dr Bayvel would pass details of this request to Dr Kahn, who would in turn discuss it with the OIE Communications Dept and other Central Bureau colleagues.

## b) Letters regarding OIE support for animal welfare research and teaching

Dr Bayvel referred to letters drafted in 2003, but not yet finalized, to be despatched over the signature of the Director General. It was agreed that Dr Bayvel would revise and update these draft letters for consideration and appropriate action by the Central Bureau.

## c) Sabbatical – Dr Ed Pajor, University of Purdue

The proposal that Dr Pajor undertake a sabbatical in Paris, in early 2007, and assist with implementing Working Group proposals in relation to animal welfare and education was supported by the Working Group and, in principle, by the Director General. Prof. Fraser will liaise with Dr Kahn to firm up any outstanding administrative arrangements.

**17. World Bank Group/International Finance Corporation and Animal Welfare**

Dr Gavinelli confirmed strong EC support for the work undertaken recently by the IFC and proposed that the OIE liaise further with the IFC to promote international awareness. Dr Vallat confirmed that a conference was planned for Washington in December 2006 at which it would be possible to include animal welfare and the IFC initiative on the agenda. It was agreed that Dr Gavinelli would liaise with Dr Kahn on this opportunity and that Dr Kahn would communicate with IFC to confirm possibilities for further World Bank/OIE collaboration.

**18. International Training in Animal Welfare and Slaughter**

Dr Gavinelli provided an update on the purpose of this meeting, which will be held in Bristol on 26 – 29 September. It was agreed that Dr Gavinelli would liaise with Dr Kahn re appropriate Central Bureau staff involvement and proposed linkage with the OIE website.

### **19. 2004 Global Conference follow up**

Dr Gavinelli confirmed EC support for such a conference, which was also supported by the Director General. An indicative theme “Towards International Implementation of Animal Welfare Standards – Challenges and Opportunities” was discussed and it was agreed in principle to recommend that the conference be held outside Europe or North America to reflect the broad range of OIE Member Countries’ interests, experiences and needs in regard to animal welfare. 2008 was agreed to be a realistic time to hold the conference, to enable necessary planning activities to take place, and Cairo and Bangalore were suggested as two possible venues.

It was agreed that the planning modus operandi used for the successful 2004 conference would be repeated, with a steering committee comprising Profs Fraser and Aidaros and Drs Rahman, Wilkins, Gavinelli and Bayvel. Dr Bayvel will liaise with Dr Kahn, with a view to preparing a draft conference project plan by October 2006.

### **20. Regional Commission involvement**

Working Group members confirmed their interest in actively participating in Regional Commission meetings. This would generally assist with promoting awareness and adoption of guidelines and could specifically assist in promoting the update of educational activities such as the Bristol/WSPA “Concepts in Animal Welfare” programme. Such involvement was supported by the Director General and it was agreed that Dr Kahn would liaise with Central Bureau colleges and Working Group members, as appropriate.

### **21. SATRS 24(2) Promotion**

Dr Bayvel noted that initial sales of the OIE *Scientific and Technical Revue* Series publication “Animal Welfare: Global Issues, Trend and Challenges” have been very good and he had been liaising with the OIE Publications Department regarding additional journal and conference promotional opportunities. It was agreed that the Publications Department (Ms. Annie Souyri) would liaise directly with Working Group members to identify additional regional marketing opportunities.

### **22. New OIE Collaborating Centres**

As per discussions at the 2005 Working Group meeting, and as per the 2006 work programme, it was agreed that Prof. Fraser, Dr Bayvel and the Central Bureau would review collaborating centre qualifying criteria to ensure that animal welfare is appropriately addressed and with a view to encouraging centres which meet the criteria to apply for OIE recognition. It was agreed that Prof. Fraser would prepare an initial review by end September.

### **23. Membership of Animal Welfare Working Group**

Dr Vallat confirmed the policies and process relating to Working Group membership. A number of options to address the most appropriate method of ongoing involvement of IFAP, IMS, IDF, Teramo and other international stakeholder groups (e.g. aquatic industry and laboratory animal science stakeholders) were discussed. It was agreed that Dr Vallat and Central Bureau staff would meet again with IFAP, IMS and IDF senior management and that the outcome of these discussions would be communicated to the Working Group by end 2006. This would ensure that a revised modus operandi was agreed for the next meeting of the Working Group in 2007.

Appendix XXVII (contd)**24. Relationship with other organisations**

The relationships with other organisations worldwide has made possible the successful participation in relevant conferences and seminars, presenting the OIE *modus operandi* and raising awareness of OIE initiatives. Due to the increasing number of topics dealt by the Working Group and the foreseen increase in number of contacts related in particular to the new area of work on the protection of laboratory animals, the Working Group suggested that the OIE Central Bureau compile a list of the main organisations with world and regional importance that are already cooperating with the OIE, to be shared and updated by the members of the Working Group. This list for internal use could contribute to prioritizing the activities and the contribution to future initiatives where OIE participation will be demanded.

**25. Animal Welfare Conference in Uruguay**

Dr Wilkins reported on negotiations for an animal welfare conference for MERCOSUR countries to be held in Uruguay in 2007. The European Commission and WSPA have agreed to support administratively and financially the Uruguayan initiative to hold an animal welfare conference. A meeting took place during the OIE General Session with the representatives of the Uruguay State Veterinary Service. Progress was made in ensuring that all interested parties in Uruguay were involved in the organisation. It was also decided that the programme should include presentations from other South American countries and the OIE.

**26. Other business**

During her two months stay at the OIE Central Bureau, it was agreed that Ms Sonja Rosic-Banjanin, a stagiaire from Ontario Veterinary College, Guelph, Canada, would support the Working Group in the following areas:

- a) Review of animal handler definition and certification requirements and necessary amendments to adopted guidelines based on the recommendations from the Working Group
- b) Letters regarding OIE support for animal welfare research and teaching
- c) *ad hoc* Group on Stray Animal Control
- d) Stakeholder database
- e) Support for the proposed 2008 conference steering committee is a further possible area of activity.

**27. Next Meeting**

Working Group members confirmed that they would appreciate as early as possible advice on the date of the next meeting in 2007. Dr Thiermann suggested that an early September date was most likely. It was agreed that Dr Bayvel would liaise with Drs Thiermann and Kahn to ensure a date was agreed by end 2006. This timing would align with proposals on involvement of industry stakeholders in the Working Group. Working Group members also confirmed interest in receiving background documents at least two weeks prior to the meeting and that the agenda be structured to ensure that meeting effectiveness is not adversely influenced by the participation of multiple observers.

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.../Appendices

## FIFTH MEETING OF THE OIE WORKING GROUP ON ANIMAL WELFARE

Paris, 4-6 July 2006

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**FIFTH MEETING OF THE OIE WORKING GROUP ON ANIMAL WELFARE****Paris, 4-6 July, 2006****Adopted agenda**

1. Introduction
2. OIE General Session 2006 outcomes
  - Resolution on Animal Welfare
  - International Declaration on Animal Welfare
  - Updated four chapters on Animal Welfare in the OIE *Terrestrial Animal Health Code*
  - Other issues raised
3. Work of the OIE Terrestrial and Aquatic Animal Health Standards Commissions
  - Member Countries' comments on the chapters on terrestrial animal welfare
  - Development of the chapters on aquatic animal welfare
  - Addressing comments from non-OIE Delegate sources
4. Current issues
  - 2006-2007 AWWG Work Plan
  - Other Teramo Meeting Actions
  - Working Group TOR and Strategy Development
  - Outcome-based versus Prescriptive Standard
  - Discussion paper on 'housing/production; generic housing systems'
  - Discussion paper on wildlife and zoo animal welfare
  - Laboratory Animal Welfare: OIE/ICLAS/IACLAM meeting (AALAS, Salt Lake City, 15 October 2006) (D. Bayvel, EU representative, OIE Central Bureau and D. Fraser)
  - Outputs from the meeting of the *ad hoc* Group on stray animal control
  - Draft guidelines for crustaceans
  - EU Five Year Action Plan
  - EU contribution to the OIE trust fund for the purpose of Animal Welfare training

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Appendix B (contd)

- Educational resources in the area of AW (Sabbatical Dr. Ed Pajor)
  - International Finance Corporation Guide Note on Animal Welfare and Business
5. Other Business
- International Training on Animal Welfare at Slaughter
  - 2004 Global Conference Follow up
  - Animal Health and Welfare Fund
  - Regional Commission Involvement
  - SATRS 24(2) Promotion Follow up of the OIE Global Conference 2004
  - New OIE collaborating centres for animal welfare
  - Membership AWWG
  - Relationships with other organisations/associations (IDF, IMS, IFAP, AATA, WSPA, CIWF, etc.)
6. Next meeting

## CHAPTER 1.1.1. GENERAL DEFINITIONS

### Article 1.1.1.1.

For the purposes of the *Terrestrial Code*:

#### ***Animal handler***

means a person with a knowledge of the behaviour and needs of animals ~~which, who~~ with appropriate experience and a professional and positive response to an animal's needs, ~~results in can~~ achieve effective management and good welfare. In cases during animal transport by land in individual trucks, the truck driver may be the animal handler if a designated animal handler is not present (under study). Their competence should be demonstrated through independent assessment and certification from the *Competent Authority* or from an independent body accredited by the *Competent Authority* (under study).

#### **Accredited/Certified animal handler**

means a person with a knowledge of the behaviour and needs of animals, who with appropriate experience and a professional and positive response to an animal's needs, can achieve in effective management and good welfare. Their competence should be demonstrated through independent assessment and certification from the *Competent Authority* or from an independent body accredited by the *Competent Authority* (under study).

#### ***Container***

means a non-self-propelled receptacle or other rigid structure for holding animals during a *journey* by one or several means of transport.

#### ***Death***

means the irreversible loss of brain activity demonstrable by the loss of brain stem reflexes.

#### ***Journey***

an animal transport journey commences when the first animal is loaded onto a *vehicle/vessel* or into a *container* and ends when the last animal is unloaded, and includes any stationary resting / holding periods. The same animals do not commence a new journey until after a suitable period for rest and recuperation, with adequate feed and water.

#### ***Killing***

means any procedure which causes the *death* of an animal.

#### ***Lairage***

means pens, yards and other holding areas used for accommodating animals in order to give them necessary attention (such as water, feed, rest) before they are moved on or used for specific purposes including slaughter.

#### ***Loading/Unloading***

loading means the procedure of moving animals onto a *vehicle/vessel* or into a *container* for transport purposes, whereas unloading: means the procedure of moving animals off a *vehicle/vessel* or out of a *container*.

Appendix XXVII (contd)Appendix C (contd)***Post-journey period***

means the period between *unloading* and either recovery from the effects of the *journey* or slaughter (if this occurs before recovery).

***Pre-journey period***

means the period during which animals are identified, and often assembled for the purpose of loading them.

***Resting point***

means a place where the *journey* is interrupted to rest, feed or water the animals; the animals may remain in the *vehicle/vessel* or *container*, or be unloaded for these purposes.

***Restraint***

means the application to an animal of any procedure designed to restrict its movements.

***Slaughter***

means any procedure which causes the *death* of an animal by bleeding.

***Slaughterhouse/abattoir***

means premises, including facilities for moving or lairaging animals, used for the slaughter of *animals* to produce animal products, and approved by the *Veterinary Services* or other *Competent Authority*.

***Space allowance***

means the measure of the floor area and height allocated per individual or body weight of animals.

***Stocking density***

means the number or body weight of animals per unit area on a *vehicle/vessel* or *container*.

***Stunning***

means any mechanical, electrical, chemical or other procedure which causes immediate loss of consciousness; when used before slaughter, the loss of consciousness lasts until *death* from the slaughter process; in the absence of slaughter, the procedure would allow the animal to recover consciousness.

***Transport***

means the procedures associated with the carrying of animals for commercial purposes from one location to another by any means.

***Transporter***

means the person licensed by the *Competent Authority* to transport animals.

***Travel***

means the movement of a *vehicle/vessel* or *container* carrying animals from one location to another.

***Vehicle/vessel***

means any means of conveyance including train, truck, aircraft or ship that is used for carrying animal(s).

Appendix XXVII (contd)

Appendix C (contd)

***Quarantine station***

means a facility under the control of the *Veterinary Authority* where animals are maintained in isolation with no direct or indirect contact with other animals, to prevent the transmission of specified pathogen(s) while the animals are undergoing observation for a specified length of time and, if appropriate, testing and treatment.

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## APPENDIX 3.7.2.

GUIDELINES FOR THE TRANSPORT  
OF ANIMALS BY SEA

**Preamble:** These guidelines apply to the following live domesticated animals: cattle, buffalo, deer, camelids, sheep, goats, pigs and equines. They may also be applicable to other domesticated animals.

## Article 3.7.2.1.

The amount of time animals spend on a *journey* should be kept to the minimum.

Article 3.7.2.1. bis1. Animal behaviour

Accredited animal handlers and animal handlers should be experienced and competent in handling and moving farm livestock and understand the behaviour patterns of animals and the underlying principles necessary to carry out their tasks.

The behaviour of individual animals or groups of animals will vary, depending on their breed, sex, temperament and age and the way in which they have been reared and handled. Despite these differences, the following behaviour patterns which are always present to some degree in domestic animals, should be taken into consideration in handling and moving the animals.

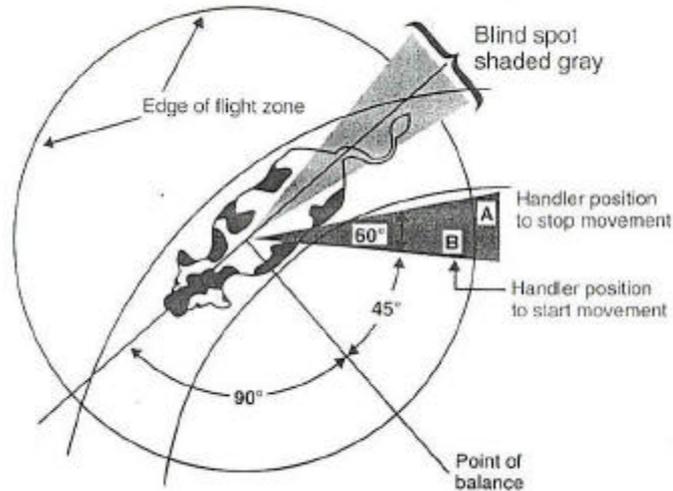
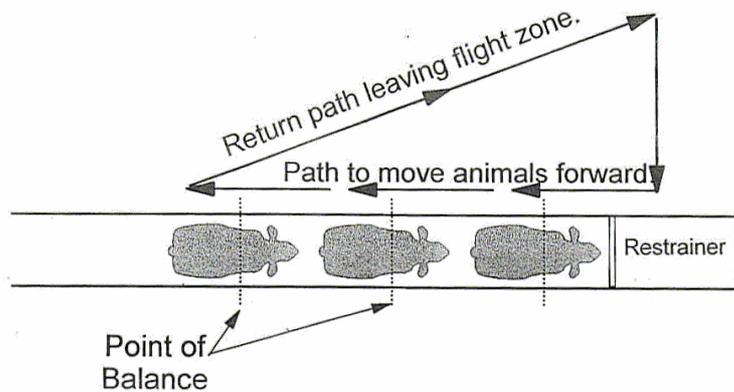
Most domestic livestock are kept in herds and follow a leader by instinct.

Animals which are likely to be hostile to each other in a group situation should not be mixed.

The desire of some animals to control their personal space should be taken into account in designing loading and unloading facilities, transport vessels and containers.

Domestic animals will try to escape if any person approaches closer than a certain distance. This critical distance, which defines the flight zone, varies among species and individuals of the same species, and depends upon previous contact with humans. Animals reared in close proximity to humans (i.e. tame) have a smaller flight zone, whereas those kept in free range or extensive systems may have flight zones which may vary from one metre to many metres. Accredited animal handlers and/or animal handlers should avoid sudden penetration of the flight zone which may cause a panic reaction which could lead to aggression or attempted escape.

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

Appendix XXVII (contd)Appendix D (contd)An example of a flight zone (cattle)Animal handler movement pattern to move cattle forward

Domestic animals have wide-angle vision but only have limited forward binocular vision and poor perception of depth. This means that they can detect objects and movements beside and behind them, but can only judge distances directly ahead.

Although all domestic animals have a highly sensitive sense of smell, they may react differently to the smells encountered during travel. Smells which cause fear or other negative responses should be taken into consideration when managing animals.

Domestic animals can hear over a greater range of frequencies than humans and are more sensitive to higher frequencies. They tend to be alarmed by constant loud noise and by sudden noises, which may cause them to panic. Sensitivity to such noises should also be taken into account when handling animals.

## 2. Distractions and their removal

Distractions that may cause approaching animals to stop, baulk or turn back should be designed out from new *loading* and *unloading* facilities or removed from existing ones. Below are examples of common distractions and methods for eliminating them:

- a) reflections on shiny metal or wet floors - move a lamp or change lighting;
- b) dark entrances - illuminate with indirect lighting which does not shine directly into the eyes of approaching animals;
- c) animals seeing moving people or equipment up ahead - install solid sides on chutes and races or install shields;
- d) chains or other loose objects hanging in chutes or on fences - remove them;
- e) uneven floors or a sudden drop in floor levels – avoid uneven floor surfaces or install a solid false floor to provide an illusion of a solid and continuous walking surface;
- f) sounds of air hissing from pneumatic equipment - install silencers or use hydraulic equipment or vent high pressure to the external environment using flexible hosing;
- g) clanging and banging of metal objects - install rubber stops on gates and other devices to reduce metal to metal contact;
- h) air currents from fans or air curtains blowing into the face of animals - redirect or reposition equipment.

Article 3.7.2.2.

## **Responsibilities**

Once the decision to transport the animals by sea has been made, the welfare of the animals during their *journey* is the paramount consideration and is the joint responsibility of all people involved. ~~with~~ The individual responsibilities of those persons involved being will be described in more detail in this Article. These guidelines may also be applied to the transport of animals by water within a country.

The management of animals at post-discharge facilities is outside the scope of this Appendix.

~~The roles of each of those responsible are defined below:~~

### 1. General considerations

- a) Exporters, importers, owners of animals, business or buying/selling agents, shipping companies, masters of vessels and managers of facilities are jointly responsible for the general health of the animals and their fitness for the *journey*, and for their overall welfare during the *journey*, regardless of whether duties are subcontracted to other parties during transport.
- b) The Exporters, the shipping companies, business or buying/selling agents, and the masters of the vessels are jointly responsible for planning the *journey* to ensure the care of the animals, including:

Appendix XXVII (contd)Appendix D (contd)

- i) choosing appropriate *vessels* and ensuring that at least one accredited animal handler and the appropriate number of animal handlers are available to care for the animals;
  - ii) developing and keeping up to date contingency plans to address emergencies (including adverse weather conditions) and minimise stress during transport;
  - iii) correct *loading* of the ship, regular inspections during the *journey* and for appropriate responses to problems arising;
  - iv) disposal of carcasses according to international law.
- c) To carry out ~~these~~ the above mentioned responsibilities, the ~~people~~ parties involved should be competent regarding transport regulations, equipment usage, and the humane handling and care of animals.

2. Specific considerationsa) The responsibilities of the exporters include:

- ~~2. The exporter has overall responsibility for the organisation, carrying out and completion of the journey, regardless of whether duties are subcontracted to other parties during transport. The exporter is also responsible for ensuring that equipment and medication are provided as appropriate for the species and journey, and for the presence during the journey of at least one animal handler competent for the species being transported. The exporter is also responsible for ensuring compliance of the animals with any required veterinary certification and, in the case of animals for export, any other requirements of the importing and exporting countries.~~

- i) the organisation, carrying out and completion of the journey, regardless of whether duties are subcontracted to other parties during transport;
- ii) ensuring that equipment and medication are provided as appropriate for the species and the journey;
- iii) securing the presence of at least one accredited animal handler and the appropriate number of animal handlers competent for the species being transported;
- iv) ensuring compliance of the animals with any required veterinary certification, and their fitness to travel;
- v) in case of animals for export, ensuring compliance with any requirements of the importing and exporting countries.

b) The responsibilities of the importers include:(under study)

- c) The responsibilities of the owners of the animals include the selection of animals that are fit to travel based on veterinary recommendations.

## Appendix XXVII (contd)

## Appendix D (contd)

3. ~~Business or buying/selling agents have a joint responsibility with owners for the selection of animals that are fit to travel. They have a joint responsibility with masters of vessels and managers of facilities at the start and at the end of the journey for the availability of suitable facilities for the assembly, loading, transport, unloading and holding of animals, and for emergencies.~~
- d) The responsibilities of the business or buying/selling agent include:
- i) selection of animals that are fit to travel based on veterinary recommendations;
  - ii) availability of suitable facilities for the assembly, loading, transport, unloading and holding of animals at the start and at the end of the journey, and for emergencies.
- e) The responsibilities of shipping companies include:
- (under study)
- f) The responsibilities of masters of vessels include the provision of suitable premises for animals on the vessel.
- g) The responsibilities of managers of facilities during loading include:
- ~~ii) Managers of facilities during loading of the animals are responsible for:~~
  - i) providing suitable premises for loading the animals;
  - ii) providing at least one accredited animal handler and an appropriate number of animal handlers to load the animals with minimum stress and the avoidance of injury;
  - iii) minimising the opportunities for disease transmission while the animals are in the facilities;
  - iv) providing appropriate facilities for emergencies;
  - v) providing facilities, ~~and veterinarians~~ and/or accredited animal handlers capable of killing animals humanely when required.
- h) The responsibilities of managers of facilities during unloading include:
- ~~ii) Managers of facilities at the end of the journey are responsible for:~~
  - i) providing suitable facilities for unloading the animals onto transport vehicles for immediate movement or securely holding the animals in *lairage*, with shelter, water and feed, when required, for transit;
  - ii) providing at least one accredited animal handler and an appropriate number of animal handlers to unload the animals with minimum stress and injury;
  - iii) minimising the opportunities for disease transmission while the animals are in the facilities;
  - iv) providing appropriate facilities for emergencies;

Appendix XXVII (contd)Appendix D (contd)

- v) providing facilities, ~~and veterinarians~~ and/or accredited animal handlers capable of *killing* animals humanely when required.
4. ~~Animal handlers are responsible for the humane handling and care of animals, especially during loading and unloading. To carry out these responsibilities, accredited animal handlers (they) should have the authority to take prompt action.~~
- i) The responsibilities of the *accredited animal handlers* include:
    - i) humane handling and care of the animals, especially during *loading and unloading*;
    - ii) possess authority to take prompt action in order to maintain the required level of animal care and handling by the *animal handlers*.
  - ii) The responsibilities of the *animal handlers* include humane handling and care of the animals, especially during *loading and unloading*.
  - k) The responsibilities of the *Competent Authority* of the *exporting country* include:
    - i) establishing minimum standards for animal welfare, including requirements for inspection of animals before and during their travel, and for certification and record keeping;
    - ii) establishing requirements for a *veterinarian* and/or an *accredited animal handler* qualified to approve~~ing~~ facilities, *containers, vehicles/vessels* for the holding and transport of animals, including that of the *importing country*;
    - iii) setting competence standards for *accredited animal handlers* and *animal handlers* and managers of facilities;
    - iv) ~~ensuring that the vessel transporting animals meets the required standards, including those of the *importing country*;~~
    - v) implementation of the standards, including through accreditation of / interaction with other organisations and *Competent Authorities*;
    - vi) establishing requirements for a *veterinarian* and/or an *accredited animal handler* to monitor~~ing~~ and evaluate~~ing~~ health and welfare performance, including the use of any veterinary medications.
  - l) The responsibilities of the *Competent Authority* of the *importing country* include:
    - i) establishing minimum standards for animal welfare, including requirements for inspection of animals after their travel, and for certification and record keeping;
    - ii) establishing requirements for a *veterinarian* and/or an *accredited animal handler* qualified to approve~~ing~~ facilities, *containers, vehicles/vessels* for the holding and transport of animals;
    - iii) setting competence standards for *accredited animal handlers* and *animal handlers* and managers of facilities;

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- iv) implementation of the standards, including through accreditation of / interaction with other organisations and *Competent Authorities*;
- v) ensuring that the *exporting country* is aware of the required standards for the *vessel* transporting the animals;
- vi) establishing requirements for a *veterinarian* and/or an *accredited animal handler* to monitor and evaluate health and welfare performance, including the use of any veterinary medications.

~~12. When travelling on vessels with the animals, veterinarians are responsible for the humane handling and treatment of the animals during the journey. To carry out these responsibilities, they should have the authority to act and report independently. The veterinarian should meet with the Master, Chief Officer and the senior accredited animal handler (senior animal handler) on a daily basis.~~

- m) The responsibilities of *veterinarians* travelling on the *vessel* with the animals include:
  - i) humane handling and treatment of animals during the *journey*, including in emergencies, such as euthanasia;
  - ii) possess ability to report and act independently;
  - iii) meet daily with the master of the *vessel* and the *accredited animal handler* to obtain up-to-date information on animal health and welfare status.
- n) The receiving *Competent Authority* should report back to the sending *Competent Authority* on significant animal welfare problems which occurred during the *journey*.

Article 3.7.2.3.

### Competence

1. All people responsible for animals during *journeys*, should be competent according to their responsibilities listed in Article 3.7.2.2. Competence in areas other than animal welfare would need to be addressed separately. Competence may be gained through formal training and/or practical experience.
2. The competence of *accredited animal handlers* should be demonstrated through a current certificate from the *Competent Authority* or from an independent body accredited by the *Competent Authority*. The certificate should be in one of the OIE official languages if the international transport of animals is involved.
3. The assessment of competence of *accredited animal handlers* should at a minimum address knowledge, and ability to apply that knowledge, in the following areas:
  - a) planning a *journey*, including appropriate *space allowance*, feed, water and ventilation requirements;
  - b) responsibilities for animals during the *journey*, including *loading and unloading*;
  - c) sources of advice and assistance;

Appendix XXVII (contd)Appendix D (contd)

- d) animal behaviour, general signs of disease, and indicators of poor animal welfare such as stress, pain and fatigue, and their alleviation;
  - e) assessment of fitness to travel; if fitness to travel is in doubt, the animal should be examined by a veterinarian;
  - f) relevant authorities and applicable transport regulations, and associated documentation requirements;
  - g) general disease prevention procedures, including cleaning and *disinfection*;
  - h) appropriate methods of animal handling during transport and associated activities such as assembling, *loading*, and *unloading*;
  - i) methods of inspecting animals, managing situations frequently encountered during transport such as adverse weather conditions, and dealing with emergencies, including euthanasia;
  - j) species-specific aspects and age-specific aspects of animal handling and care, including feeding, watering and inspection; and
  - k) maintaining a *journey* log and other records.
4. The assessment of competence of *animal handlers* should at a minimum address knowledge, and ability to apply that knowledge, in the following areas:
- a) ~~planning a journey, including~~ appropriate *space allowance*, and feed, water and ventilation requirements;
  - b) responsibilities for animals during the *journey*, including *loading* and *unloading*;
  - c) sources of advice and assistance;
  - d) animal behaviour, general signs of disease, and indicators of poor animal welfare such as stress, pain and fatigue, and their alleviation;
  - e) general disease prevention procedures, including cleaning and *disinfection*;
  - f) appropriate methods of animal handling during transport and associated activities such as assembling, *loading*, and *unloading*;
  - g) methods of inspecting animals, managing situations frequently encountered during transport such as adverse weather conditions;
  - h) species-specific aspects and age-specific aspects of animal handling and care, including feeding, watering and inspection; and
  - i) maintaining a *journey* log and other records.
5. Assessment of competence for exporters, *importers*, owners of animals, business or buying/selling agents, shipping companies, masters of *vessels* and managers of facilities should at a minimum address knowledge, and ability to apply that knowledge, in the following areas:

Appendix XXVII (contd)Appendix D (contd)

- a) planning a *journey*, including appropriate *space allowances*, and feed, water and ventilation requirements;
- b) relevant authorities and applicable transport regulations, and associated documentation requirements;
- c) appropriate methods of animal handling during transport and associated activities such as cleaning and *disinfection*, assembling, *loading*, and *unloading*;
- d) species-specific aspects of animal handling and care, including appropriate equipment and medication;
- e) sources of advice and assistance;
- f) appropriate record keeping; and
- g) managing situations frequently encountered during transport, such as adverse weather conditions, and dealing with emergencies.

## Article 3.7.2.4.

**Planning the journey**1. General considerations

- a) Adequate planning is a key factor affecting the welfare of animals during a *journey*.
- b) Before the *journey* starts, plans should be made in relation to:
  - i) preparation of animals for the *journey*;
  - ii) type of transport *vessel* required;
  - iii) route, taking into account distance, expected weather and sea conditions;
  - iv) nature and duration of *journey*;
  - v) daily care and management of the animals, including presence of at least one accredited animal handler and the appropriate number of *animal handlers*, to help ensure the health and welfare of all the animals;
  - vi) avoiding the mixing of animals from different sources in a single pen group;
  - vii) provision of appropriate equipment and medication for the numbers and species carried; and
  - viii) emergency response procedures.

Appendix XXVII (contd)Appendix D (contd)2. Preparation of animals for the journey

- a) When animals are to be provided with a novel diet or unfamiliar methods of supplying of feed or water, they should be preconditioned.
- b) There should be planning for water and feed availability during the *journey*. Feed should be of appropriate quality and composition for the species, age, condition of the animals, etc.
- c) Extreme weather conditions are hazards for animals undergoing transport and require appropriate *vessel* design to minimise risks. Special precautions should be taken for animals that have not been acclimatised or which are unsuited to either hot or cold conditions. In some extreme conditions of heat or cold, animals should not be transported at all.
- d) Animals more accustomed to contact with humans and with being handled are likely to be less fearful of being loaded and transported. Animals should be handled and loaded in a manner that reduces their fearfulness and improves their approachability.
- e) Behaviour-modifying (such as tranquillisers) or other medication should not be used routinely during transport. Such medicines should only be administered when a problem exists in an individual animal, and should be administered by a *veterinarian* or other person who has been instructed in their use by a *veterinarian*, such as an accredited animal handler. Treated animals should be placed in a dedicated area.

3. Control of disease

As animal transport is often a significant factor in the spread of infectious diseases, *journey* planning should take into account the following:

- a) When possible and agreed by the *Veterinary Authority* of the *importing country*, animals should be vaccinated against diseases to which they are likely to be exposed at their destination.
- b) Medications used prophylactically or therapeutically should only be administered by a *veterinarian* or other person who has been instructed in their use by a *veterinarian*, such as an accredited animal handler.
- c) Mixing of animals from different sources in a single consignment should be minimized.

4. Vessel and container design and maintenance

- a) *Vessels* used for the sea transport of animals should be designed, constructed and fitted as appropriate to the species, size and weight of the animals to be transported. Special attention should be paid to the avoidance of injury to animals through the use of secure smooth fittings free from sharp protrusions and the provision of non-slip flooring. The avoidance of injury to accredited animal handlers or animal handlers while carrying out their responsibilities should be emphasised.
- b) *Vessels* should be properly illuminated to allow animals to be observed and inspected.
- c) *Vessels* should be designed to permit thorough cleaning and *disinfection*, and the management of faeces and urine.

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- d) *Vessels* and their fittings should be maintained in good mechanical and structural condition.
  - e) *Vessels* should have adequate ventilation to meet variations in climate and the thermo-regulatory needs of the animal species being transported. The ventilation system should be effective when the *vessel* is stationary. An emergency power supply should be available to maintain ventilation in the case of primary machinery breakdown.
  - f) The feeding and watering system should be designed to permit adequate access to feed and water appropriate to the species, size and weight of the animals, and to minimise soiling of pens.
  - g) *Vessels* should be designed so that the faeces or urine from animals on upper levels do not soil animals on lower levels, or their feed or water.
  - h) *Loading* and stowage of feed and bedding should be carried out in such a way to ensure protection from fire hazards, the elements and sea water.
  - i) Where appropriate, suitable bedding, such as straw or sawdust, should be added to *vessel* floors to assist absorption of urine and faeces, provide better footing for animals and protect animals (especially young animals) from hard or rough flooring surfaces and adverse weather conditions.
  - j) The above principles apply also to *containers* used for the transport of animals.
5. Special provisions for transport in road vehicles on roll-on/roll-off vessels or for containers
- a) Road *vehicles* and *containers* should be equipped with a sufficient number of adequately designed, positioned and maintained securing points enabling them to be securely fastened to the *vessel*.
  - b) Road *vehicles* and *containers* should be secured to the ship before the start of the sea *journey* to prevent them being displaced by the motion of the *vessel*.
  - c) *Vessels* should have adequate ventilation to meet variations in climate and the thermo-regulatory needs of the animal species being transported, especially where the animals are transported in a secondary *vehicle/container* on enclosed decks.
  - d) Due to the risk of limited airflow on certain ~~vessels'~~ decks of a vessel, a road *vehicle* or *container* may require a forced ventilation system of greater capacity than that provided by natural ventilation.
- 6) Nature and duration of the journey
- The maximum duration of a *journey* should be determined ~~according to~~ taking into account factors that determine the overall welfare of animals, such as:
- i) the ability of the animals to cope with the stress of transport (such as very young, old, lactating or pregnant animals);
  - j) the ~~animals'~~ previous transport experience of the animals;
  - k) the likely onset of fatigue;
  - l) the need for special attention;

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- m) the need for feed and water;
- n) the increased susceptibility to injury and disease;
- o) *space allowance* and *vessel* design;
- p) weather conditions.

7. Space allowance

- a) The number of animals which should be transported on a *vessel* and their allocation to different pens on the *vessel* should be determined before *loading*.
- b) The amount of space required, including headroom, depends on the species of animal and should allow the necessary thermoregulation. Each animal should be able to assume its natural position for transport (including during *loading* and *unloading*) without coming into contact with the roof or upper deck of the *vessel*. When animals lie down, there should be enough space for every animal to adopt a normal lying posture.
- c) Calculations for the *space allowance* for each animal should be carried out, using the figures given in Appendix X.X.X. or, in their absence, in a relevant national or international document. The size of pens will affect the number of animals in each.
- d) The same principles apply when animals are transported in *containers*.

8. Ability to observe animals during the journey

Animals should be positioned to enable each animal to be observed regularly and clearly by the accredited animal handler or animal handler or other responsible person, during the *journey* to ensure their safety and good welfare.

9. Emergency response procedures

There should be an emergency management plan that identifies the important adverse events that may be encountered during the *journey*, the procedures for managing each event and the action to be taken in an emergency. For each important event, the plan should document the actions to be undertaken and the responsibilities of all parties involved, including communications and record keeping.

Article 3.7.2.5.

**Documentation**

- 1. Animals should not be loaded until the documentation required to that point is complete.
- 2. The documentation accompanying the consignment should include:
  - a) *journey* travel plan (~~including and~~ an emergency management plan);
  - b) time, date and place of *loading*;

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- c) the *journey* log – a daily record of inspection and important events which includes records of morbidity and mortality and actions taken, climatic conditions, food and water consumed, medication provided, mechanical defects;
  - d) expected time, date and place of arrival and *unloading*;
  - e) veterinary certification, when required;
  - f) *animal identification* to allow ~~traceback~~ animal traceability of individual animals to the premises of departure, and, where possible, to the premises of origin;
  - g) details of any animals considered ~~‘at risk’~~ at particular risk of suffering poor welfare during transport (point 3e) of Article 3.7.2.6.;
  - h) number of accredited animal handlers and animal handlers on board, and their competencies; and
  - i) *stocking density* estimate for each load in the consignment.
3. When veterinary certification is required to accompany consignments of animals, it should address:
- a) when required, details of *disinfection* carried out;
  - b) fitness of the animals to travel;
  - c) *animal identification* (description, number, etc.); and
  - d) health status including any tests, treatments and vaccinations carried out.

Article 3.7.2.6.

### **Pre-journey period**

#### 1. General considerations

- a) Before each *journey*, *vessels* should be thoroughly cleaned and, if necessary, treated for animal and public health purposes, using chemicals approved by the *Competent Authority*. When cleaning is necessary during a *journey*, this should be carried out with the minimum of stress to the animals.
- b) In some circumstances, animals may require *pre-journey* assembly. In these circumstances, the following points should be considered:
  - i) *Pre-journey* rest is necessary if the welfare of animals has become poor during the collection period because of the physical environment or the social behaviour of the animals.
  - ii) For animals such as pigs which are susceptible to motion sickness, and in order to reduce urine and faeces production during the *journey*, a species-specific short period of feed deprivation prior to *loading* is desirable.
  - iii) When animals are to be provided with a novel diet or unfamiliar methods of supplying feed or water, they should be preconditioned.

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- c) Where an accredited animal handler or animal handler believes that there is a significant risk of disease among the animals to be loaded or significant doubt as to their fitness to travel, the animals should be examined by a *veterinarian*.
- d) Pre-journey assembly / holding areas should be designed to:
  - i) securely contain the animals;
  - ii) maintain an environment safe from hazards, including predators and disease;
  - iii) protect animals from exposure to adverse weather conditions;
  - iv) allow for maintenance of social groups; and
  - v) allow for rest, watering and feeding.

2. Selection of compatible groups

Compatible groups should be selected before transport to avoid adverse animal welfare consequences. The following guidelines should be applied when assembling groups of animals:

- a) animals of different species should not be mixed unless they are judged to be compatible;
- b) animals of the same species can be mixed unless there is a significant likelihood of aggression; aggressive individuals should be segregated (recommendations for specific species are described in detail in Article 3.7.2.11.). For some species, animals from different groups should not be mixed because poor welfare occurs unless they have established a social structure;
- c) young or small animals may need to be separated from older or larger animals, with the exception of nursing mothers with young at foot;
- d) animals with horns or antlers should not be mixed with animals lacking horns or antlers, unless judged to be compatible; and
- e) animals reared together should be maintained as a group; animals with a strong social bond, such as a dam and offspring, should be transported together.

3. Fitness to travel

- a) Animals should be inspected by a *veterinarian* or an accredited animal handler to assess fitness to travel. If its fitness to travel is in doubt, ~~the animal should be examined by a veterinarian~~ it is the responsibility of a veterinarian to determine its ability to travel. Animals found unfit to travel should not be loaded onto a *vessel*.
- b) Humane and effective arrangements should be made by the owner or agent for the handling and care of any animal rejected as unfit to travel.
- c) Animals that are unfit to travel include, but may not be limited to:
  - i) those that are sick, injured, weak, disabled or fatigued;

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- ii) those that are unable to stand unaided or bear weight on each leg;
  - iii) those that are blind in both eyes;
  - iv) those that cannot be moved without causing them additional suffering;
  - v) newborn with an unhealed navel;
  - vi) females travelling without young which have given birth within the previous 48 hours;
  - vii) pregnant animals which would be in the final 10% of their gestation period at the planned time of *unloading*.
- d) Risks during transport can be reduced by selecting animals best suited to the conditions of travel and those that are acclimatised to expected weather conditions.
- e) Animals ~~'at risk' at particular risk of suffering poor welfare during transport and~~ which require special conditions (such as in the design of facilities and *vehicles*, and the length of the *journey*) and additional attention during transport, may include: ~~Animals at particular risk of suffering poor welfare during transport, and requiring better conditions and additional attention during transport may include:~~
- i) very large or obese individuals;
  - ii) very young or old animals;
  - v) excitable or aggressive animals;
  - vi) animals subject to motion sickness;
  - v) animals which have had little contact with humans;
  - vi) females in the last third of pregnancy or in heavy lactation.
- f) Hair or wool length should be considered in relation to the weather conditions expected during transport.

Article 3.7.2.7.

## **Loading**

### 1. Competent supervision

- a) *Loading* should be carefully planned as it has the potential to be the cause of poor welfare in transported animals.
- b) *Loading* should be supervised by the *Competent Authority* ~~and conducted by the~~ via accredited animal handlers. Accredited animal handlers and animal handlers should ensure that animals are loaded quietly and without unnecessary noise, harassment or force, and that untrained assistants or spectators do not impede the process.

Appendix XXVII (contd)Appendix D (contd)2. Facilities

- a) The facilities for *loading*, including the collecting area at the wharf, races and loading ramps should be designed and constructed to take into account ~~of~~ the needs and abilities of the animals with regard to dimensions, slopes, surfaces, absence of sharp projections, flooring, sides, etc.
- b) Ventilation during *loading* and the *journey* should provide for fresh air, and the removal of excessive heat, humidity and noxious fumes (such as ammonia and carbon monoxide). Under warm and hot conditions, ventilation should allow for the adequate convective cooling of each animal. In some instances, adequate ventilation can be achieved by increasing the *space allowance* for animals.
- c) *Loading* facilities should be properly illuminated to allow the animals to be easily inspected by the accredited animal handlers and animal handlers, and to allow the ~~animals'~~ ease of movement of animals at all times. Facilities should provide uniform ~~lighting~~ light levels directly over approaches to sorting pens, chutes, loading ramps, with brighter ~~lighting~~ light levels inside *vehicles/containers*, in order to minimise baulking. Dim ~~lighting~~ light levels may be advantageous for the catching of some animals. Artificial lighting may be required.

3. Goads and other aids

The following principles should apply:

- a) ~~Animals that have little or no room to move should not be subjected to physical force or goads and other aids which compel movement.~~
- b) ~~Useful and permitted goads include panels, flags, plastic paddles, flappers (a length of cane with a short strap of leather or canvas attached), plastic bags and metallic rattles; they should be used in a manner sufficient to encourage and direct movement of the animals.~~
- e) ~~Painful procedures (including whipping, tail twisting, use of nose twitches, pressure on eyes, ears or external genitalia), or the use of unsuitable goads or other aids (including sticks with sharp ends, lengths of metal piping, fencing wire or heavy leather belts), should not be used to move animals.~~
- d) ~~The use of goads which administer electric shocks should be discouraged, and restricted to that necessary to assist movement of the animal. Such use should be limited to battery-powered goads on the hindquarters of pigs and large ruminants, and never on sensitive areas such as the eyes, mouth, ears, anogenital region or belly. Such instruments should not be used on horses, sheep and goats of any age, or on calves or piglets.~~
- e) ~~Shouting or yelling at animals or making loud noises (e.g., through the cracking of whips) to encourage them to move should not occur, as such actions may make the animals agitated, leading to crowding or falling.~~
- f) ~~The use of well trained dogs to help with the *loading* of some species may be acceptable.~~
- g) ~~Manual lifting is permissible for young animals that may have difficulty negotiating ramps, but the lifting of animals by body parts such as their tail, head, horns, ears, limbs, wool or hair should not be permitted. The throwing or dropping of animals should not be permitted.~~

## Appendix XXVII (contd)

## Appendix D (contd)

- a) Animals that have little or no room to move should not be subjected to physical force or goads and other aids which compel movement. Electric goads and prods should only be used in extreme cases and not on a routine basis to move animals. The use and the power output should be restricted to that necessary to assist movement of an animal and only when an animal has a clear path ahead to move. Goads and other aids should not be used repeatedly if the animal fails to respond or move. In such cases it should be investigated whether some physical or other impediment is preventing the animal from moving.
- b) The use of such devices should be limited to battery-powered goads on the hindquarters of pigs and large ruminants, and never on sensitive areas such as the eyes, mouth, ears, anogenital region or belly. Such instruments should not be used on horses, sheep and goats of any age, or on calves or piglets.
- c) Useful and permitted goads include panels, flags, plastic paddles, flappers (a length of cane with a short strap of leather or canvas attached), plastic bags and metallic rattles; they should be used in a manner sufficient to encourage and direct movement of the animals without causing undue stress;
- d) Painful procedures (including whipping, tail twisting, use of nose twitches, pressure on eyes, ears or external genitalia), or the use of goads or other aids which cause pain and suffering (including large sticks, sticks with sharp ends, lengths of metal piping, fencing wire or heavy leather belts), should not be used to move animals.
- e) Shouting or yelling at animals or making loud noises (e.g., through the cracking of whips) to encourage them to move should not occur, as such actions may make the animals agitated, leading to crowding or falling.
- f) The use of well trained dogs to help with the *loading* of some species may be acceptable.
- g) Animals should be grasped or lifted in a manner which avoids pain or suffering and physical damage (e.g. bruising, fractures, dislocations). In the case of quadrupeds, manual lifting by a person should only be used in young animals or small species, and in a manner appropriate to the species; grasping or lifting such animals only by their wool, hair, feathers, feet, neck, ears, tails, head, horns, limbs causing pain or suffering should not be permitted, except in an emergency where animal welfare or human safety may otherwise be compromised.
- h) Conscious animals should not be thrown, dragged or dropped.
- i) Performance standards should be established in which numerical scoring is used to evaluate the use of such instruments, and to measure the percentage of animals moved with an electric instrument and the percentage of animals slipping or falling as a result of their usage.

Article 3.7.2.8.

## Travel

### 1. General considerations

- a) Accredited animal handlers and animal handlers should check the consignment immediately before departure to ensure that the animals have been loaded according to the load plan. Each consignment should be checked again within 12 hours.

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- b) Adjustments should be made to the *stocking density* as appropriate during the *journey*.
  - c) Each pen of animals should be observed on a daily basis for normal behaviour, health and welfare, and the correct operation of ventilation, watering and feeding systems. There should also be a night patrol. Any necessary corrective action should be undertaken promptly.
  - d) Adequate access to suitable feed and water should be ensured for all animals in each pen.
2. Sick ~~and~~ or injured animals
- a) Sick ~~and~~ or injured animals should be segregated ~~if possible~~.
  - b) Sick ~~and~~ or injured animals should be appropriately treated or humanely killed, in accordance with a predetermined emergency response plan (Article 3.7.2.4.). Veterinary advice should be sought if necessary. All drugs and products should be used according to recommendations from a veterinarian and in accordance with the manufacturer's ~~or veterinarian's recommendations instructions~~.
  - c) A record of treatments carried out and their outcomes should be kept.
  - d) When euthanasia is necessary, ~~the person responsible for the animals~~ the veterinarian or the accredited animal handler must ensure that it is carried out humanely. ~~Assistance should be sought from a veterinarian or other person(s) competent in euthanasia procedures.~~ Recommendations for specific species are described in Appendix 3.7.6. on killing of animals for disease control purposes.

Article 3.7.2.9.

**Unloading and post-journey handling**1. General considerations

- a) The required facilities and the principles of animal handling detailed in Article 3.7.2.7. apply equally to *unloading*, but consideration should be given to the likelihood that the animals will be fatigued.
- b) *Unloading* should be carefully planned as it has the potential to be the cause of poor welfare in transported animals.
- c) A livestock *vessel* should have priority attention when arriving in port and have priority access to a berth with suitable *unloading* facilities. As soon as possible after the ~~ship's vessel's~~ arrival at the port and acceptance of the consignment by the *Competent Authority*, animals should be unloaded into appropriate facilities.
- d) The accompanying veterinary certificate and other documents should meet the requirements of the *importing country*. Veterinary inspections should be completed as quickly as possible.
- e) *Unloading* should be supervised by the *Competent Authority* ~~and conducted by~~ via an accredited animal handlers. The accredited animal handlers and *animal handlers* should ensure that animals are unloaded as soon as possible after arrival but sufficient time should be allowed for *unloading* to proceed quietly and without unnecessary noise, harassment or force, and that untrained assistants or spectators do not impede the process.

Appendix XXVII (contd)Appendix D (contd)2. Facilities

- a) The facilities for *unloading* including the collecting area at the wharf, races and unloading ramps should be designed and constructed to take into account of the needs and abilities of the animals with regard to dimensions, slopes, surfaces, absence of sharp projections, flooring, sides, etc.
- b) All *unloading* facilities should have sufficient lighting to allow the animals to be easily inspected by the *accredited animal handlers* or *animal handlers*, and to allow the ~~animals~~<sup>animals</sup> ease of movement of animals at all times.
- c) There should be facilities to provide animals with appropriate care and comfort, adequate space, access to quality feed and clean drinking water, and shelter from extreme weather conditions.

3. Sick and or injured animals

- a) An animal that has become sick, injured or disabled during a *journey* should be appropriately treated or ~~humanely killed~~ euthanised (see Appendix 3.7.6.). ~~When necessary, veterinary Advice of a veterinarian or accredited animal handler~~ should be sought in the care and treatment of these animals.
- b) In some cases, where animals are non-ambulatory due to fatigue, injury or sickness, it may be in the best welfare interests of the animal to be treated or euthanised aboard the *vessel*.
- c) If *unloading* is in the best welfare interests of animals that are fatigued, injured or sick, there should be appropriate facilities and equipment for the humane *unloading* of such animals. These animals should be unloaded in a manner that causes the least amount of suffering. After *unloading*, separate pens and other appropriate facilities and treatments should be provided for sick or injured animals.

4. Cleaning and disinfection

- d) *Vessels* and *containers* used to carry the animals should be cleaned before re-use through the physical removal of manure and bedding, by scraping, washing and flushing *vessels* and *containers* with water until visibly clean. This should be followed by *disinfection* when there are concerns about disease transmission.
- e) Manure, litter and bedding should be disposed of in such a way as to prevent the transmission of disease and in compliance with all relevant health and environmental legislation.
- f) Where cleaning or *disinfestation* is necessary during travel, it should be carried out with the minimum of stress to the animals.

Article 3.7.2.10.

**Actions in the event of a refusal to allow the importation of a shipment**

- 1. The welfare of the animals should be the first consideration in the event of a refusal to import.

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2. When animals have been refused import, the *Competent Authority* of ~~that~~ the *importing country* should make available suitable isolation facilities to allow the *unloading* of animals from a *vessel* and their secure holding, without posing a risk to the health of the national herd, pending resolution of the situation. In this situation, the priorities should be:
  - a) The *Competent Authority* of the *importing country* should provide urgently in writing the reasons for the refusal.
  - b) In the event of a refusal for animal health reasons, the *Competent Authority* of the *importing country* should provide urgent access to an OIE-appointed *veterinarian(s)* to assess the ~~animals~~<sup>2</sup> health status of the animals with regard to the *importing country's concerns of the importing country*, and the necessary facilities and approvals to expedite the required diagnostic testing.
  - c) The *Competent Authority* of the *importing country* should provide access to allow continued assessment of the ongoing health and welfare situation.
  - d) If the matter cannot be promptly resolved, the *Competent Authority* of the *exporting and importing countries* should call on the OIE to mediate.
3. In the event that the animals are required to remain on the *vessel*, the priorities should be:
  - a) The *Competent Authority* of the *importing country* should allow ~~reprovision~~ provisioning of the *vessel* with water and feed as necessary.
  - b) The *Competent Authority* of the *importing country* should provide urgently in writing the reasons for the refusal.
  - c) In the event of a refusal for animal health reasons, the *Competent Authority* of the *importing country* should provide urgent access to an OIE-appointed *veterinarian(s)* to assess the ~~animals~~<sup>2</sup> health status of the animals with regard to the *importing country's concerns of the importing country*, and the necessary facilities and approvals to expedite the required diagnostic testing.
  - d) The *Competent Authority* of the *importing country* should provide access to allow continued assessment of the ongoing health and other aspects of the welfare of the animals, and the necessary actions to deal with any issues which arise.
  - e) If the matter cannot be urgently resolved, the *Competent Authorities* of the *exporting and importing countries* should call on the OIE to mediate.
4. The OIE should utilise its dispute settlement mechanism to identify a mutually agreed solution which will address the animal health and welfare issues in a timely manner.

Article 3.7.2.11.

**Species specific issues**

**Cattle** are sociable animals and may become agitated if they are singled out. Social order is usually established at about two years of age. When groups are mixed, social order has to be re-established and aggression may occur until a new order is established. Crowding of cattle may also increase aggression as the animals try to maintain personal space. Social behaviour varies with age, breed and sex; *Bos indicus* and *B. indicus*-cross animals are usually more temperamental than European breeds. Young bulls, when moved in groups, show a degree of playfulness (pushing and shoving) but become more aggressive and territorial with age. Adult bulls have a minimum personal space of six square metres. Cows with young calves can be very protective, and handling calves in the presence of their mothers can be dangerous.

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**Goats** should be handled calmly and are more easily led or driven than if they are excited. When goats are moved, their gregarious tendencies should be exploited. Activities which frighten, injure or cause agitation to animals should be avoided. Bullying is particularly serious in goats. Housing strange goats together could result in fatalities, either through physical violence, or subordinate goats being refused access to food and water.

**Sheep** are sociable animals with good eyesight and tend to “flock together”, especially when they are agitated. They should be handled calmly and their tendency to follow each other should be exploited when they are being moved. Sheep may become agitated if they are singled out for attention and will strive to rejoin the group. Activities which frighten, injure or cause agitation to sheep should be avoided. They can negotiate steep ramps.

**Pigs** have poor eyesight, and may move reluctantly in strange surroundings. They benefit from well lit *loading* bays. Since they negotiate ramps with difficulty, these should be as level as possible and provided with secure footholds. Ideally, a hydraulic lift should be used for greater heights. Pigs also negotiate steps with difficulty. A good ‘rule-of-thumb’ is that no step should be higher than the pig’s front knee. Serious aggression may result if unfamiliar animals are mixed. Pigs are highly susceptible to heat stress.

**Horses** in this context include all solipeds, donkeys, mules, hinnies and zebra. They have good eyesight and a very wide angle of vision. They may have a history of *loading* resulting in good or bad experiences. Good training should result in easier *loading*, but some horses can prove difficult, especially if they are inexperienced or have associated *loading* with poor transport conditions. In these circumstances, two experienced animal handlers can load an animal by linking arms or using a strop below its rump. Blindfolding may even be considered. Ramps should be as shallow as possible. Steps are not usually a problem when horses mount a ramp, but they tend to jump a step when descending, so steps should be as low as possible. Horses benefit from being individually stalled, but may be transported in compatible groups. When horses are to travel in groups, their shoes should be removed.

**Camelids** in this context comprise llamas, alpacas, guanaco and vicuna. They have good eyesight and, like sheep, can negotiate steep slopes, though ramps should be as shallow as possible. They load most easily in a bunch as a single animal will strive to rejoin the others. Whilst they are usually docile, they have an unnerving habit of spitting in self-defence. During transport, they usually lie down. They frequently extend their front legs forward when lying, so gaps below partitions should be high enough so that their legs are not trapped when the animals rise.

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## APPENDIX 3.7.3.

GUIDELINES FOR THE TRANSPORT  
OF ANIMALS BY LAND

**Preamble:** These guidelines apply to the following live domesticated animals: cattle, buffalo, camels, sheep, goats, pigs, poultry and equines. They will also be largely applicable to some other animals (e.g., deer, other camelids and ratites). Wild, feral and partly domesticated animals may need different conditions.

## Article 3.7.3.1.

The amount of time animals spend on a *journey* should be kept to the minimum.

Article 3.7.3.1. bis1. Animal behaviour

Accredited animal handlers and animal handlers should be experienced and competent in handling and moving farm livestock and understand the behaviour patterns of animals and the underlying principles necessary to carry out their tasks.

The behaviour of individual animals or groups of animals will vary, depending on their breed, sex, temperament and age and the way in which they have been reared and handled. Despite these differences, the following behaviour patterns which are always present to some degree in domestic animals, should be taken into consideration in handling and moving the animals.

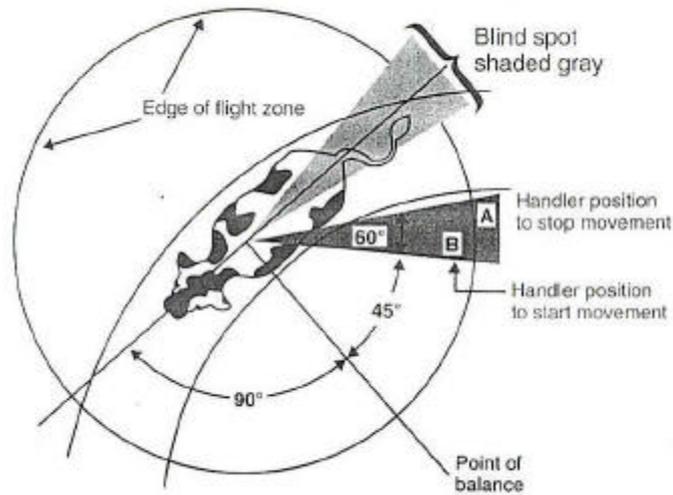
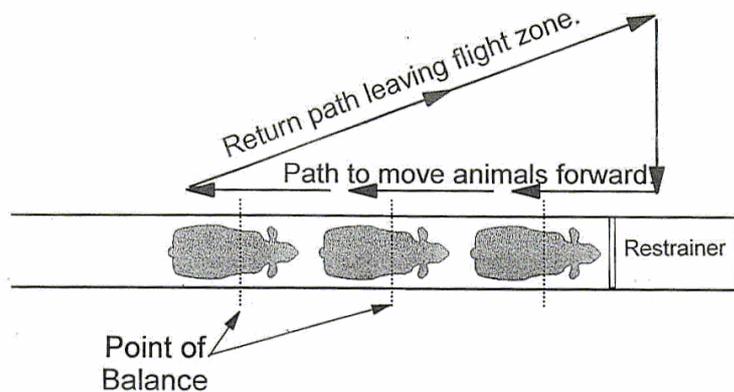
Most domestic livestock are kept in herds and follow a leader by instinct.

Animals which are likely to be hostile to each other in a group situation should not be mixed.

The desire of some animals to control their personal space should be taken into account in designing loading and unloading facilities, transport vessels and containers.

Domestic animals will try to escape if any person approaches closer than a certain distance. This critical distance, which defines the flight zone, varies among species and individuals of the same species, and depends upon previous contact with humans. Animals reared in close proximity to humans (i.e. tame) have a smaller flight zone, whereas those kept in free range or extensive systems may have flight zones which may vary from one metre to many metres. Accredited animal handlers and/or animal handlers should avoid sudden penetration of the flight zone which may cause a panic reaction which could lead to aggression or attempted escape.

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

Appendix XXVII (contd)Appendix E (contd)An example of a flight zone (cattle)Animal handler movement pattern to move cattle forward

Domestic animals have wide-angle vision but only have limited forward binocular vision and poor perception of depth. This means that they can detect objects and movements beside and behind them, but can only judge distances directly ahead.

Although all domestic animals have a highly sensitive sense of smell, they may react differently to the smells encountered during travel. Smells which cause fear or other negative responses should be taken into consideration when managing animals.

Domestic animals can hear over a greater range of frequencies than humans and are more sensitive to higher frequencies. They tend to be alarmed by constant loud noise and by sudden noises, which may cause them to panic. Sensitivity to such noises should also be taken into account when handling animals.

## 2. Distractions and their removal

Distractions that may cause approaching animals to stop, baulk or turn back should be designed out from new loading and unloading facilities or removed from existing ones. Below are examples of common distractions and methods for eliminating them:

- a) reflections on shiny metal or wet floors - move a lamp or change lighting;
- b) dark entrances - illuminate with indirect lighting which does not shine directly into the eyes of approaching animals;
- c) animals seeing moving people or equipment up ahead - install solid sides on chutes and races or install shields;
- d) chains or other loose objects hanging in chutes or on fences - remove them;
- e) uneven floors or a sudden drop in floor levels – avoid uneven floor surfaces or install a solid false floor to provide an illusion of a solid and continuous walking surface;
- f) sounds of air hissing from pneumatic equipment - install silencers or use hydraulic equipment or vent high pressure to the external environment using flexible hosing;
- g) clanging and banging of metal objects - install rubber stops on gates and other devices to reduce metal to metal contact;
- h) air currents from fans or air curtains blowing into the face of animals - redirect or reposition equipment.

Article 3.7.3.2.

## **Responsibilities**

Once the decision to transport the animals has been made, the welfare of the animals during their *journey* is the paramount consideration and is the joint responsibility of all people involved, ~~with~~ The individual responsibilities of those persons involved being will be described in more detail in this Article.

The roles of each of those responsible are defined below:

- ~~4. The owners and managers of the animals are responsible for the general health of the animals and their fitness for the journey, and for their overall welfare during the journey. They are also responsible for ensuring compliance with any required veterinary or other certification, and for the presence during the journey of at least one *animal handler* competent for the species being transported, with the authority to take prompt action. They are also responsible for ensuring that equipment and veterinary assistance are provided as appropriate for the species and journey. These responsibilities should apply regardless of whether duties are subcontracted to other parties during transport.~~
1. The owners and managers of the animals are responsible for:
  - a) the general health, overall welfare and fitness of the animals for the *journey*;
  - b) ensuring compliance with any required veterinary or other certification;

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- c) the presence of an *animal handler* competent for the species being transported during the *journey* with the authority to take prompt action; in case of transport by individual trucks, the truck driver may be the sole *animal handler* during the *journey*;
  - d) the presence of at least one *accredited animal handler* and an adequate number of *animal handlers* during *loading* and *unloading*;
  - e) ensuring that equipment and veterinary assistance are provided as appropriate for the species and the *journey*.
2. ~~Business agents or buying/selling agents have a joint responsibility with owners for the selection of animals that are fit to travel. They have a joint responsibility with market owners and managers of facilities at the start and at the end of the journey for the availability of suitable facilities for the assembly, *loading*, transport, *unloading* and holding of animals, including for any stops at resting points during the journey and for emergencies.~~
2. Business agents or buying/selling agents are responsible for:
- a) selection of animals that are fit to travel;
  - b) availability of suitable facilities at the start and at the end of the *journey* for the assembly; *loading*, transport, *unloading* and holding of animals, including for any stops at *resting points* during the *journey* and for emergencies.
3. ~~Accredited animal handlers and animal handlers are responsible for the humane handling and care of the animals, especially during *loading* and *unloading*, and for maintaining a journey log. To carry out their responsibilities, they should have the authority to take prompt action. In the absence of a separate *accredited animal handler* or *animal handler*, the driver is the *animal handler*. The driver may also be an *accredited animal handler* if an appropriate certification was obtained from the *Competent Authority*.~~
3. *Accredited animal handlers* are responsible for:
- a) humane handling of animals especially during *loading* and *unloading*;
  - b) maintaining a *journey* log;
  - c) possessing authority to take prompt action.
4. In absence of a separate *accredited animal handler* or an *animal handler* during the *journey* via individual trucks, the truck driver is the *animal handler*. The driver may also be an *accredited animal handler* if an appropriate certification was obtained from the *Competent Authority*.
5. *Animal handlers* are responsible for:  
(under study)
6. ~~Transport~~ Shipping companies, *vehicle* owners and drivers are responsible for planning the *journey* to ensure the care of the animals, in particular they are responsible for:

## Appendix XXVII (contd)

## Appendix E (contd)

- a) ~~transport companies and vehicle owners are responsible for~~ choosing appropriate *vehicles* for the species transported and the journey;
  - b) ~~and ensuring that properly trained staff at least one accredited animal handler and adequate number of animal handlers are available for loading/unloading of animals;~~
  - c) ensuring adequate competency of the driver in matters of animal welfare for the species being transported in case a separate animal handler is not assigned to the truck;
  - d) ~~transport companies and vehicle owners are responsible for~~ developing and keeping up-to-date contingency plans to address emergencies (including adverse weather conditions) and minimise stress during transport;
  - e) ~~transport companies and vehicle owners are responsible for~~ producing a *journey* plan which includes a *loading* plan, *journey* duration, itinerary and location of resting places;
  - f) ~~drivers are responsible for~~ *loading* only those animals which are fit to travel, for their correct *loading* into the *vehicle* and their inspection during the *journey*, and for appropriate responses to problems arising. If its fitness to travel is in doubt, the animal should be examined by a *veterinarian* in accordance with point 5 a) of Article 3.7.3.6;
  - g) welfare of the animals during the actual transport.
7. Managers of facilities at the start and at the end of the *journey* and at *resting points* are responsible for:
- a) providing suitable premises for *loading*, *unloading* and securely holding the animals, with water and feed when required, until further transport, sale or other use (including rearing or slaughter);
  - b) providing an adequate number of competent animal handlers to load, unload, drive and hold animals in a manner that causes minimum stress and injury. In absence of a separate accredited animal handler or animal handler during the journey itself, the driver is the animal handler. The driver may also be an accredited animal handler if an appropriate certification was obtained from the Competent Authority;
  - c) minimising the opportunities for disease transmission;
  - d) providing appropriate facilities, with water and feed when required;
  - e) providing appropriate facilities for emergencies;
  - f) providing facilities for washing and disinfecting *vehicles* after *unloading*;
  - g) providing facilities and veterinarians or accredited animal handlers capable of euthanising animals when required; ~~providing facilities and competent staff to allow the humane killing of animals when required~~
  - h) ensuring proper rest times and minimal delay during stops.

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8. The responsibilities of *Competent Authorities* include:
- a) establishing minimum standards for animal welfare, including requirements for inspection of animals before, during and after their travel, defining 'fitness to travel' and appropriate certification and record keeping;
  - b) setting standards for facilities, *containers* and *vehicles* for the transport of animals;
  - c) setting standards for the competence of *accredited animal handlers*, *animal handlers*, drivers and managers of facilities in relevant issues in animal welfare;
  - d) ensuring appropriate awareness and training of *accredited animal handlers*, *animal handlers*, drivers and managers of facilities in relevant issues in animal welfare;
  - e) implementation of the standards, including through accreditation of / interaction with other organisations;
  - f) monitoring and evaluating the effectiveness of standards of health and other aspects of welfare;
  - g) monitoring and evaluating the use of veterinary medications;
  - h) ~~expediting the passage of animal consignments at frontiers~~ give animal consignments priority at frontiers in order to allow them to pass without unnecessary delay.
9. All individuals, including *veterinarians*, involved in transporting animals and the associated handling procedures should receive appropriate training and be competent to meet their responsibilities.
10. The receiving *Competent Authority* should report back to the sending *Competent Authority* on significant animal welfare problems which occurred during the *journey*.

## Article 3.7.3.3.

**Competence**

1. All people responsible for animals during *journeys*, should be competent according to their responsibilities listed in Article 3.7.3.2. Competence may be gained through formal training and/or practical experience. Competence in areas other than animal welfare would need to be addressed separately.
2. The competence of *accredited animal handlers* should be demonstrated through a current certificate from the *Competent Authority* or an independent body, accredited by the *Competent Authority*. The certificate should be in one of the OIE official languages if the international transport of animals is involved.
3. The assessment of the competence of *accredited animal handlers* should at a minimum address knowledge, and ability to apply that knowledge, in the following areas:
  - a) planning a *journey*, including appropriate *space allowance*, and feed, water and ventilation requirements;
  - b) responsibilities for animals during the *journey*, including loading and unloading;

## Appendix XXVII (contd)

## Appendix E (contd)

- c) sources of advice and assistance;
  - d) animal behaviour, general signs of disease, and indicators of poor animal welfare such as stress, pain and fatigue, and their alleviation;
  - e) assessment of fitness to travel. If fitness to travel is in doubt, the animal should be examined by a veterinarian;
  - f) relevant authorities and applicable transport regulations, and associated documentation requirements;
  - g) general disease prevention procedures, including cleaning and *disinfection*;
  - h) appropriate methods of animal handling during transport and associated activities such as assembling, *loading*, and *unloading*;
  - i) methods of inspecting animals, managing situations frequently encountered during transport such as adverse weather conditions, and dealing with emergencies, including euthanasia;
  - j) species-specific aspects and age-specific aspects of animal handling and care, including feeding, watering and inspection; and
  - k) maintaining a *journey* log and other records.
4. The assessment of competence of *animal handlers* should at a minimum address knowledge, and ability to apply that knowledge, in the following areas:
- a) responsibilities for animals during the *journey*, including *loading* and *unloading*;
  - b) sources of advice and assistance;
  - c) animal behaviour, general signs of disease, and indicators of poor animal welfare such as stress, pain and fatigue, and their alleviation;
  - d) general disease prevention procedures, including cleaning and *disinfection*;
  - e) appropriate methods of animal handling during transport and associated activities such as assembling, *loading*, and *unloading*;
  - f) methods of inspecting animals, managing situations frequently encountered during transport such as adverse weather conditions;
  - g) during the *journey* when a *veterinarian* or an *accredited animal handler* may not be present, the *animal handler* should be capable of performing euthanasia if necessary (under study);
  - h) species-specific aspects and age-specific aspects of animal handling and care, including feeding, watering and inspection; and
  - i) maintaining a *journey* log and other records.

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5. The competence of the driver should be at the same level as that of an *animal handler* in case a separate *animal handler* is not present.

Article 3.7.3.4.

**Planning the journey**1. General considerations

- a) Adequate planning is a key factor affecting the welfare of animals during a *journey*.
- b) Before the *journey* starts, plans should be made in relation to:
  - i) preparation of animals for the *journey*;
  - ii) choice of road, ~~or~~ rail; roll-on roll-off vessels or containers;
  - iii) nature and duration of the *journey*;
  - iv) *vehicle/container* design and maintenance, including roll-on roll-off *vessels*;
  - v) required documentation;
  - vi) *space allowance*;
  - vii) rest, water and feed;
  - viii) observation of animals en route;
  - ix) control of disease; ~~and~~
  - x) emergency response procedures;
  - xi) forecast weather conditions (e.g. conditions being too hot or too cold to travel during certain periods of the day);
  - xii) transfer time when changing mode of transport, and
  - xiii) waiting time at frontiers and inspection points.
- c) Regulations concerning drivers (for example, maximum driving periods) should be harmonised with maximum transport *journey* intervals appropriate for the species based on sound science.

2. Preparation of animals for the journey

- a) When animals are to be provided with a novel diet or method of water provision during transport, an adequate period of adaptation should be planned. For animals such as pigs which are susceptible to motion sickness, and in order to reduce urine and faeces production during the *journey*, a species-specific short period of feed deprivation prior to *loading* may be desirable.

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- b) Animals more accustomed to contact with humans and with being handled are likely to be less fearful of being loaded and transported. ~~People handling animals~~ Animal handlers should handle and load animals in a manner that reduces their fearfulness and improves their approachability.
- c) Behaviour-modifying compounds (such as tranquillisers) or other medication should not be used routinely during transport. Such compounds should only be administered when a problem exists in an individual animal, and should be administered by a *veterinarian* or other person who has been instructed in their use by a *veterinarian*, such as an accredited animal handler or an animal handler.

3. Nature and duration of the journey

The maximum duration of a *journey* should be determined ~~according to~~ taking into account factors that determine the overall welfare of animals, such as:

- a) the ability of the animals to cope with the stress of transport (such as very young, old, lactating or pregnant animals);
- b) the ~~animals'~~ previous transport experience of the animals;
- c) the likely onset of fatigue;
- d) the need for special attention;
- e) the need for feed and water;
- f) the increased susceptibility to injury and disease;
- g) *space allowance*, *vehicle* design, road conditions and driving quality;
- h) weather conditions;
- i) vehicle type used, terrain to be traversed, road surfaces and quality, skill and experience of the driver.

4. Vehicle and container design and maintenance

- a) *Vehicles* and *containers* used for the transport of animals should be designed, constructed and fitted as appropriate ~~to for~~ the species, size and weight of the animals to be transported. Special attention should be paid to ~~the avoidance~~ avoid ~~of~~ the injury to animals through the use of secure smooth fittings free from sharp protrusions. The avoidance of injury to drivers, accredited animal handlers and *animal handlers* while carrying out their responsibilities should be emphasised.
- b) *Vehicles* and *containers* should be designed with the structures necessary to provide protection from adverse weather conditions and to minimise the opportunity for animals to escape.
- c) In order to minimise the likelihood of the spread of infectious disease during transport, *vehicles* and *containers* should be designed to permit thorough cleaning and *disinfection*, and the containment of faeces and urine during a *journey*.

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- d) *Vehicles* and *containers* should be maintained in good mechanical and structural condition.
  - e) *Vehicles* and *containers* should have adequate ventilation to meet variations in climate and the thermo-regulatory needs of the animal species being transported; the ventilation system (natural or mechanical) should be effective when the *vehicle* is stationary.
  - f) *Vehicles* should be designed so that the faeces or urine from animals on upper levels do not soil animals on lower levels, nor their feed and water.
  - g) When *vehicles* are carried on board ferries, facilities for adequately securing them should be available.
  - h) If feeding or watering while the *vehicle* is moving is required, adequate facilities on the *vehicle* should be available.
  - i) When appropriate, suitable bedding should be added to *vehicle* floors to assist absorption of urine and faeces, to minimise slipping by animals, and protect animals (especially young animals) from hard flooring surfaces and adverse weather conditions.
5. Special provisions for transport in vehicles (road and rail) on roll-on/roll-off vessels or for containers
- a) *Vehicles* and *containers* should be equipped with a sufficient number of adequately designed, positioned and maintained securing points enabling them to be securely fastened to the *vessel*.
  - b) *Vehicles* and *containers* should be secured to the ~~ship~~ *vessel* before the start of the sea *journey* to prevent them being displaced by the motion of the *vessel*.
  - c) Roll-on/roll-off *vessels* should have adequate ventilation to meet variations in climate and the thermo-regulatory needs of the animal species being transported, especially where the animals are transported in a secondary *vehicle/ container* on enclosed decks.
6. Space allowance
- a) The number of animals which should be transported on a *vehicle* or in a *container* and their allocation to compartments should be determined before *loading*.
  - b) The space required on a *vehicle* or in a *container* depends upon whether or not the animals need to lie down (for example, pigs, camels and poultry), or to stand (horses). Animals which will need to lie down often stand when first loaded or when the *vehicle* is driven with too much lateral movement or sudden braking.
  - c) When animals lie down, they should all be able to adopt a normal lying posture which allows necessary thermoregulation.
  - d) When animals are standing, they should have sufficient space to adopt a balanced position as appropriate to the climate and species transported (~~Article~~ Appendix X.X.X.).
  - e) The amount of headroom necessary depends on the species of animal. Each animal should be able to assume its natural position for transport (including during *loading* and *unloading*) without coming into contact with the roof or upper deck of the *vehicle*.

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- f) Calculations for the *space allowance* for each animal should be carried out using the figures given in Appendix X.X.X. or, in their absence, in a relevant national or international document. The number and size of pens on the *vehicle* should be varied to where possible accommodate already established groups of animals while avoiding group sizes which are too large.
- g) Other factors which may influence *space allowance* include:
  - i) *vehicle/container* design;
  - ii) length of *journey*;
  - iii) need to provide feed and water on the *vehicle*;
  - iv) quality of roads;
  - v) expected weather conditions.

7. Rest, water and feed

- a) ~~There should be planning for the availability of~~ Suitable water and feed should be available as appropriate and needed for the species, age, and condition of the animals, as well as the duration of the *journey*, climatic conditions, etc.
- b) ~~There should be planning for the resting of animals at~~ Animals should be allowed to rest at resting points at appropriate intervals during the *journey*. The type of transport, the age and species of the animals being transported, and climatic conditions should determine the frequency of rest stops and whether the animals should be unloaded. ~~There should be planning for~~ Water and feed should be available ~~availability~~ during rest stops.

8. Ability to observe animals during the journey

- a) Animals should be positioned to enable each animal to be observed regularly during the *journey* to ensure their safety and good welfare.
- b) If the animals are in crates or on multi-tiered *vehicles* which do not allow free access for observation, for example where the roof of the tier is too low (i.e. less than 1.3 m), animals cannot be inspected adequately, and serious injury or disease could go undetected. In these circumstances, a shorter *journey* duration should be allowed, and the maximum duration will vary according to the rate at which problems arise in the species and under the conditions of transport.

9. Control of disease

As animal transport is often a significant factor in the spread of infectious diseases, *journey* planning should take the following into account:

- a) Mixing of animals from different sources in a single consignment should be minimised.
- b) Contact at *resting points* between animals from different sources should be avoided.

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- c) When possible, animals should be vaccinated against diseases to which they are likely to be exposed at their destination.
- d) Medications used prophylactically or therapeutically should be approved by the *Veterinary Authority* of the *importing country* and should only be administered by a *veterinarian* or other person who has been instructed in their use by a *veterinarian*, such as an accredited animal handler or an animal handler.

10. Emergency response procedures

There should be an emergency management plan that identifies the important adverse events that may be encountered during the *journey*, the procedures for managing each event and the action to be taken in an emergency. For each important event, the plan should document the actions to be undertaken and the responsibilities of all parties involved, including communications and record keeping.

11. Other considerations

- a) Extreme weather conditions are hazardous for animals undergoing transport and require appropriate *vehicle* design to minimise risks. Special precautions should be taken for animals that have not been acclimatised or which are unsuited to either hot or cold conditions. In some extreme conditions of heat or cold, animals should not be transported at all.
- b) In some circumstances, transportation during the night may reduce thermal stress or the adverse effects of other external stimuli.

Article 3.7.3.5.

**Documentation**

1. Animals should not be loaded until the documentation required to that point is complete.
2. The documentation accompanying the consignment should include:
  - a) *journey* travel plan (~~including~~ and an emergency management plan);
  - b) date, time, and place of *loading* and *unloading*;
  - c) veterinary certification, when required;
  - d) ~~driver's~~ competencies of the driver;
  - e) ~~identities of the~~ animal identification transported to allow ~~traceback~~ animal traceability of individual animals to the premises of departure and, where possible, to the premises of origin;
  - f) details of any animals considered ~~'at risk'~~ at particular risk of suffering poor welfare during transport (point 3e) of Article 3.7.3.6.);

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- g) documentation of the period of rest, and access to feed and water, prior to the *journey*;
  - h) *stocking density* estimate for each load in the consignment;
  - i) the *journey* log - daily record of inspection and important events, including records of morbidity and mortality and actions taken, climatic conditions, rest stops, travel time and distance, feed and water offered and estimates of consumption, medication provided, and mechanical defects.
3. When veterinary certification is required to accompany consignments of animals, it should address:
- a) fitness of animals to travel;
  - b) *animal identification* (description, number, etc.);
  - c) health status including any tests, treatments and vaccinations carried out;
  - d) when required, details of *disinfection* carried out.

At the time of certification, the *veterinarian* should notify the accredited animal handler, animal handler or the driver of any factors affecting the ~~animals~~<sup>animals</sup> fitness of animals to travel for a particular *journey*.

Article 3.7.3.6.

### Pre-journey period

#### 1. General considerations

- a) Pre-*journey* rest is necessary if the welfare of animals has become poor during the collection period because of the physical environment or the social behaviour of the animals.
- b) Pre-*journey* assembly/holding areas should be designed to:
  - i) securely hold the animals;
  - ii) maintain a safe environment from hazards, including predators and disease;
  - iii) protect animals from exposure to severe weather conditions;
  - iv) allow for maintenance of social groups; ~~and~~
  - v) allow for rest, and appropriate water and feed; and
  - vi) allow sufficient space for all animals to lie down comfortably and move around freely.
- c) Consideration should be given to ~~an animal's~~ the previous transport experience, training and conditioning of the animals, if known, as these may reduce fear and stress in animals.
- d) Feed and water should be provided pre-*journey* if the *journey* duration is greater than the normal inter-feeding and drinking interval for the animal. Recommendations for specific species are described in detail in Article 3.7.3.11.

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- e) When animals are to be provided with a novel diet or method of feed or water provision during the journey, an adequate period of adaptation should be ~~planned~~ allowed.
- f) Before each *journey*, *vehicles* and *containers* should be thoroughly cleaned and, if necessary, treated for animal health and public health purposes, using methods approved by the *Competent Authority*. When cleaning is necessary during a *journey*, this should be carried out with the minimum of stress to the animals.
- g) Where an accredited animal handler or *animal handler* believes that there is a significant risk of disease among the animals to be loaded or significant doubt as to their fitness to travel, the animals should be examined by a *veterinarian*.

2. Selection of compatible groups

Compatible groups should be selected before transport to avoid adverse animal welfare consequences. The following guidelines should be applied when assembling groups of animals:

- a) Animals reared together should be maintained as a group; animals with a strong social bond, such as a dam and offspring, should be transported together.
- b) Animals of the same species can be mixed unless there is a significant likelihood of aggression; aggressive individuals should be segregated (recommendations for specific species are described in detail in Article 3.7.3.11.). For some species, animals from different groups should not be mixed because poor welfare occurs unless they have established a social structure.
- c) Young or small animals should be separated from older or larger animals, with the exception of nursing mothers with young at foot.
- d) Animals with horns or antlers should not be mixed with animals lacking horns or antlers unless judged to be compatible.
- e) Animals of different species should not be mixed unless they are judged to be compatible.

3. Fitness to travel

- a) Each animal should be inspected by a *veterinarian* or an *accredited animal handler* to assess fitness to travel. If its fitness to travel is in doubt, the animal should be examined by a *veterinarian*. Animals found unfit to travel should not be loaded onto a *vehicle*, except for transport to receive veterinary treatment.
- b) Humane and effective arrangements should be made by the owner or agent for the handling and care of any animal rejected as unfit to travel.
- c) Animals that are unfit to travel include, but may not be limited to:
  - i) those that are sick, injured, weak, disabled or fatigued;
  - ii) those that are unable to stand unaided and bear weight on each leg;
  - iii) those that are blind in both eyes;

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- iv) those that cannot be moved without causing them additional suffering;
  - v) newborn with an unhealed navel;
  - vi) pregnant animals which would be in the final 10% of their gestation period at the planned time of *unloading*;
  - vii) females travelling without young which have given birth within the previous 48 hours;
  - viii) those whose body condition would result in poor welfare because of the expected climatic conditions.
- d) Risks during transport can be reduced by selecting animals best suited to the conditions of travel and those that are acclimatised to expected weather conditions.
- e) Animals ~~'at risk'~~ at particular risk of suffering poor welfare during transport and which require special conditions (such as in the design of facilities and *vehicles*, and the length of the *journey*) and additional attention during transport, may include:
- i) large or obese individuals;
  - ii) very young or old animals;
  - iii) excitable or aggressive animals;
  - iv) animals which have had little contact with humans;
  - v) animal subject to motion sickness;
  - vi) females in late pregnancy or heavy lactation, dam and offspring;
  - vii) animals with a history of exposure to stressors or pathogenic agents prior to transport.

4. Specific species requirements

Transport procedures should be able to take account of variations in the behaviour of the species. Flight zones, social interactions and other behaviour vary significantly among species and even within species. Facilities and handling procedures that are successful with one species are often ineffective or dangerous with another.

Recommendations for specific species are described in detail in Article 3.7.3.11.

Article 3.7.3.7.

**Loading**1. Competent supervision

- a) *Loading* should be carefully planned as it has the potential to be the cause of poor welfare in transported animals.

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- b) *Loading* should be supervised by a veterinarian or an accredited animal handler and/or conducted by accredited animal handlers or animal handlers. ~~These animal handlers should ensure that~~ The animals are to be loaded quietly and without unnecessary noise, harassment or force, ~~and that~~ Untrained assistants or spectators do not impede the process.
- c) In cases where animals are loaded onto individual trucks on a farm, the animal owner is responsible for ensuring the presence of a loading supervisor who is competent in the issues in animal welfare.
- d) When *containers* are loaded onto a *vehicle*, this should be carried out in such a way to avoid poor animal welfare.

2. Facilities

- a) The facilities for *loading* including the collecting area, races and loading ramps should be designed and constructed to take into account the needs and abilities of the animals with regard to dimensions, slopes, surfaces, absence of sharp projections, flooring, etc.
- b) *Loading* facilities should be properly illuminated to allow the animals to be observed by the accredited animal handlers and/or animal handler(s), and to allow the animals' ease of movement of the animals at all times. Facilities should provide uniform light levels directly over approaches to sorting pens, chutes, loading ramps, with brighter light levels inside *vehicles/containers*, in order to minimise baulking. Dim light levels may be advantageous for the catching of poultry and some other animals. Artificial lighting may be required.
- c) Ventilation during *loading* and the *journey* should provide for fresh air, the removal of excessive heat, humidity and noxious fumes (such as ammonia and carbon monoxide), and the prevention of accumulations of ammonia and carbon dioxide. Under warm and hot conditions, ventilation should allow for the adequate convective cooling of each animal. In some instances, adequate ventilation can be achieved by increasing the *space allowance* for animals.

3. Goads and other aids

The following principles should apply:

- a) ~~Animals which have little or no room to move should not be subjected to physical force or goads and other aids which compel movement.~~
- b) ~~Useful and permitted aids include panels, flags, plastic paddles, flappers (a length of cane with a short strap of leather or canvas attached), plastic bags and metallic rattles; they should be used in a manner sufficient to encourage and direct movement of the animals.~~
- e) ~~Painful procedures (including whipping, tail twisting, use of nose twitches, pressure on eyes, ears or external genitalia), or the use of unsuitable goads or other aids (including sticks with sharp ends, lengths of metal piping, fencing wire or heavy leather belts), should not be used to move animals.~~
- d) ~~The use of goads which administer electric shocks should be discouraged, and restricted to that necessary to assist movement of the animal. Such use should be limited to battery-powered goads on the hindquarters of adult pigs and cattle, and never on sensitive areas such as the eyes, mouth, ears, anogenital region or belly. Such instruments should not be used on other animals.~~

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## Appendix E (contd)

- e) ~~The use of well trained dogs to help with the *loading* of some species may be acceptable.~~
- f) ~~The throwing or dropping of animals, or their lifting or dragging by body parts such as their tail, head, horns, ears, limbs, wool, hair or feathers, should not be permitted. The manual lifting of small animals is permissible.~~
- g) ~~Shouting or yelling at animals or making loud noises e.g. through the cracking of whips to encourage them to move should not occur, as such actions may make the animals agitated, leading to crowding or falling.~~
- a) Animals that have little or no room to move should not be subjected to physical force or goads and other aids which compel movement. Electric goads and prods should only be used in extreme cases and not on a routine basis to move animals. The use and the power output should be restricted to that necessary to assist movement of an animal and only when an animal has a clear path ahead to move. Goads and other aids should not be used repeatedly if the animal fails to respond or move. In such cases it should be investigated whether some physical or other impediment is preventing the animal from moving.
- b) The use of such devices should be limited to battery-powered goads on the hindquarters of pigs and large ruminants, and never on sensitive areas such as the eyes, mouth, ears, anogenital region or belly. Such instruments should not be used on horses, sheep and goats of any age, or on calves or piglets.
- c) Useful and permitted goads include panels, flags, plastic paddles, flappers (a length of cane with a short strap of leather or canvas attached), plastic bags and metallic rattles; they should be used in a manner sufficient to encourage and direct movement of the animals without causing undue stress.
- d) Painful procedures (including whipping, tail twisting, use of nose twitches, pressure on eyes, ears or external genitalia), or the use of goads or other aids which cause pain and suffering (including large sticks, sticks with sharp ends, lengths of metal piping, fencing wire or heavy leather belts), should not be used to move animals.
- e) Shouting or yelling at animals or making loud noises (e.g., through the cracking of whips) to encourage them to move should not occur, as such actions may make the animals agitated, leading to crowding or falling.
- f) The use of well trained dogs to help with the *loading* of some species may be acceptable.
- g) Animals should be grasped or lifted in a manner which avoids pain or suffering and physical damage (e.g. bruising, fractures, dislocations). In the case of quadrupeds, manual lifting by a person should only be used in young animals or small species, and in a manner appropriate to the species; grasping or lifting such animals only by their wool, hair, feathers, feet, neck, ears, tails, head, horns, limbs causing pain or suffering should not be permitted, except in an emergency where animal welfare or human safety may otherwise be compromised.
- h) Conscious animals should not be thrown, dragged or dropped.
- i) Performance standards should be established in which numerical scoring is used to evaluate the use of such instruments, and to measure the percentage of animals moved with an electric instrument and the percentage of animals slipping or falling as a result of their usage.

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## Article 3.7.3.8.

**Travel**1. General considerations

- a) ~~*Accredited animal handlers/animal handlers and/or*~~ drivers should check the load immediately before departure to ensure that the animals have been properly loaded. ~~Early in the trip, the *accredited animal handler/animal handler* or the driver should check the animals again and make appropriate adjustments if necessary. Each load should be checked again early in the trip and adjustments made as appropriate. From then on, periodic checks should be made by the *accredited animal handler/animal handler* or the driver throughout the trip. Periodic checks should be made throughout the trip.~~
- b) Drivers should utilise smooth, defensive driving techniques, without sudden turns or stops, to minimise uncontrolled movements of the animals.

2. Methods of restraining or containing animals

- a) Methods of restraining animals should be appropriate to the species and age of animals involved and the training of the individual animal.
- b) Recommendations for specific species are described in detail in Article 3.7.3.11.

3. Regulating the environment within vehicles or containers

- a) Animals should be protected against harm from hot or cold conditions during travel. Effective ventilation procedures for maintaining the animals' environment within *vehicles* or *containers* will vary according to whether conditions are cold, hot and dry or hot and humid, but in all conditions a build-up of noxious gases should be prevented. Specific temperature and humidity parameters are described in detail in Appendix X.X.X.
- b) The animals' environment within *vehicles* or *containers* in hot and warm weather can be regulated by the flow of air produced by the movement of the *vehicle*. In warm and hot weather, the duration of *journey* stops should be minimised and *vehicles* should be parked under shade, with adequate and appropriate ventilation.
- c) To minimise slipping and soiling, and maintain a healthy environment, urine and faeces should be removed from floors when necessary and disposed of in such a way as to prevent the transmission of disease and in compliance with all relevant health and environmental legislation.

4. Sick, injured ~~and~~ or dead animals

- a) ~~A driver or~~ *Accredited animal handler/animal handler* ~~or the driver~~ finding sick, injured or dead animals should act according to a predetermined emergency response plan.
- b) ~~If possible,~~ Sick or injured animals should be segregated.
- c) Ferries (roll-on roll-off) should have procedures to treat sick or injured animals during the *journey*.

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- d) In order to reduce the likelihood that animal transport will increase the spread of infectious disease, contact between transported animals, or the waste products of the transported animals, and other farm animals should be minimised.
  - e) During the *journey*, when disposal of a dead animal becomes necessary, this should be carried out in such a way as to prevent the transmission of disease and in compliance with all relevant health and environmental legislation.
  - f) When euthanasia is necessary, ~~the driver or~~ accredited animal handler/ animal handler or the driver should ensure that it is carried out as quickly as possible and assistance should be sought from a ~~veterinarian or other person(s)~~ an accredited animal handler competent in ~~humane~~ euthanasia procedures. Recommendations for specific species are described in Appendix 3.7.6. on killing of animals for disease control purposes.
5. Water and feed requirements
- a) If *journey* duration is such that feeding or watering is required or if the species requires feed or water throughout, access to suitable feed and water for all the animals (appropriate for their species and age) carried in the *vehicle* should be provided. There should be adequate space for all animals to move to the feed and water sources and due account taken of likely competition for feed.
  - b) Recommendations for specific species are described in detail in Article 3.7.3.11.
6. Rest periods and conditions including hygiene
- a) Animals that are being transported should be rested at appropriate intervals during the *journey* and offered feed and water, either on the *vehicle* or, if necessary, unloaded into suitable facilities.
  - b) Suitable facilities should be used en route, when resting requires the *unloading* of the animals. These facilities should meet the needs of the particular animal species and should allow access of all animals to feed and water.
7. In-transit observations
- a) Animals being transported by road should be observed soon after a *journey* is commenced and whenever the driver has a rest stop (with a maximum interval of 5 hours). After meal breaks and refuelling stops, the animals should be observed immediately prior to departure.
  - b) Animals being transported by rail should be observed at each scheduled stop nearest to 5 hours since the last observation. The responsible rail transporter should monitor the progress of trains carrying animals and take all appropriate action to minimise delays.
  - c) During stops, it should be ensured that the animals continue to be properly confined, have appropriate feed and water, and their physical condition is satisfactory.

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## Article 3.7.3.9.

**Unloading and post-journey handling**1. General considerations

- a) The required facilities and the principles of animal handling detailed in Article 3.7.3.7. apply equally to *unloading*, but consideration should be given to the likelihood that the animals will be fatigued.
- b) *Unloading* should be supervised ~~and/or~~ by a veterinarian or an accredited animal handler and conducted by ~~an accredited animal handlers~~ or animal handlers with knowledge and experience of the behavioural and physical characteristics of the species being unloaded. Animals should be unloaded from the *vehicle* into appropriate facilities as soon as possible after arrival at the destination but sufficient time should be allowed for *unloading* to proceed quietly and without unnecessary noise, harassment or force.
- c) Facilities should provide all animals with appropriate care and comfort, adequate space and ventilation, access to feed (if appropriate) and water, and shelter from extreme weather conditions.
- d) For details regarding the *unloading* of animals at a *slaughterhouse*, see Appendix 3.7.5. on slaughter of animals for human consumption.

2. Sick ~~and~~ or injured animals

- a) An animal that has become sick, injured or disabled during a *journey* should be appropriately treated or ~~humanely killed~~ ethanized by a veterinarian or an accredited animal handler (see Appendix 3.7.6. on killing of animals for disease control purposes). ~~When~~ If necessary, veterinary advice should be sought in the care and treatment of these animals. In some cases, where animals are non-ambulatory due to fatigue, injury or sickness, it may be in the best welfare interests of the animal to be treated or euthanased aboard the *vehicle*.
- b) At the destination, *the animal handler* or the driver during transit should ensure that responsibility for the welfare of sick, injured or disabled animals is transferred to a ~~suitable person~~ veterinarian or an accredited animal handler.
- c) If treatment or euthanasia is not possible aboard the vehicle, there should be appropriate facilities and equipment for the humane *unloading* of animals that are non-ambulatory due to fatigue, injury or sickness. These animals should be unloaded in a manner that causes the least amount of suffering. After *unloading*, separate pens and other appropriate facilities should be available for sick or injured animals.
- d) Feed, if appropriate, and water should be available for each sick or injured animal.

3. Addressing disease risks

The following should be taken into account in addressing the greater risk of disease due to animal transport and the possible need for segregation of transported animals at the destination:

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- a) increased contact among animals, including those from different sources and with different disease histories;
  - b) increased shedding of pathogens and increased susceptibility to infection related to stress and impaired defences against disease, including immunosuppression;
  - c) exposure of animals to pathogens which may contaminate *vehicles, resting points, markets*, etc.
4. Cleaning and disinfection
- a) *Vehicles, crates, containers*, etc. used to carry the animals should be cleaned before re-use through the physical removal of manure and bedding by scraping, washing and flushing ~~vehicles and containers~~ with water and detergent. This should be followed by *disinfection* when there are concerns about disease transmission.
  - b) Manure, litter, bedding and the bodies of any animals which die during the *journey* should be disposed of in such a way as to prevent the transmission of disease and in compliance with all relevant health and environmental legislation.
  - c) Establishments like livestock *markets, slaughterhouses, resting sites*, railway stations, etc. where animals are unloaded should be provided with appropriate areas for the cleaning and *disinfection of vehicles*.
  - d) Where *disinfestation* is necessary, it should be carried out with the minimum stress to the animals.

Article 3.7.3.10.

**Actions in the event of a refusal to allow the completion of the journey**

1. The welfare of the animals should be the first consideration in the event of a refusal to allow the completion of the *journey*.
2. When the animals have been refused import, the *Competent Authority* of ~~that~~ the importing country should make available suitable isolation facilities to allow the *unloading* of animals from a *vehicle* and their secure holding, without posing a risk to the health of national herd or flock, pending resolution of the situation. In this situation, the priorities should be:
  - a) The *Competent Authority* of the *importing country* should provide urgently in writing the reasons for the refusal.
  - b) In the event of a refusal for animal health reasons, the *Competent Authority* of the *importing country* should provide urgent access to a *veterinarian*, where possible an OIE *veterinarian(s)* appointed by the Director General, to assess the ~~animals'~~ animals' health status of the animals with regard to the concerns of the importing country's concerns, and the necessary facilities and approvals to expedite the required diagnostic testing.
  - c) The *Competent Authority* of the *importing country* should provide access to allow continued assessment of the health and other aspects of the welfare of the animals.
  - d) If the matter cannot be promptly resolved, the *Competent Authorities* of the *exporting and importing countries* should call on the OIE to mediate.

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3. In the event that a *Competent Authority* requires the animals to remain on the *vehicle*, the priorities should be:
  - a) The *Competent Authority* should allow reprovisioning of the *vehicle* with water and feed as necessary.
  - b) The *Competent Authority* should provide urgently in writing the reasons for the refusal.
  - c) In the event of a refusal for animal health reasons, the *Competent Authority* should provide urgent access to an independent *veterinarian(s)* to assess the ~~animals'~~ health status of the animals, and the necessary facilities and approvals to expedite the required diagnostic testing.
  - d) The *Competent Authority* should provide access to allow continued assessment of the health and other aspects of the welfare of the animals, and the necessary actions to deal with any animal issues which arise.
4. The OIE should utilise its dispute settlement mechanism to identify a mutually agreed solution which will address animal health and any other welfare issues in a timely manner.

Article 3.7.3.11.

**Species specific issues**

(To be developed)

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 — text deleted

## APPENDIX 3.7.5.

### GUIDELINES FOR THE SLAUGHTER OF ANIMALS

#### Article 3.7.5.1.

#### General principles

##### 1. Object

These guidelines address the need to ensure the welfare of food animals during pre-*slaughter* and *slaughter* processes, until they are dead.

These guidelines apply to the *slaughter* in *slaughterhouses* of the following domestic animals: cattle, buffalo, sheep, goats, deer, horses, pigs, ratites and poultry. Other animals, wherever they have been reared, and all animals slaughtered outside *slaughterhouses* should be managed to ensure that their *transport*, ~~lairaging~~ lairage, *restraint* and *slaughter* is carried out without causing undue stress to the animals; the principles underpinning these guidelines apply also to these animals.

##### 2. Personnel

Persons engaged in the *unloading*, moving, ~~lairaging~~ lairage, care, ~~restraining~~ restraint, *stunning*, *slaughter* and bleeding of animals play an important role in the welfare of those animals. For this reason, there should be a sufficient number of personnel, who should be patient, considerate, competent and familiar with the guidelines outlined in the present Appendix and their application within the national context.

Competence may be gained through formal training and/or practical experience. This competence should be demonstrated through a current certificate from the *Competent Authority* or from an independent body accredited by the *Competent Authority*.

The management of the *slaughterhouse* and the *Veterinary Services* should ensure that *slaughterhouse* staff are competent and carry out their tasks in accordance with the principles of animal welfare.

~~The management of the slaughterhouse and the Veterinary Services should ensure that slaughterhouse staff carry out their tasks in accordance with the principles of animal welfare.~~

##### 3. Animal behaviour

Accredited animal handlers and *animal handlers* should be experienced and competent in handling and moving farm livestock and understand the behaviour patterns of animals and the underlying principles necessary to carry out their tasks.

The behaviour of individual animals or groups of animals will vary, depending on their breed, sex, temperament and age and the way in which they have been reared and handled. Despite these differences, the following behaviour patterns which are always present to some degree in domestic animals, should be taken into consideration in handling and moving the animals.

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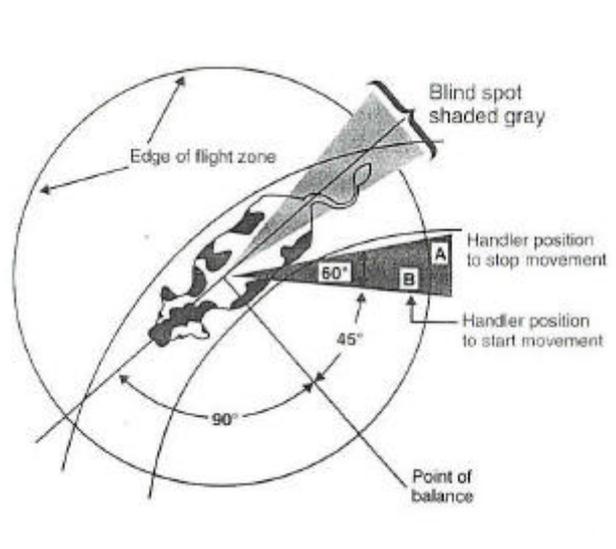
Most domestic livestock are kept in herds and follow a leader by instinct.

Animals which are likely to be hostile to each other in a group situation should not be mixed at *slaughterhouses*.

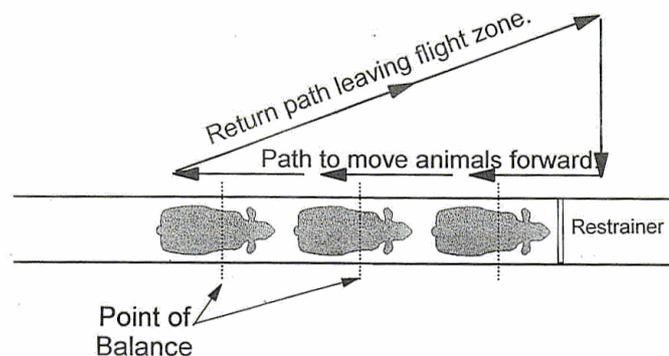
The desire of some animals to control their personal space should be taken into account in designing facilities.

Domestic animals will try to escape if ~~animal handler~~ any person approaches closer than a certain distance. This critical distance, which defines the flight zone, varies among species and individuals of the same species, and depends upon previous contact with humans. Animals reared in close proximity to humans (i.e., tame) have a ~~small~~ smaller flight zone, whereas those kept in free range or extensive systems may have flight zones which may vary from one metre to many metres. Accredited animal handlers and/or animal handlers should avoid sudden penetration of the flight zone which may cause a panic reaction which could lead to aggression or attempted escape.

**An example of a flight zone (cattle)**



**Animal handler movement pattern to move cattle forward**



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

Domestic animals have wide-angle vision but only have limited forward binocular vision and poor perception of depth. This means that they can detect objects and movements beside and behind them, but can only judge distances directly ahead.

Although all domestic animals have a highly sensitive sense of smell, they react in different ways to the smells of *slaughterhouses*. Smells which cause fear or other negative responses should be taken into consideration when managing animals.

Domestic animals can hear over a greater range of frequencies than humans and are more sensitive to higher frequencies. They tend to be alarmed by constant loud noise and by sudden noises, which may cause them to panic. Sensitivity to such noises should also be taken into account when handling animals.

#### 4. Distractions and their removal

Distractions that may cause approaching animals to stop, baulk or turn back should be designed out from new facilities or removed from existing ones. Below are examples of common distractions and methods for eliminating them:

- a) reflections on shiny metal or wet floors - move a lamp or change lighting;
- b) dark entrances to chutes, races, stun boxes or conveyor restrainers - illuminate with indirect lighting which does not shine directly into the eyes of approaching animals;
- c) animals seeing moving people or equipment up ahead - install solid sides on chutes and races or install shields;
- d) chains or other loose objects hanging in chutes or on fences - remove them;
- e) uneven floors or a sudden drop in floor levels at the entrance to conveyor restrainers – avoid uneven floor surfaces or install a solid false floor under the restrainer to provide an illusion of a solid and continuous walking surface;
- f) sounds of air hissing from pneumatic equipment - install silencers or use hydraulic equipment or vent high pressure to the external environment using flexible hosing;
- g) clanging and banging of metal objects - install rubber stops on gates and other devices to reduce metal to metal contact;
- h) air currents from fans or air curtains blowing into the face of animals - redirect or reposition equipment.

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## Article 3.7.5.2.

**Moving and handling animals**1. General considerations

Animals should be transported to *slaughter* in a way that minimises adverse animal health and welfare outcomes, and the transport should be conducted in accordance with the OIE guidelines for the transportation of animals (~~Chapters~~ Appendices 3.7.2 and 3.7.3).

The following principles should apply to *unloading* animals, moving them into *lairage* pens, out of the *lairage* pens and up to the *slaughter* point:

- a) The conditions of the animals should be assessed upon their arrival for any animal welfare and health problems.
- b) Injured or sick animals, requiring immediate *slaughter*, should be killed humanely, preferably at the site where they are found in accordance with the OIE guidelines for the killing of animals for disease control purposes (~~Chapter~~ Appendix 3.7.6).
- ~~e) The use of force on animals that have little or no room to move should not occur.~~
- ~~d) The use of instruments which administer electric shocks (e.g., goads and prods) and their power output should be restricted to that necessary to assist movement of an animal and only when an animal has a clear path ahead to move. If such use is necessary, it should be limited to the hindquarters of pigs and large ruminants, and never on sensitive areas such as the eyes, mouth, ears, anogenital region or belly. Such instruments should not be used on horses, sheep and goats of any age, or on calves or piglets, nor on animals that have little or no room to move.~~
- ~~e) Performance standards should be established in which numerical scoring is used to evaluate the use of such instruments, and to measure the percentage of animals moved with an electric instrument and the percentage of animals slipping or falling at a point in the slaughterhouse; the slaughterhouse should be investigated for faults in flooring, raceway design, lighting or handling, and these should be rectified to enable free movement of the animals without the need to use such instruments.~~
- ~~f) Aids for moving animals such as panels, flags, plastic paddles, flappers (a length of cane with a short strap of leather or canvas attached), plastic bags and metallic rattles should be used in a manner sufficient to encourage and direct movement of the animals.~~
- ~~g) Shouting or yelling at animals or making loud noises e.g. through the cracking of whips to encourage them to move should not occur as such actions may make the animals agitated, leading to crowding or falling.~~
- ~~h) Implements which cause pain and suffering such as large sticks, sticks with sharp ends, metal piping, fencing wire or heavy leather belts should not be used to move animals.~~

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## Appendix F (contd)

- ~~i) Animals should be grasped or lifted in a manner which avoids pain or suffering and physical damage (e.g. bruising, fractures, dislocations). In the case of quadrupeds, manual lifting by a person should only be used in young animals or small species, and in a manner appropriate to the species; grasping or lifting such animals only by their wool, hair, feet, neck, ears or tails causing pain or suffering should not be permitted, except in an emergency where animal welfare or human safety may otherwise be compromised.~~
- ~~ii) Conscious animals should not be thrown or dragged.~~
- ~~k) Animals should not be forced to move at a speed greater than their normal walking pace, in order to minimise injury through falling or slipping. Performance standards should be established where numerical scoring of the prevalence of animals slipping or falling is used to evaluate whether animal moving practices and/or facilities should be improved. In properly designed and constructed facilities with competent *animal handlers*, it should be possible to move 99% of animals without their falling.~~
- ~~l) Animals for slaughter should not be forced to walk over the top of other animals.~~
- ~~m) Animals should be handled in such a way as to avoid harm, distress or injury. Under no circumstances should *animal handlers* resort to violent acts to move animals, such as crushing or breaking animals' tails, grasping animals' eyes or pulling them by their ears. *animal handlers* should never apply an injurious object or irritant substance to animals and especially not to sensitive areas such as eyes, mouth, ears, anogenital region or belly. The throwing or dropping of animals, or their lifting or dragging by body parts such as their tail, head, horns, ears, limbs, wool, hair or feathers, should not be permitted. The manual lifting of small animals is permissible.~~
- c) Animals should not be forced to move at a speed greater than their normal walking pace, in order to minimise injury through falling or slipping. Performance standards should be established where numerical scoring of the prevalence of animals slipping or falling is used to evaluate whether animal moving practices and/or facilities should be improved. In properly designed and constructed facilities with competent *accredited animal handlers* or *animal handlers*, it should be possible to move 99% of animals without their falling.
- d) Animals for slaughter should not be forced to walk over the top of other animals.
- e) Animals should be handled in such a way as to avoid harm, distress or injury. Under no circumstances should *accredited animal handlers* or *animal handlers* resort to violent acts to move animals, such as crushing or breaking tails of animals, grasping their eyes or pulling them by the ears. *Accredited animal handlers* and *animal handlers* should never apply an injurious object or irritant substance to animals and especially not to sensitive areas such as eyes, mouth, ears, anogenital region or belly. The throwing or dropping of animals, or their lifting or dragging by body parts such as their tail, head, horns, ears, limbs, wool, hair or feathers, should not be permitted. The manual lifting of small animals is permissible.
- f) When using goads and other aids, the following principles should apply:
  - i) Animals that have little or no room to move should not be subjected to physical force or goads and other aids which compel movement. Electric goads and prods should only be used in extreme cases and not on a routine basis to move animals. The use and the power output should be restricted to that necessary to assist movement of an animal and only when an animal has a clear path ahead to move. Goads and other aids should not be used repeatedly if the animal fails to respond or move. In such cases it should be investigated whether some physical or other impediment is preventing the animal from moving.

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- ii) The use of such devices should be limited to battery-powered goads on the hindquarters of pigs and large ruminants, and never on sensitive areas such as the eyes, mouth, ears, anogenital region or belly. Such instruments should not be used on horses, sheep and goats of any age, or on calves or piglets.
  - iii) Useful and permitted goads include panels, flags, plastic paddles, flappers (a length of cane with a short strap of leather or canvas attached), plastic bags and metallic rattles; they should be used in a manner sufficient to encourage and direct movement of the animals without causing undue stress;
  - iv) Painful procedures (including whipping, tail twisting, use of nose twitches, pressure on eyes, ears or external genitalia), or the use of goads or other aids which cause pain and suffering (including large sticks, sticks with sharp ends, lengths of metal piping, fencing wire or heavy leather belts), should not be used to move animals.
  - v) Shouting or yelling at animals or making loud noises (e.g. through the cracking of whips) to encourage them to move should not occur, as such actions may make the animals agitated, leading to crowding or falling.
  - vi) Animals should be grasped or lifted in a manner which avoids pain or suffering and physical damage (e.g. bruising, fractures, dislocations). In the case of quadrupeds, manual lifting by a person should only be used in young animals or small species, and in a manner appropriate to the species; grasping or lifting such animals only by their wool, hair, feathers, feet, neck, ears, tails, head, horns, limbs causing pain or suffering should not be permitted, except in an emergency where animal welfare or human safety may otherwise be compromised.
  - vii) Conscious animals should not be thrown, dragged or dropped.
  - viii) Performance standards should be established in which numerical scoring is used to evaluate the use of such instruments, and to measure the percentage of animals moved with an electric instrument and the percentage of animals slipping or falling at a point in the slaughterhouse; the slaughterhouse should be investigated for faults in flooring, raceway design, lighting or handling, and these should be rectified to enable free movement of the animals without the need to use such instruments.
2. Provisions relevant to animals delivered in containers
- a) Containers in which animals are transported should be handled with care, and should not be thrown, dropped or knocked over. Where possible, they should be horizontal while being loaded and unloaded mechanically, and stacked to ensure ventilation. In any case they should be moved and stored in an upright position as indicated by specific marks.
  - b) Animals delivered in *containers* with perforated or flexible bottoms should be unloaded with particular care in order to avoid injury. Where appropriate, animals should be unloaded from the *containers* individually.
  - c) Animals which have been transported in *containers* should be slaughtered as soon as possible; mammals and ratites which are not taken directly upon arrival to the place of slaughter should have drinking water available to them from appropriate facilities at all times. Delivery of poultry for slaughter should be scheduled such that they are not deprived of water at the premises for longer than 12 hours. Animals which have not been slaughtered within 12 hours of their arrival should be fed, and should subsequently be given moderate amounts of food at appropriate intervals.

### 3. Provisions relevant to restraining and containing animals

- a) Provisions relevant to restraining animals for *stunning* or slaughter without *stunning*, to help maintain animal welfare, include:
  - i) provision of a non-slip floor;
  - ii) avoidance of excessive pressure applied by restraining equipment that causes struggling or vocalisation in animals;
  - iii) equipment engineered to reduce noise of air hissing and clanging metal;
  - iv) absence of sharp edges in restraining equipment that would harm animals;
  - v) avoidance of jerking or sudden movement of restraining device.
- b) Methods of *restraint* causing avoidable suffering ~~such as the following~~ should not be used in conscious animals because they cause severe pain and stress, such as the following:
  - i) suspending or hoisting animals (other than poultry) by the feet or legs;
  - ii) indiscriminate and inappropriate use of *stunning* equipment;
  - iii) mechanical clamping of ~~an animal's~~ the legs or feet of the animals (other than shackles used in poultry and ostriches) as the sole method of *restraint*;
  - iv) breaking legs, cutting leg tendons or blinding animals in order to immobilise them;
  - v) severing the spinal cord, for example using a puntilla or dagger, to immobilise animals; using electric currents to immobilise animals, except for proper *stunning*.

Article 3.7.5.3.

## **Lairage design and construction**

### 1. General considerations

The *lairage* should be designed and constructed to hold an appropriate number of animals in relation to the throughput rate of the *slaughterhouse* without compromising the welfare of the animals.

In order to permit operations to be conducted as smoothly and efficiently as possible without injury or undue stress to the animals, the *lairage areas* should be designed and constructed so as to allow the animals to move freely in the required direction, using their behavioural characteristics and without undue penetration of their flight ~~zone~~ zone.

The following guidelines may help to achieve this.

### 2. Design of lairages

- a) The *lairage* should be designed to allow a one-way flow of animals from *unloading* to the point of *slaughter*, with a minimum number of abrupt corners to negotiate.

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- b) In red meat *slaughterhouses*, pens, passageways and races should be arranged in such a way as to permit inspection of animals at any time, and to permit the removal of sick or injured animals when considered to be appropriate, for which separate appropriate accommodation should be provided.
- c) Each animal should have room to stand up and lie down and, when confined in a pen, to turn around, except where the animal is reasonably restrained for safety reasons (e.g. fractious bulls). The *lairage* should have sufficient accommodation for the number of animals intended to be held. Drinking water should always be available to the animals, and the method of delivery should be appropriate to the type of animal held. Troughs should be designed and installed in such a way as to minimise the risk of fouling by faeces, without introducing risk of bruising and injury in animals, and should not hinder the movement of animals.
- d) Holding pens should be designed to allow as many animals as possible to stand or lie down against a wall. Where feed troughs are provided, they should be sufficient in number and feeding space to allow adequate access of all animals to feed. The feed trough should not hinder the movement of animals.
- e) Where tethers, ties or individual stalls are used, these should be designed so as not to cause injury or distress to the animals and should also allow the animals to stand, lie down and access any food or water that may need to be provided.
- f) Passageways and races should be either straight or consistently curved, as appropriate to the animal species. Passageways and races should have solid sides, but when there is a double race, the shared partition should allow adjacent animals to see each other. For pigs and sheep, passageways should be wide enough to enable two or more animals to walk side by side for as long as possible. At the point where passageways are reduced in width, this should be done by a means which prevents excessive bunching of the animals.
- g) Accredited animal handlers and animal handlers should be positioned alongside races and passageways on the inside radius of any curve, to take advantage of the natural tendency of animals to circle an intruder. Where one-way gates are used, they should be of a design which avoids bruising. Races should be horizontal but where there is a slope, they should be constructed to allow the free movement of animals without injury.
- h) There should be a waiting pen, with a level floor and solid sides, between the holding pens and the race leading to the point of *stunning* or *slaughter*, to ensure a steady supply of animals for *stunning* or *slaughter* and to avoid having accredited animal handlers or animal handlers trying to rush animals from the holding pens. The waiting pen should preferably be circular, but in any case, so designed that animals cannot be trapped or trampled.
- i) Ramps or lifts should be used for *loading* and *unloading* of animals where there is a difference in height or a gap between the floor of the *vehicle* and the unloading area. Unloading ramps should be designed and constructed so as to permit animals to be unloaded from *vehicles* on the level or at the minimum gradient achievable. Lateral side protection should be available to prevent animals escaping or falling. They should be well drained, with secure footholds and adjustable to facilitate easy movement of animals without causing distress or injury.

### 3. Construction of lairages

- a) *Lairages* should be constructed and maintained so as to provide protection from unfavourable climatic conditions, using strong and resistant materials such as concrete and metal which has been treated to prevent corrosion. Surfaces should be easy to clean. There should be no sharp edges or protuberances which may injure the animals.
- b) Floors should be well drained and not slippery; they should not cause injury to the ~~animals'~~ feet of the animals. Where necessary, floors should be insulated or provided with appropriate bedding. Drainage grids should be placed at the sides of pens and passageways and not where animals would have to cross them. Discontinuities or changes in floor patterns or texture which could cause baulking in the movement of animals should be avoided.
- c) *Lairages* should be provided with adequate lighting, but care should be taken to avoid harsh lights and shadows, which frighten the animals or affect their movement. The fact that animals will move more readily from a darker area into a well-lit area might be exploited by providing for lighting that can be regulated accordingly.
- d) *Lairages* should be adequately ventilated to ensure that waste gases (e.g. ammonia) do not build up and that draughts at animal height are minimised. Ventilation should be able to cope with the range of expected climatic conditions and the number of animals the *lairage* will be expected to hold.
- e) Care should be taken to protect the animals from excessively or potentially disturbing noises, for example by avoiding the use of noisy hydraulic or pneumatic equipment, and muffling noisy metal equipment by the use of suitable padding, or by minimising the transmission of such noise to the areas where animals are held and slaughtered.
- f) Where animals are kept in outdoor *lairages* without natural shelter or shade, they should be protected from the effects of adverse weather conditions.

Article 3.7.5.4.

### **Care of animals in lairages**

Animals in *lairages* should be cared for in accordance with the following guidelines:

1. As far as possible, established groups of animals should be kept together. Each animal should have enough space to stand up, lie down and turn around. Animals hostile to each other should be separated.
2. Where tethers, ties or individual stalls are used, they should allow animals to stand up and lie down without causing injury or distress.
3. Where bedding is provided, it should be maintained in a condition that minimises risks to the health and safety of the animals, and sufficient bedding should be used so that animals do not become soiled with manure.
4. Animals should be kept securely in the *lairage*, and care should be taken to prevent them from escaping and from predators.

Appendix XXVII (contd)Appendix F (contd)

5. Suitable drinking water should be available to the animals on their arrival and at all times to animals in *lairages* unless they are to be slaughtered without delay.
6. If animals are not to be slaughtered as soon as possible, suitable feed should be available to the animals on arrival and at intervals appropriate to the species. Unweaned animals should be slaughtered as soon as possible.
7. In order to prevent heat stress, animals subjected to high temperatures, particularly pigs and poultry, should be cooled by the use of water sprays, fans or other suitable means. However, the potential for water sprays to reduce the ability of animals to thermoregulate (especially poultry) should be considered in any decision to use water sprays. The risk of animals being exposed to very cold temperatures or sudden extreme temperature changes should also be considered.
8. The *lairage* area should be well lit in order to enable the animals to see clearly without being dazzled. During the night, the lights should be dimmed. Lighting should also be adequate to permit inspection of all animals. Subdued lighting, and for example, blue light may be useful in poultry *lairages* in helping to calm birds.
9. The condition and state of health of the animals in a *lairage* should be inspected at least every morning and evening by a *veterinarian* or, under the ~~latter's~~ *veterinarian's* responsibility, by another competent person, such as an accredited animal handler or an animal handler. Animals which are sick, weak, injured or showing visible signs of distress should be separated, and veterinary advice should be sought immediately regarding treatment or euthanasia. ~~and treated or humanely killed immediately.~~
10. Lactating dairy animals should be slaughtered as soon as possible. Dairy animals with obvious udder distension should be milked to minimise udder discomfort.
11. Animals which have given birth during the *journey* or in the *lairage* should be slaughtered as soon as possible or provided with conditions which are appropriate for suckling, for ~~its~~ their welfare and the welfare of the newborn. Under normal circumstances, animals which are expected to give birth during a *journey* should not be transported.
12. Animals with horns, antlers or tusks capable of injuring other animals, if aggressive, should be penned separately.

Recommendations for specific species are described in detail in Articles 3.7.5.5. to 3.7.5.8.

Article 3.7.5.5.  
(under study)

### **Management of foetuses during slaughter of pregnant animals**

~~The welfare of foetuses during slaughter of pregnant animals needs to be safeguarded.~~

Under normal circumstances, pregnant animals which would be in the final 10% of their gestation period at the planned time of *unloading at the slaughterhouse* should neither be transported nor slaughtered. ~~When~~ If such an event occurs, an accredited animal handler or an animal handler should ensure that females are handled separately and the specific procedures described below are applied. In all cases, the welfare of foetuses and dams during slaughter should be safeguarded.

Appendix XXVII (contd)Appendix F (contd)

1. Foetuses should not be removed from the uterus sooner than five minutes after the maternal neck or chest cut, to ensure absence of consciousness. A foetal heartbeat will usually still be present and foetal movements may occur at this stage, but these are only a cause for concern if the exposed foetus successfully breathes air.
2. If a live mature foetus is removed from the uterus, it should be prevented from inflating its lungs and breathing air (e.g., by clamping the trachea).
3. When uterine, placental or foetal tissues, including foetal blood, are not to be collected as part of the post-slaughter processing of pregnant animals, all foetuses should be left inside the unopened uterus until they are dead. When uterine, placental or foetal tissues are to be collected, where practical, foetuses should not be removed from the uterus until at least 15-20 minutes after the maternal neck or chest cut.
4. If there is any doubt about consciousness, the foetus should be killed with a captive bolt of appropriate size or a blow to the head with a suitable blunt instrument.

The above guidelines do not refer to foetal rescue. Foetal rescue, the practice of attempting to revive foetuses found alive at evisceration of the dam, should not be attempted during normal commercial slaughter as it may lead to serious welfare complications in the newborn animal. These include impaired brain function resulting from oxygen shortage before rescue is completed, compromised breathing and body heat production because of foetal immaturity, and an increased incidence of infections due to a lack of colostrum.

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Article 3.7.5.6.

**Summary of ~~acceptable~~ handling and restraining methods and the associated animal welfare issues**

	<b>Presentation of animals</b>	<b>Specific procedure</b>	<b>Specific purpose</b>	<b>AW concerns/implications</b>	<b>Key AW requirements</b>	<b>Applicable species</b>
No restraint	Animals are grouped	Group container	Gas stunning	Specific procedure is suitable only for gas stunning	<del>Competent</del> <u>Accredited</u> animal handlers in lairage; facilities; stocking density	Pigs, poultry
		In the field	Free bullet	Inaccurate targeting and inappropriate ballistics not achieving outright kill with first shot	Operator competence	Deer
		Group stunning pen	Head-only electrical Captive bolt	Uncontrolled movement of animals impedes use of hand operated electrical and mechanical stunning methods	<del>Competent</del> <u>Accredited</u> animal handlers in lairage and at stunning point	Pigs, sheep, goats, calves
	Individual animal confinement	Stunning pen/box	Electrical and mechanical stunning methods	Loading of animal; accuracy of stunning method, slippery floor and animal falling down	<del>Competent</del> <u>Accredited</u> animal handlers	Cattle, buffalo, sheep, goats, horses, pigs, deer, camelids, ratites
Restraining methods	Head restraint, upright	Halter/ head collar/bridle	Captive bolt Free bullet	Suitable for halter-trained animals; stress in untrained animals	<del>Competent</del> <u>Accredited</u> animal handlers	Cattle, buffalo, horses, camelids
	Head restraint, upright	Neck yoke	Captive bolt Electrical-head-only Free bullet Slaughter without stunning	Stress of loading and neck capture; stress of prolonged restraint, horn configuration; unsuitable for fast line speeds, animals struggling and falling due to slippery floor, excessive pressure	Equipment; <del>competent</del> <u>accredited</u> animal handlers, prompt stunning or slaughter	Cattle
	Leg restraint	Single leg tied in flexion (animal standing on 3 legs)	Captive bolt Free bullet	Ineffective control of animal movement, misdirected shots	<del>Competent</del> <u>Accredited</u> animal handlers	Breeding pigs (boars and sows)

Appendix XXVII (contd)

Appendix F (contd)

## Summary of acceptable handling and restraining methods and the associated animal welfare issues (contd)

	Presentation of animals	Specific procedure	Specific purpose	AW concerns/implications	Key AW requirements	Applicable species
Restraining methods	Upright restraint	Beak holding	Captive bolt Electrical-head-only	Stress of capture	<del>Sufficient</del> <u>Competent Accredited</u> animal handlers	Ostriches
		Head restraint in electrical stunning box	Electrical-head-only	Stress of capture and positioning	<del>Competent</del> <u>Accredited</u> animal handlers	Ostriches
	Holding body upright- manual	Manual restraint	Captive bolt Electrical-head-only Slaughter without stunning	Stress of capture and restraint; accuracy of stunning/slaughter	<del>Competent</del> <u>Accredited</u> animal handlers	Sheep, goats, calves, raites, small camelids, poultry
	Holding body upright mechanical	Mechanical clamp / crush / squeeze/ V-restrainer (static)	Captive bolt Electrical methods Slaughter without stunning	Loading of animal and overriding; excessive pressure	Proper design and operation of equipment	Cattle, buffalo, sheep, goats, deer, pigs, ostriches
	Lateral restraint – manual or mechanical	Restrainer/cradle/crush	Slaughter without stunning	Stress of restraint	<del>Competent</del> <u>Accredited</u> animal handlers	Sheep, goats, calves, camelids, cattle
	Upright restraint mechanical	Mechanical straddle (static)	Slaughter without stunning Electrical methods Captive bolt	Loading of animal and overriding	<del>Competent</del> <u>Accredited</u> animal handlers	Cattle, sheep, goats, pigs
	Upright restraint – manual or mechanical	Wing shackling	Electrical	Excessive tension applied prior to stunning	<del>Competent</del> <u>Accredited</u> animal handlers	Ostriches

## Appendix XXVII (contd)

## Appendix F (contd)

## Summary of acceptable handling and restraining methods and the associated animal welfare issues (contd)

	Presentation of animals	Specific procedure	Specific purpose	AW concerns/implications	Key AW requirements	Applicable species
Restraining and /or conveying methods	Mechanical - upright	V-restrainer	Electrical methods Captive bolt Slaughter without stunning	Loading of animal and overriding; excessive pressure, size mismatch between restrainer and animal	Proper design and operation of equipment	Cattle, calves, sheep, goats, pigs
	Mechanical - upright	Mechanical straddle – band restrainer (moving)	Electrical methods Captive bolt Slaughter without stunning	Loading of animal and overriding, size mismatch between restrainer and animal	<del>Competent</del> <u>Accredited</u> animal handlers, proper design and layout of restraint	Cattle, calves, sheep, goats, pigs
	Mechanical - upright	Flat bed/deck Tipped out of <i>containers</i> on to conveyors	Presentation of birds for shackling prior to electrical stunning Gas stunning	Stress and injury due to tipping in dump-module systems height of tipping conscious poultry broken bones and dislocations	Proper design and operation of equipment	Poultry
	Suspension and/or inversion	Poultry shackle	Electrical stunning Slaughter without stunning	Inversion stress; pain from compression on leg bones	<del>Competent</del> <u>Accredited</u> animal handlers; proper design and operation of equipment	Poultry
	Suspension and/or inversion	Cone	Electrical – head-only Captive bolt Slaughter without stunning	Inversion stress	<del>Competent</del> <u>Accredited</u> animal handlers; proper design and operation of equipment	Poultry
	Upright restraint	Mechanical leg clamping	Electrical – head-only	Stress of resisting restraint in ostriches	<del>Competent</del> <u>Accredited</u> animal handlers; proper equipment design and operation	Ostriches

Appendix XXVII (contd)

Appendix F (contd)

## Summary of acceptable handling and restraining methods and the associated animal welfare issues (contd)

	Presentation of animals	Specific procedure	Specific purpose	AW concerns/implications	Key AW requirements	Applicable species
Restraining by inversion	Rotating box	Fixed side(s) (e.g. Weinberg pen)	Slaughter without stunning	Inversion stress; stress of resisting restraint, prolonged restraint, inhalation of blood and ingesta. Keep restraint as brief as possible	Proper design and operation of equipment	Cattle
		Compressible side(s)	Slaughter without stunning	Inversion stress, stress of resisting restraint, prolonged restraint Preferable to rotating box with fixed sides Keep restraint as brief as possible	Proper design and operation of equipment	Cattle
Body restraint	Casting/hobbling	Manual	Mechanical stunning methods Slaughter without stunning	Stress of resisting restraint; animal temperament; bruising. Keep restraint as short as possible	<del>Competent</del> <u>Accredited</u> animal handlers	Sheep, goats, calves, small camelids, pigs
Leg restraints		Rope casting	Mechanical stunning methods Slaughter without stunning	Stress of resisting restraint; prolonged restraint, animal temperament; bruising Keep restraint as short as possible	<del>Competent</del> <u>Accredited</u> animal handlers	Cattle, camelids
		Tying of 3 or 4 legs	Mechanical stunning methods Slaughter without stunning	Stress of resisting restraint; prolonged restraint, animal temperament; bruising Keep restraint as short as possible	<del>Competent</del> <u>Accredited</u> animal handlers	Sheep, goats, small camelids, pigs

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## Article 3.7.5.7.

**Stunning methods**1. General considerations

The competence of the operators, and the appropriateness, and effectiveness of the method used for *stunning* and the maintenance of the equipment are the responsibility of the management of the *slaughterhouse*, and should be checked regularly by a *Competent Authority*.

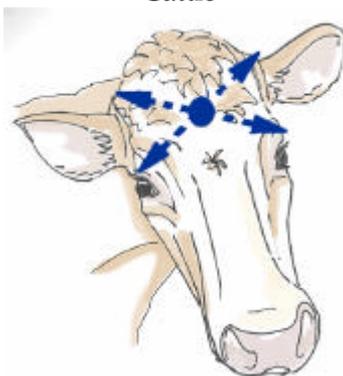
Persons carrying out *stunning* should be properly trained and competent, and should ensure that:

- a) the animal is adequately restrained;
- b) animals in *restraint* are stunned as soon as possible;
- c) the equipment used for *stunning* is maintained and operated properly in accordance with the manufacturer's recommendations, in particular with regard to the species and size of the animal;
- d) the instrument is applied correctly;
- e) stunned animals are bled out (slaughtered) as soon as possible;
- f) animals should not be stunned when slaughter is likely to be delayed; and
- g) backup *stunning* devices are available for immediate use if the primary method of *stunning* fails.

In addition, such persons should be able to recognise when an animal is not correctly stunned and should take appropriate action.

2. Mechanical stunning

A mechanical device should be applied usually to the front of the head and perpendicular to the bone surface. The following diagrams illustrate the proper application of the device for certain species.

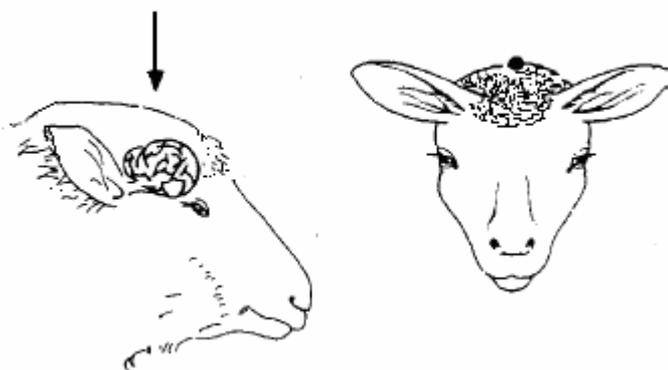
**Cattle**

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The optimum position for cattle is at the intersection of two imaginary lines drawn from the rear of the eyes to the opposite horn buds.

**Pigs**

The optimum position for pigs is on the midline just above eye level, with the shot directed down the line of the spinal cord.

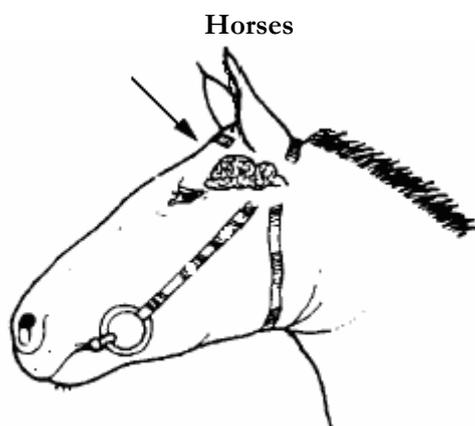
**Sheep**

The optimum position for hornless sheep and goats is on the midline.

**Goats**

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The optimum position for heavily horned sheep and horned goats is behind the poll, aiming towards the angle of the jaw.



The optimum position for horses is at right angles to the frontal surface, well above the point where imaginary lines from eyes to ears cross.

Signs of correct *stunning* using a mechanical instrument are as follows:

- a) the animal collapses immediately and does not attempt to stand up;
- b) the body and muscles of the animal become tonic (rigid) immediately after the shot;
- c) normal rhythmic breathing stops; and
- d) the eyelid is open with the eyeball facing straight ahead and is not rotated.

### 3. Electrical stunning

#### a) General considerations

An electrical device should be applied to the animal in accordance with the following guidelines.

Electrodes should be designed, constructed, maintained and cleaned regularly to ensure that the flow of current is optimal and in accordance with manufacturing specifications. They should be placed so that they span the brain. The application of electrical currents which bypass the brain is unacceptable unless the animal has been stunned. The use of a single current leg-to-leg is unacceptable as a *stunning* method.

If, in addition, it is intended to cause cardiac arrest, the electrodes should either span the brain and immediately thereafter the heart, on the condition that it has been ascertained that the animal is adequately stunned, or span brain and heart simultaneously.

Electrical *stunning* equipment should not be applied on animals as a means of guidance, movement, *restraint* or immobilisation, and shall not deliver any shock to the animal before the actual *stunning* or *killing*.

Electrical *stunning* apparatus should be tested prior to application on animals using appropriate resistors or dummy loads to ensure the power output is adequate to stun animals.

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The apparatus should incorporate a device which monitors and displays *stunning* current delivered to the animals.

Appropriate measures, such as removing excess wool or wetting the skin only at the point of contact, can be taken to minimise impedance of the skin and facilitate effective *stunning*.

The *stunning* apparatus required for electrical *stunning* should be provided with adequate power to achieve continuously the minimum current level recommended for *stunning* as indicated in the table below:

Species	Minimum current levels
Cattle	1.5 amps
Calves	1.0 amps
Pigs	1.25 amps
Sheep and goats	1.0 amps
Lambs	0.7 amps
Ostriches	0.4 amps

In all cases, the correct current level shall be attained within one second of the initiation of stun and maintained at least for between one and three seconds and in accordance with the manufacturer's instructions.

b) Electrical *stunning* of birds using a waterbath

In the case of birds suspended on a moving line, measures should be taken to ensure that the birds are not wing flapping at the entrance of the stunner. The birds should be secure in their shackle, but there should not be undue pressure on their shanks.

Waterbaths for poultry should be adequate in size and depth for the type of bird being slaughtered, and their height should be adjustable to allow for the head of each bird to be immersed. The electrode immersed in the bath should extend the full length of the waterbath. Birds should be immersed in the bath up to the base of their wings.

The waterbath should be designed and maintained in such a way that when the shackles pass over the water, they are in continuous contact with the earthed rubbing bar.

The control box for the waterbath stunner should incorporate an ammeter which displays the total current flowing through the birds.

The shackle-to-leg contact should be wetted preferably before the birds are inserted in the shackles. In order to improve electrical conductivity of the water it is recommended that salt be added in the waterbath as necessary. Additional salt should be added regularly as a solution to maintain suitable constant concentrations in the waterbath.

Using waterbaths, birds are stunned in groups and different birds will have different impedances. The voltage should be adjusted so that the total current is the required current per bird as shown in the table hereafter, multiplied by the number of birds in the waterbath at the same time. The following values have been found to be satisfactory when employing a 50 Hertz sinusoidal alternating current.

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Birds should receive the current for at least 4 seconds.

Species	Current (milliamperes per bird)
Broilers	120
Layers (spent hens)	120
Turkeys	150
Ducks and Geese	130

While a lower current may also be satisfactory, the current shall in any case be such as to ensure that unconsciousness occurs immediately and lasts until the bird has been killed by cardiac arrest or by bleeding. When higher electrical frequencies are used, higher currents may be required.

Every effort shall be made to ensure that no conscious or live birds enter the scalding tank.

In the case of automatic systems, until fail-safe systems of *stunning* and bleeding have been introduced, a manual back-up system should be in place to ensure that any birds which have missed the waterbath stunner and/or the automatic neck-cutter are immediately stunned and/or killed immediately, and they are dead before entering scald tank.

To lessen the number of ~~unstunned~~ birds that have not been effectively stunned from reaching neck cutters, steps should be taken to ensure that small birds do not go on the line amongst bigger birds and that these small birds are stunned separately.

#### 4. Gas stunning (under study)

##### a) Stunning of pigs by exposure to carbon dioxide (CO<sub>2</sub>)

The concentration of CO<sub>2</sub> for *stunning* should be preferably 90% by volume but in any case no less than 80% by volume. After entering the *stunning* chamber, the animals should be conveyed to the point of maximum concentration of the gas as rapidly as possible and be kept until they are dead or brought into a state of insensibility which lasts until *death* occur due to bleeding. Ideally, pigs should be exposed to this concentration of CO<sub>2</sub> for 3 minutes. Sticking should occur as soon as possible after exit from the gas chamber.

In any case, the concentration of the gas should be such that it minimises as far as possible all stress of the animal prior to loss of consciousness.

The chamber in which animals are exposed to CO<sub>2</sub> and the equipment used for conveying them through it shall be designed, constructed and maintained in such a way as to avoid injury or unnecessary stress to the animals. The animal density within the chamber should be such to avoid stacking animals on top of each others.

The conveyor and the chamber shall be adequately lit to allow the animals to see their surroundings and, if possible, each other.

It should be possible to inspect the CO<sub>2</sub> chamber whilst it is in use, and to have access to the animals in emergency cases.

The chamber shall be equipped to continuously measure and display register at the point of *stunning* the CO<sub>2</sub> concentration and the time of exposure, and to give a clearly visible and audible warning if the concentration of CO<sub>2</sub> falls below the required level.

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## b) Inert gas mixtures for stunning pigs

Inhalation of high concentrations of carbon dioxide is aversive and can be distressing to animals. Therefore, the use of non-aversive gas mixtures is being developed.

Such gas mixtures include:

- i) a maximum of 2% by volume of oxygen in argon, nitrogen or other inert gases, or
- ii) ~~to~~ a maximum of 30% by volume of carbon dioxide and a maximum of 2% by volume of oxygen in mixtures with carbon dioxide and argon, nitrogen or other inert gases.

Exposure time to the gas mixtures should be sufficient to ensure that no pigs regain consciousness before *death* supervenes through bleeding or cardiac arrest is induced.

## c) Gas stunning of poultry

The main objective of gas *stunning* is to avoid the pain and suffering associated with shackling conscious poultry under water bath *stunning* and *killing* systems. Therefore, gas *stunning* should be limited to birds contained in crates or on conveyors only. The gas mixture should be non-aversive to poultry.

Gas *stunning* of poultry in their transport *containers* will eliminate the need for live bird handling at the processing plant and all the problems associated with the electrical *stunning*. Gas *stunning* of poultry on a conveyor eliminates the problems associated with the electrical water bath *stunning*.

Live poultry should be conveyed into the gas mixtures either in transport crates or on conveyor belts.

i) Gas mixtures used for *stunning* poultry include:

- a minimum of 2 minutes exposure to 40% carbon dioxide, 30% oxygen and 30% nitrogen, followed by a minimum of one minute exposure to 80% carbon dioxide in air; or
- a minimum of 2 minutes exposure to any mixture of argon, nitrogen or other inert gases with atmospheric air and carbon dioxide, provided that the carbon dioxide concentration does not exceed 30% by volume and the residual oxygen concentration does not exceed 2% by volume; or
- a minimum of 2 minutes exposure to argon, nitrogen, other inert gases or any mixture of these gases in atmospheric air with a maximum of 2% residual oxygen by volume; or
- a minimum of 2 minutes exposure to a minimum of 55% carbon dioxide in air.

## ii) Requirements for effective use are as follows:

- Compressed gases should be vaporised prior to administration into the chamber and should be at room temperature to prevent any thermal shock. Under no circumstances, should solid gases with freezing temperatures enter the chamber.

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- Gas mixtures should be humidified.
- Appropriate gas concentrations should be monitored and displayed continuously at the level of the birds inside the chamber.

Under no circumstances, should birds exposed to gas mixtures be allowed to regain consciousness. If necessary, the exposure time should be extended.

5. Bleeding

From the point of view of animal welfare, animals which are stunned with a reversible method should be bled without delay and in any case within the following time limits:

<b>Stunning method</b>	<b>Maximum delay for bleeding to be started</b>
Electrical methods and non penetrating captive bolt	20 seconds
CO <sub>2</sub>	60 seconds (after leaving the chamber)

All animals should be bled out by incising both carotid arteries, or the vessels from which they arise (e.g., chest stick). However, when the *stunning* method used causes cardiac arrest, the incision of all of these *vessels* is not necessary from the point of view of animal welfare.

It should be possible for staff to observe, inspect and access the animals throughout the bleeding period. Any animal showing signs of recovering consciousness should be re-stunned ~~restunned~~.

After incision of the blood vessels, no scalding carcass treatment or dressing procedures should be performed on the animals for at least 30 seconds, or in any case until all brain-stem reflexes have ceased.

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Article 3.7.5.8.

Summary of ~~acceptable~~ stunning methods and the associated animal welfare issues

Method	Specific method	AW concerns/implications	Key AW requirements applicable	Species	Comment
Mechanical	Free bullet	Inaccurate targeting and inappropriate ballistics	Operator competence, achieving outright kill with first shot	Cattle, calves, buffalo, deer, horses, pigs (boars and sows)	Personnel safety
	Captive bolt - penetrating	Inaccurate targeting, velocity and diameter of bolt	Competent operation and maintenance of equipment; restraint; accuracy	Cattle, calves, buffalo, sheep, goats, deer, horses, pigs, camelids, ratites	(Unsuitable for specimen collection from TSE suspects). A back-up gun should be available in the event of an ineffective shot
	Captive bolt - non-penetrating	Inaccurate targeting, velocity of bolt, potentially higher failure rate than penetrating captive bolt	Competent operation and maintenance of equipment; restraint; accuracy	Cattle, calves, sheep, goats, deer, pigs, camelids, ratites	Presently available devices are not recommended for young bulls and animals with thick skull
	Manual percussive blow	Inaccurate targeting; insufficient power; size of instrument	<del>Competent</del> <u>Accredited</u> animal handlers; restraint; accuracy. Not recommended for general use	Young and small mammals, ostriches and poultry	Mechanical devices potentially more reliable. Where manual percussive blow is used, unconsciousness should be achieved with single sharp blow delivered to central skull bones
Electrical	Split application: 1. across head then head to chest; 2. across head then across chest	Accidental pre-stun electric shocks; electrode positioning; application of a current to the body while animal conscious; inadequate current and voltage	Competent operation and maintenance of equipment; restraint; accuracy	Cattle, calves, sheep, goats and pigs, ratites and poultry	Systems involving repeated application of head-only or head-to-leg with short current durations (<1 second) in the first application should not be used.

Appendix XXVII (contd)Appendix F (contd)**Summary of acceptable stunning methods and the associated animal welfare issues**

Method	Specific method	AW concerns/implications	Key AW requirements applicable	Species	Comment
Electrical	Single application: 1. head only; 2. head to body; 3. head to leg	Accidental pre-stun electric shocks; inadequate current and voltage; wrong electrode positioning; recovery of consciousness	Competent operation and maintenance of equipment; restraint; accuracy	Cattle, calves, sheep, goats, pigs, ratites, poultry	
	Waterbath	Restraint, accidental pre-stun electric shocks; inadequate current and voltage; recovery of consciousness	Competent operation and maintenance of equipment	Poultry only	
Gaseous	CO <sub>2</sub> air/O <sub>2</sub> mixture; CO <sub>2</sub> inert gas mixture	Aversiveness of high CO <sub>2</sub> concentrations, respiratory distress; inadequate exposure	Concentration; duration of exposure; design, maintenance and operation of equipment; stocking density management	Pigs, poultry	
	Inert gases	Recovery of consciousness	Concentration; duration of exposure; design, maintenance and operation of equipment; stocking density management	Pigs, poultry	

## Article 3.7.5.9.

**Summary of acceptable slaughter methods and the associated animal welfare issues**

Slaughter methods	Specific method	AW concerns / implications	Key requirements	Species	Comments
Bleeding out by severance of blood vessels in the neck without stunning	Full frontal cutting across the throat	Failure to cut both common carotid arteries; occlusion of cut arteries.	A very sharp blade or knife, of sufficient length so that the point of the knife remains outside the incision during the cut; the point of the knife should not be used to make the incision. An incision which does not close over the knife during the throat cut.	Cattle, buffalo, horses, camelids, sheep, goats, poultry, ratites	
Bleeding with prior stunning	Full frontal cutting across the throat	Failure to cut both common carotid arteries; occlusion of cut arteries; pain during and after the cut.	A very sharp blade or knife, of sufficient length so that the point of the knife remains outside the incision during the cut; the point of the knife should not be used to make the incision. An incision which does not close over the knife during the throat cut.	Cattle, buffalo, horses, camelids, sheep, goats,	
	Neck stab followed by forward cut	Ineffective stunning; failure to cut both common carotid arteries; impaired blood flow; delay in cutting after reversible stunning	Prompt and accurate cutting	Camelids, sheep, goats, poultry, ratites	
	Neck stab alone	Ineffective stunning; failure to cut both common carotid arteries; impaired blood flow; delay in cutting after reversible stunning	Prompt and accurate cutting	Camelids, sheep, goats, poultry, ratites	

Appendix XXVII (contd)Appendix F (contd)**Summary of acceptable slaughter methods and the associated animal welfare issues (contd)**

<b>Slaughter methods</b>	<b>Specific method</b>	<b>AW concerns / implications</b>	<b>Key requirements</b>	<b>Species</b>	<b>Comments</b>
Bleeding with prior stunning (contd)	Chest stick into major arteries or hollow-tube knife into heart	Ineffective stunning; Inadequate size of stick wound inadequate length of sticking knife; delay in sticking after reversible stunning	Prompt and accurate sticking	Cattle, sheep, goats, pigs	
	Neck skin cut followed by severance of vessels in the neck	Ineffective stunning; Inadequate size of stick wound; Inadequate length of sticking knife; delay in sticking after reversible stunning	Prompt and accurate cutting of vessels	Cattle	
Bleeding with prior stunning	Automated mechanical cutting	Ineffective stunning; failure to cut and misplaced cuts. Recovery of consciousness following reversible stunning systems	Design, maintenance and operation of equipment; accuracy of cut; manual back-up	Poultry only	
	Manual neck cut on one side	Ineffective stunning; recovery of consciousness following reversible stunning systems	Prior non-reversible stunning	Poultry only	N.B. slow induction of unconsciousness under slaughter without stunning
	Oral cut	Ineffective stunning; recovery of consciousness following reversible stunning systems	Prior non-reversible stunning	Poultry only	N.B. slow induction of unconsciousness in non-stun systems

## Appendix XXVII (contd)

## Appendix F (contd)

Slaughter methods	Specific method	AW concerns / implications	Key requirements	Species	Comments
Other methods without stunning	Decapitation with a sharp knife	Pain due to loss of consciousness not being immediate		Sheep, goats, poultry	This method is only applicable to Jhatka slaughter
	Manual neck dislocation and decapitation	Pain due to loss of consciousness not being immediate; difficult to achieve in large birds	Neck dislocation should be performed in one stretch to sever the spinal cord	Poultry only	Slaughter by neck dislocation should be performed in one stretch to sever the spinal cord
Cardiac arrest in a waterbath electric stunner	Bleeding by evisceration		Induction of cardiac arrest	Quail	
	Bleeding by neck cutting			Poultry	

Article 3.7.5.10.

### Methods, procedures or practices unacceptable on animal welfare grounds

- The restraining methods which work through immobilisation by injury such as breaking legs, ~~and~~ leg tendon cutting, and severing the spinal cord (e.g. using a puntilla or dagger) cause severe pain and stress in animals. Those methods are not acceptable in any species.
- The use of the electrical *stunning* method with a single application leg to leg is ineffective and unacceptable in any species. ~~as it is likely to be painful. The animal welfare concerns are:~~
  - ~~accidental pre-stun electric shocks;~~
  - ~~inadequate current and voltage;~~
  - ~~wrong electrode positioning;~~
  - ~~recovery of consciousness.~~
- The slaughter method of brain stem severance by piercing through the eye socket or skull bone without prior *stunning*, is not acceptable in any species.

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## APPENDIX 3.7.6.

GUIDELINES FOR THE KILLING OF  
ANIMALS FOR DISEASE CONTROL PURPOSES

## Article 3.7.6.1.

**General principles**

These guidelines are based on the premise that a decision to kill the animals has been made, and address the need to ensure the welfare of the animals until they are dead.

1. All personnel involved in the humane *killing* of animals should have the relevant skills and competencies. Competence may be gained through formal training and/or practical experience.
2. As necessary, operational procedures should be adapted to the specific circumstances operating on the premises and should address, apart from animal welfare, aesthetics of the method of euthanasia, cost of the method, operator safety, biosecurity and environmental aspects.
3. Following the decision to kill the animals, *killing* should be carried out as quickly as possible and normal husbandry should be maintained until the animals are killed.
4. The handling and movement of animals should be minimised and when done, it should be done in accordance with the guidelines described below.
5. Animal *restraint* should be sufficient to facilitate effective *killing*, and in accordance with animal welfare and operator safety requirements; when *restraint* is required, *killing* should follow with minimal delay.
6. When animals are killed for disease control purposes, methods used should result in immediate death or immediate loss of consciousness lasting until death; when loss of consciousness is not immediate, induction of unconsciousness should be non-aversive and should not cause anxiety, pain, distress or suffering in the animals.
7. For animal welfare considerations, young animals should be killed before older animals; for biosecurity considerations, infected animals should be killed first, followed by in-contact animals, and then the remaining animals.
8. There should be continuous monitoring of the procedures by the *Competent Authorities* to ensure they are consistently effective with regard to animal welfare, operator safety and biosecurity.
9. When the operational procedures are concluded, there should be a written report describing the practices adopted and their effect on animal welfare, operator safety and biosecurity.
10. These general principles should also apply when animals need to be killed for other purposes such as after natural disasters or for culling animal populations.

Appendix XXVII (contd)Appendix G (contd)

## Article 3.7.6.2.

**Organisational structure**

Disease control contingency plans should be in place at a national level and should contain details of management structure, disease control strategies and operational procedures; animal welfare considerations should be addressed within these disease control contingency plans. The plans should also include a strategy to ensure that an adequate number of personnel competent in the humane *killing* of animals is available. Local level plans should be based on national plans and be informed by local knowledge.

Disease control contingency plans should address the animal welfare issues that may result from animal movement controls.

The operational activities should be led by an *official veterinarian* who has the authority to appoint the personnel in the specialist teams and ensure that they adhere to the required animal welfare and biosecurity standards. When appointing the personnel, he/she should ensure that the personnel involved has the required competencies.

The *official veterinarian* should be responsible for all activities across one or more affected premises and should be supported by coordinators for planning (including communications), operations and logistics to facilitate efficient operations.

The *official veterinarian* should provide overall guidance to personnel and logistic support for operations on all affected premises to ensure consistency in adherence to the OIE animal welfare and animal health guidelines.

A specialist team, led by a team leader answerable to the *official veterinarian*, should be deployed to work on each affected premises. The team should consist of personnel with the competencies to conduct all required operations; in some situations, personnel may be required to fulfil more than one function. Each team should contain a *veterinarian* or have access to veterinary advice at all times.

In considering the animal welfare issues associated with the *killing* of animals, the key personnel, their responsibilities and competencies required are described in Article 3.7.6.3.

## Article 3.7.6.3.

**Responsibilities and competencies of the specialist team**1. Team leader

## a) Responsibilities:

- i) plan overall operations on ~~an~~ affected premises;
- ii) determine and address requirements for animal welfare, operator safety and biosecurity;
- iii) organise, brief and manage team of people to facilitate humane *killing* of the relevant animals on the premises in accordance with national regulations and these guidelines;
- iv) determine logistics required;
- v) monitor operations to ensure animal welfare, operator safety and biosecurity requirements are met;

Appendix XXVII (contd)Appendix G (contd)

- vi) report upwards on progress and problems;
  - vii) provide a written report at the conclusion of the *killing*, describing the practices adopted and their effect on the animal welfare, operator safety and biosecurity outcomes.
- b) Competencies
- i) appreciation of normal animal husbandry practices;
  - ii) appreciation of animal welfare and the underpinning behavioural, anatomical and physiological processes involved in the *killing* process;
  - iii) skills to manage all activities on premises and deliver outcomes on time;
  - iv) awareness of psychological effects on farmer, team members and general public;
  - v) effective communication skills;
  - vi) appreciation of the environmental impacts caused by their operation.
2. Veterinarian
- a) Responsibilities
- i) determine and ~~implement~~ supervise the implementation of the most appropriate *killing* method to ensure that animals are killed without avoidable pain and distress;
  - ii) determine and implement the additional requirements for animal welfare, including the order of *killing*;
  - iii) ensure that confirmation of animals deaths is carried out by competent persons at appropriate times after the *killing* procedure;
  - iv) minimise the risk of disease spread within and from the premises through the supervision of biosecurity procedures;
  - v) continuously monitor animal welfare and biosecurity procedures;
  - vi) in cooperation with the leader, prepare a written report at the conclusion of the *killing*, describing the practices adopted and their effect on animal welfare.
- b) Competencies
- i) ability to assess animal welfare, especially the effectiveness of *stunning* and *killing*, and to correct any deficiencies;
  - ii) ability to assess biosecurity risks.
3. Accredited animal handlers
- a) Responsibilities
- i) review on-site facilities in terms of their appropriateness;

Appendix XXVII (contd)Appendix G (contd)

- ii) design and construct temporary animal handling facilities, when required;
  - iii) move and restrain animals;
  - iv) continuously monitor animal welfare and biosecurity procedures.
- b) Competencies
- i) animal handling in emergency situations and in close confinement is required;
  - ii) an appreciation of biosecurity and containment principles.

4. Animal handlera) Responsibilities

- i) move and restrain animals;
- ii) continuously monitor animal welfare and biosecurity procedures.

b) Competencies

- i) animal handling in emergency situations and in close confinement is required;
- ii) an appreciation of biosecurity and containment principles.

4.5. Animal killing personnel

## a) Responsibilities

Humane *killing* of the animals through effective *stunning* and *killing* should be ensured.

## b) Competencies

- i) when required by regulations, licensed to use necessary equipment;
- ii) competent to use and maintain relevant equipment;
- iii) competent to use techniques for the species involved;
- iv) competent to assess effective *stunning* and *killing*.

5.6. Carcass disposal personnel

## a) Responsibilities

An efficient carcass disposal (to ensure *killing* operations are not hindered) should be ensured.

## b) Competencies

The personnel should be competent to use and maintain available equipment and apply techniques for the species involved.

6.7. Farmer/owner/manager

- a) Responsibilities
  - i) assist when requested.
- b) Competencies
  - i) specific knowledge of his/her animals and their environment.

Article 3.7.6.4.

**Considerations in planning the humane killing of animals**

Many activities will need to be conducted on affected premises, including the humane *killing* of animals. The team leader should develop a plan for humanely *killing* animals on the premises which should include consideration of:

1. minimising handling and movement of animals;
2. *killing* the animals on the affected premises; however, there may be circumstances where the animals may need to be moved to another location for *killing*; when the *killing* is conducted at an *abattoir*, the guidelines in the Chapter on *slaughter* of animals ~~for human consumption~~ should be followed;
3. the species, number, age and size of animals to be killed, and the order of *killing* them;
4. methods of *killing* the animals, and their cost;
5. housing, husbandry, ~~and~~ location of the animals, as well as accessibility of the farm;
6. the availability and effectiveness of equipment needed for *killing* of the animals, as well as the time necessary to kill the required number of animals using such methods;
7. the facilities available on the premises that will assist with the *killing* including any additional facilities that may need to be brought on and then removed from the premises;
8. biosecurity and environmental issues;
9. the health and safety of personnel conducting the *killing*;
10. any legal issues that may be involved, for example where restricted veterinary drugs or poisons may be used, or where the process may impact on the environment; ~~and~~
11. the presence of other nearby premises holding animals;
12. possibilities of removal and disposal and destruction of carcasses.

In designing a *killing* plan, it is essential that the method chosen be consistently reliable to ensure that all animals are humanely and quickly killed.

Appendix XXVII (contd)Appendix G (contd)

## Article 3.7.6.5.

**Table summarising killing methods described in Articles 3.7.6.6.-3.7.6.17.**

Species	Age range	Procedure	Restraint necessary	Animal welfare concerns with inappropriate application	Article reference
Cattle	all	free bullet	no	non-lethal wounding	3.7.6.6.
	all except neonates	captive bolt - penetrating, followed by pithing or bleeding	yes	ineffective stunning	3.7.6.7.
	adults only	captive bolt - non-penetrating, followed by bleeding	yes	ineffective stunning, regaining of consciousness before killing	3.7.6.8.
	calves only	electrical, two stage application	yes	pain associated with cardiac arrest after ineffective stunning	3.7.6.10.
	calves only	electrical, single application (method 1)	yes	ineffective stunning	3.7.6.11.
	all	injection with barbiturates and other drugs	yes	non-lethal dose, pain associated with injection site	3.7.6.15.
Sheep and goats	all	free bullet	no	non-lethal wounding	3.7.6.6.
	all except neonates	captive bolt - penetrating, followed by pithing or bleeding	yes	ineffective stunning, regaining of consciousness before death	3.7.6.7.
	all except neonates	captive bolt - non-penetrating, followed by bleeding	yes	ineffective stunning, regaining of consciousness before death	3.7.6.8.
	neonates	captive bolt - non-penetrating	yes	non-lethal wounding	3.7.6.8.
	all	electrical, two stage application	yes	pain associated with cardiac arrest after ineffective stunning	3.7.6.10.
	all	electrical, single application (Method 1)	yes	ineffective stunning	3.7.6.11.
	neonates only	CO <sub>2</sub> / air mixture	yes	slow induction of unconsciousness, aversiveness of induction	3.7.6.12.
	neonates only	nitrogen and/or inert gas mixed with CO <sub>2</sub>	yes	slow induction of unconsciousness, aversiveness of induction	3.7.6.13.

## Appendix XXVII (contd)

## Appendix G (contd)

Species	Age range	Procedure	Restraint Necessary	Animal welfare concerns with inappropriate application	Article reference
Sheep and goats (contd)	neonates only	nitrogen and/or inert gases	yes	slow induction of unconsciousness,	3.7.6.14.
	all	injection of barbiturates and other drugs	yes	non-lethal dose, pain associated with injection site	3.7.6.15.
Pigs	all	free bullet	no	Non-lethal wounding	3.7.6.6.
	all except neonates	captive bolt - penetrating, followed by pithing or bleeding	yes	ineffective stunning, regaining of consciousness before death	3.7.6.7.
	neonates only	captive bolt - non-penetrating	yes	Non-lethal wounding	3.7.6.8.
	all §	electrical, two stage application	yes	pain associated with cardiac arrest after ineffective stunning	3.7.6.10.
	all	electrical, single application (Method 1)	yes	ineffective stunning	3.7.6.11.
	neonates only	CO <sub>2</sub> / air mixture	yes	slow induction of unconsciousness, aversiveness of induction	3.7.6.12.
	neonates only	nitrogen and/or inert gas mixed with CO <sub>2</sub>	yes	slow induction of unconsciousness, aversiveness of induction	3.7.6.13.
	neonates only	nitrogen and/or inert gases	yes	slow induction of unconsciousness,	3.7.6.14.
	all	injection with barbiturates and other drugs	yes	non-lethal dose, pain associated with injection site	3.7.6.15.
Poultry	adults only	captive bolt - non-penetrating	yes	ineffective stunning	3.7.6.8.
	day-olds and eggs only	Maceration	no	non-lethal wounding, non-immediacy;	3.7.6.9.
	adults only	electrical single application (Method 2)	yes	ineffective stunning	3.7.6.11.
	adults only	electrical single application, followed by killing (Method 3)	yes	ineffective stunning; regaining of consciousness before death	3.7.6.11.

Appendix XXVII (contd)Appendix G (contd)

Species	Age range	Procedure	Restraint necessary	Animal welfare concerns with inappropriate application	Article reference
Poultry (contd)	all	CO <sub>2</sub> / air mixture Method 1 Method 2	yes no	slow induction of unconsciousness, aversiveness of induction	3.7.6.12.
	all	nitrogen and/or inert gas mixed with CO <sub>2</sub>	yes	slow induction of unconsciousness, aversiveness of induction	3.7.6.13.
	all	nitrogen and/or inert gases	yes	slow induction of unconsciousness	3.7.6.14.
	all	injection of barbiturates and other drugs	yes	Non-lethal dose, pain associated with injection site	3.7.6.15.
	adults only	addition of anaesthetics to feed or water, followed by an appropriate killing method	no	ineffective or slow induction of unconsciousness	3.7.6.16.

\* The methods are described in the order of mechanical, electrical and gaseous, not in an order of desirability from an animal welfare viewpoint.

§ The only preclusion against the use of this method for neonates is the design of the stunning tongs that may not facilitate their application across such a small-sized head/body.

Article 3.7.6.6.

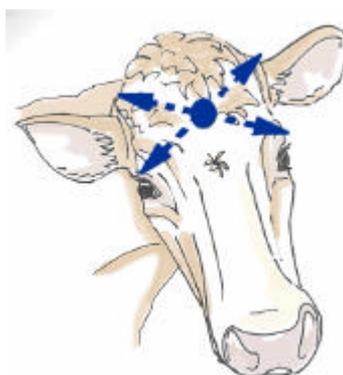
**Free bullet**1. Introduction

- a) A free bullet is a projectile fired from a shotgun, rifle, handgun or purpose-made humane killer.
- b) The most commonly used firearms for close range use are:
  - i) humane killers (specially manufactured/adapted single-shot weapons);
  - ii) shotguns (12, 16, 20, 28 bore and .410);
  - iii) rifles (.22 rimfire);
  - iv) handguns (various calibres from .32 to .45).
- c) The most commonly used firearms for long range use are rifles (.22, .243, .270 and .308).
- d) A free bullet used from long range should be aimed to penetrate the skull or soft tissue at the top of the neck of the animal, to cause irreversible concussion and death and should only be used by properly trained and competent marksmen.

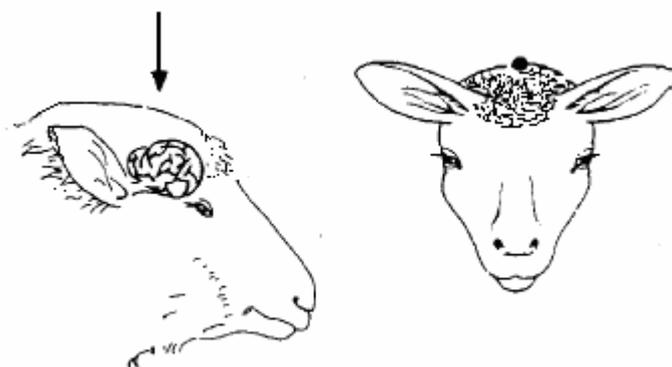
## 2. Requirements for effective use

- a) The marksman should take account of human safety in the area in which he/she is operating. Appropriate vision and hearing protective devices should be worn by all personnel involved.
- b) The marksman should ensure that the animal is not moving and in the correct position to enable accurate targeting and the range should be as short as possible (5 –50 cm for a shotgun) but the barrel should not be in contact with the ~~animal's head~~ of the animal.
- c) The correct cartridge, calibre and type of bullet for the different species age and size should be used. Ideally the ammunition should expand upon impact and dissipate its energy within the cranium.
- d) Shot animals should be checked to ensure the absence of brain stem reflexes.

**Figure 1.** The optimum shooting position for cattle is at the intersection of two imaginary lines drawn from the rear of the eyes to the opposite horn buds.



**Figure 2.** The optimum position for hornless sheep and goats is on the midline.



Appendix XXVII (contd)Appendix G (contd)

**Figure 3.** The optimum shooting position for heavily horned sheep and horned goats is behind the poll aiming towards the angle of the jaw.



**Figure 4.** The optimum shooting position for pigs is just above eye level, with the shot directed down the line of the spinal cord.

3. Advantages

- a) Used properly, a free bullet provides a quick and effective method for *killing*.
- b) It requires minimal or no *restraint* and can be use to kill from a distance by properly trained and competent marksmen.
- c) It is suitable for *killing* agitated animals in open spaces.

Appendix XXVII (contd)Appendix G (contd)4. Disadvantages

- a) The method is potentially dangerous to humans and other animals in the area.
- b) It has the potential for non-lethal wounding.
- c) Destruction of brain tissue may preclude diagnosis of some diseases.
- d) Leakage of bodily fluids may present a biosecurity risk.
- e) Legal requirements may preclude or restrict use.
- f) There is a limited availability of competent personnel.

4. Conclusions

The method is suitable for cattle, sheep, goats and pigs, including large animals in open spaces.

Article 3.7.6.7.

**Penetrating captive bolt**1. Introduction

A penetrating captive bolt is fired from a gun powered by either compressed air or a blank cartridge. There is no free projectile.

The captive bolt should be aimed on the skull in a position to penetrate the cortex and mid-brain of the animal. The impact of the bolt on the skull produces unconsciousness. Physical damage to the brain caused by penetration of the bolt may result in death, however pithing or bleeding should be performed as soon as possible after the shot to ensure the death of the animal.

2. Requirements for effective use

- a) For cartridge powered and compressed air guns, the bolt velocity and the length of the bolt should be appropriate to the species and type of animal, in accordance with the ~~manufacturer's~~ recommendations of the manufacturer.
- b) Captive bolt guns should be frequently cleaned and maintained in good working condition.
- c) More than one gun may be necessary to avoid overheating and a back-up gun should be available in the event of an ineffective shot.
- d) Animals should be restrained; at a minimum they should be penned for cartridge powered guns and in a race for compressed air guns.
- e) The operator should ensure that the ~~animal's~~ head of the animal is accessible.
- f) The operator should fire the captive bolt at right angles to the skull in the optimal position (see figures 1, 3 & 4. The optimum shooting position for hornless sheep is on the highest point of the head, on the midline and aim towards the angle of the jaw).
- g) To ensure the death of the animal, pithing or bleeding should be performed as soon as possible after *stunning*.

Appendix XXVII (contd)Appendix G (contd)

- h) Animals should be monitored continuously after *stunning* until death to ensure the absence of brain stem reflexes.
3. Advantages
- a) Mobility of cartridge powered equipment reduces the need to move animals.
- b) The method induces an immediate onset of a sustained period of unconsciousness.
4. Disadvantages
- a) Poor gun maintenance and misfiring, and inaccurate gun positioning and orientation may result in poor animal welfare.
- b) Post stun convulsions may make pithing difficult and hazardous.
- c) The method is difficult to apply in agitated animals.
- d) Repeated use of a cartridge powered gun may result in over-heating.
- e) Leakage of bodily fluids may present a biosecurity risk.
- f) Destruction of brain tissue may preclude diagnosis of some diseases.
5. Conclusions
- The method is suitable for cattle, sheep, goats and pigs (except neonates), when followed by pithing or bleeding.

Article 3.7.6.8.

**Captive bolt – non-penetrating**1. Introduction

A non-penetrating captive bolt is fired from a gun powered by either compressed air or a blank cartridge. There is no free projectile.

The gun should be placed on the front of the skull to deliver a percussive blow which produces unconsciousness in cattle (adults only), sheep, goats and pigs, and death in poultry and neonate sheep, goats and pigs. Bleeding should be performed as soon as possible after the blow to ensure the death of the animal.

2. Requirements for effective use

- a) For cartridge powered and compressed air guns, the bolt velocity should be appropriate to the species and type of animal, in accordance with the ~~manufacturer's~~ recommendations of the manufacturer.
- b) Captive bolt guns should be frequently cleaned and maintained in good working condition.
- c) More than one gun may be necessary to avoid overheating and a back-up gun should be available in the event of an ineffective shot.

Appendix XXVII (contd)Appendix G (contd)

- d) Animals should be restrained; at a minimum mammals should be penned for cartridge powered guns and in a race for compressed air guns; birds should be restrained in cones, shackles, crushes or by hand.
  - e) The operator should ensure that the ~~animal's~~ head of the animal is accessible.
  - f) The operator should fire the captive bolt at right angles to the skull in the optimal position (figures 1-4).
  - g) To ensure death in non-neonate mammals, bleeding should be performed as soon as possible after *stunning*.
  - h) Animals should be monitored continuously after *stunning* until death to ensure the absence of brain stem reflexes.
3. Advantages
- a) The method induces an immediate onset of unconsciousness, and death in birds and neonate mammals.
  - b) Mobility of equipment reduces the need to move animals.
4. Disadvantages
- a) As consciousness can be regained quickly in non-neonate mammals, they should be bled as soon as possible after *stunning*.
  - b) Laying hens in cages have to be removed from their cages and most birds have to be restrained.
  - c) Poor gun maintenance and misfiring, and inaccurate gun positioning and orientation may result in poor animal welfare.
  - d) Post stun convulsions may make bleeding difficult and hazardous.
  - e) Difficult to apply in agitated animals; such animals may be sedated in advance of the *killing* procedure.
  - f) Repeated use of a cartridge powered gun may result in over-heating.
  - g) Bleeding may present a biosecurity risk.
5. Conclusions
- a) The method is suitable for poultry, and neonate sheep, goats and pigs.
  - b) If bleeding does not present a biosecurity issue, this is a suitable method for cattle (adults only), and non-neonate sheep, goats and pigs when followed by bleeding.

Appendix XXVII (contd)Appendix G (contd)

## Article 3.7.6.9.

**Maceration**1. Introduction

Maceration, utilising a mechanical apparatus with rotating blades or projections, causes immediate fragmentation and death in day-old poultry and embryonated eggs.

2. Requirements

- a) Maceration requires specialised equipment which should be kept in excellent working order.
- b) The rate of introducing the birds should not allow the equipment to jam, birds to rebound from the blades or the birds to suffocate before they are macerated.

3. Advantages

- a) Procedure results in immediate death.
- b) Large numbers can be killed quickly.

4. Disadvantages

- a) Specialised equipment is required.
- b) Macerated tissues may present a biosecurity or human health issue.
- c) The cleaning of the equipment can be a source of contamination.

5. Conclusion

The method is suitable for *killing* day-old poultry and embryonated eggs.

## Article 3.7.6.10.

**Electrical – two-stage application**1. Introduction

A two stage application of electric current comprises firstly an application of current to the head by scissor-type tongs, immediately followed by an application of the tongs across the chest in a position that spans the heart.

The application of sufficient electric current to the head will induce ‘tonic/clonic’ epilepsy and unconsciousness. Once the animal is unconscious, the second stage will induce ventricular fibrillation (cardiac arrest) resulting in death. The second stage (the application of low frequency current across the chest) should only be applied to unconscious animals to prevent unacceptable levels of pain.

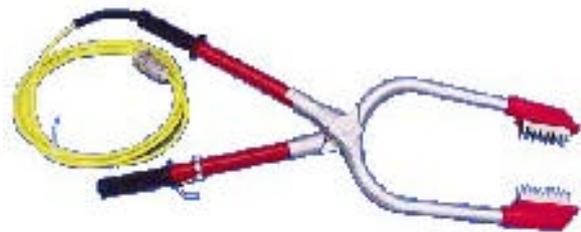


Figure 5. Scissor-type stunning tongs.

Appendix XXVII (contd)Appendix G (contd)2. Requirements for effective use

- a) The stunner control device should generate a low frequency (30 – 60 Hz) current with a minimum voltage of 250 volts true RMS under load.
- b) Appropriate protective clothing (including rubber gloves and boots) should be worn.
- c) Animals should be restrained, at a minimum free-standing in a pen, close to an electrical supply.
- d) Two team members are required, the first to apply the electrodes and the second to manipulate the position of the animal to allow the second application to be made.
- e) A *stunning* current should be applied via scissor-type stunning tongs in a position that spans the brain for a minimum of 3 seconds; immediately following the application to the head, the electrodes should be transferred to a position that spans the heart and the electrodes applied for a minimum of 3 seconds.
- f) Electrodes should be cleaned regularly and after use, to enable optimum electrical contact to be maintained.
- g) Animals should be monitored continuously after *stunning* until death to ensure the absence of brain stem reflexes.

3. Advantages

- a) The application of the second stage minimises post-stun convulsions and therefore the method is particularly effective with pigs.
- b) Non-invasive technique minimises biosecurity risk.

4. Disadvantages

- a) The method requires a reliable supply of electricity.
- b) The electrodes must be applied and maintained in the correct positions to produce an effective stun and kill.
- c) Most stunner control devices utilise low voltage impedance sensing as an electronic switch prior to the application of high voltages; in unshorn sheep, contact impedance may be too high to switch on the required high voltage (especially during stage two).
- d) The procedure may be physically demanding, leading to operator fatigue and poor electrode placement.

5. Conclusion

The method is suitable for calves, sheep and goats, and especially for pigs (over one week of age).

Appendix XXVII (contd)Appendix G (contd)

Article 3.7.6.11.

**Electrical – single application**1. Method 1

Method 1 comprises the single application of sufficient electrical current to the head and back, to simultaneously stun the animal and fibrillate the heart. Provided sufficient current is applied in a position that spans both the brain and heart, the animal will not recover consciousness.

- a) Requirements for effective use
  - i) The stunner control device should generate a low frequency (30 – 60 Hz) current with a minimum voltage of 250 volts true RMS under load.
  - ii) Appropriate protective clothing (including rubber gloves and boots) should be worn.
  - iii) Animals should be individually and mechanically restrained close to an electrical supply as the maintenance of physical contact between the *stunning* electrodes and the animal is necessary for effective use.
  - iv) The rear electrode should be applied to the back, above or behind the heart, and then the front electrode in a position that is forward of the eyes, with current applied for a minimum of 3 seconds.
  - v) Electrodes should be cleaned regularly between animals and after use, to enable optimum electrical contact to be maintained.
  - vi) Water or saline may be necessary to improve electrical contact with sheep.
  - vii) An effective stun and kill should be verified by the absence of brain stem reflexes.
- b) Advantages
  - i) Method 1 stuns and kills simultaneously.
  - ii) It minimises post-stun convulsions and therefore is particularly effective with pigs.
  - iii) A single team member only is required for the application.
  - iv) Non-invasive technique minimises biosecurity risk.
- c) Disadvantages
  - i) Method 1 requires individual mechanical animal *restraint*.
  - ii) The electrodes must be applied and maintained in the correct positions to produce an effective stun and kill.
  - iii) Method 1 requires a reliable supply of electricity.
- d) Conclusion

Method 1 is suitable for calves, sheep, goats, and pigs (over 1 week of age).

## 2. Method 2

Method 2 stuns and kills by drawing inverted and shackled poultry through an electrified waterbath stunner. Electrical contact is made between the 'live' water and earthed shackle and, when sufficient current is applied, poultry will be simultaneously stunned and killed.

- a) Requirements for effective use
  - i) A mobile waterbath stunner and a short loop of processing line are required.
  - ii) A low frequency (30-60 Hz) current applied for a minimum of 3 seconds is necessary to stun and kill the birds.
  - iii) Poultry need to be manually removed from their cage, house or yard, inverted and shackled onto a line which conveys them through a waterbath stunner with their heads fully immersed.
  - iv) The required minimum currents to stun and kill dry birds are:
    - Quail - 100 mA/bird
    - Chickens – 160 mA/bird
    - Ducks & Geese – 200 mA/bird
    - Turkeys – 250 mA/bird.

A higher current is required for wet birds.
  - v) An effective stun and kill should be verified by the absence of brain stem reflexes.
- b) Advantages
  - i) Method 2 stuns and kills simultaneously.
  - ii) It is capable of processing large numbers of birds reliably and effectively.
  - iii) This non-invasive technique minimises biosecurity risk.
- c) Disadvantages
  - i) Method 2 requires a reliable supply of electricity.
  - ii) Handling, inversion and shackling of birds are required.
- d) Conclusion

Method 2 is suitable for large numbers of poultry.

## 3. Method 3

Method 3 comprises the single application of sufficient electrical current to the head of poultry in a position that spans the brain, causing unconsciousness; this is followed by a *killing* method (Article 3.7.6.17.).

- a) Requirements for effective use
  - i) The stunner control device should generate sufficient current (more than 300 mA/bird) to stun.

Appendix XXVII (contd)Appendix G (contd)

- ii) Appropriate protective clothing (including rubber gloves and boots) should be worn.
  - iii) Birds should be restrained, at a minimum manually, close to an electrical supply.
  - iv) A *stunning* current should be applied in a position that spans the brain for a minimum of 3 seconds; immediately following this application, the birds should be killed (Article 3.7.6.17.).
  - v) Electrodes should be cleaned regularly and after use, to enable optimum electrical contact to be maintained.
  - vi) Birds should be monitored continuously after *stunning* until death to ensure the absence of brain stem reflexes.
- b) Advantages
- Non-invasive technique (when combined with cervical dislocation) minimises biosecurity risk.
- c) Disadvantages
- i) Method 3 requires a reliable supply of electricity.
  - ii) The electrodes must be applied and maintained in the correct position to produce an effective stun.
  - iii) Birds must be individually restrained.
  - iv) It must be followed by a *killing* method.
- d) Conclusion
- Method 3 is suitable for small numbers of poultry.

Article 3.7.6.12.  
(under study)

**CO<sub>2</sub> / air mixture**1. Introduction

Controlled atmosphere *killing* is performed by exposing animals to a predetermined gas mixture, either by placing them in a gas-filled *container* or apparatus (Method 1) or by the gas being introduced into a poultry house (Method 2).

Inhalation of carbon dioxide (CO<sub>2</sub>) induces respiratory and metabolic acidosis and hence reduces the pH of cerebrospinal fluid (CSF) and neurones thereby causing unconsciousness and, after prolonged exposure, death.

2. Method 1

The animals are placed in a gas-filled *container* or apparatus.

Appendix XXVII (contd)Appendix G (contd)

- a) Requirements for effective use in a *container* or apparatus
  - i) *Containers* or apparatus should allow the required gas concentration to be maintained and accurately measured.
  - ii) When animals are exposed to the gas individually or in small groups in a *container* or apparatus, the equipment used should be designed, constructed, and maintained in such a way as to avoid injury to the animals and allow them to be observed.
  - iii) Animals should be introduced into the *container* or apparatus after it has been filled with the required CO<sub>2</sub> concentration, and held in this atmosphere until death is confirmed.
  - iv) Team members should ensure that there is sufficient time allowed for each batch of animals to die before subsequent ones are introduced into the *container* or apparatus.
  - v) *Containers* or apparatus should not be overcrowded and measures are needed to avoid animals suffocating by climbing on top of each other.
- b) Advantages
  - i) CO<sub>2</sub> is readily available.
  - ii) Application methods are simple.
- c) Disadvantages
  - i) The need for properly designed *container* or apparatus.
  - ii) The aversive nature of high CO<sub>2</sub> concentrations.
  - iii) No immediate loss of consciousness.
  - iv) The risk of suffocation due to overcrowding.
  - v) Difficulty in verifying death while the animals are in the *container* or apparatus.
- d) Conclusion
 

Method 1 is suitable for use in poultry and neonatal sheep, goats and pigs.

3. Method 2

The gas is introduced into a poultry house.

- a) Requirements for effective use in a poultry house
  - i) Prior to introduction of the CO<sub>2</sub>, the poultry house should be appropriately sealed to allow control over the gas concentration.
  - ii) The house should be gradually filled with CO<sub>2</sub> so that all birds are exposed to a concentration of >40% until they are dead; a vaporiser may be required to prevent freezing.
  - iii) Devices should be used to accurately measure the gas concentration at the maximum height accommodation of birds.

Appendix XXVII (contd)Appendix G (contd)

## b) Advantages

- i) Applying gas to birds *in situ* eliminates the need to manually remove live birds.
- ii) CO<sub>2</sub> is readily available.
- iii) Gradual raising of CO<sub>2</sub> concentration minimises the aversiveness of the induction of unconsciousness.

## c) Disadvantages

- i) It is difficult to determine volume of gas required to achieve adequate concentrations of CO<sub>2</sub> in some poultry houses.
- ii) It is difficult to verify death while the birds are in the poultry house.

## d) Conclusion

Method 2 is suitable for use in poultry in closed-environment sheds.

Article 3.7.6.13.

**Nitrogen and/or inert gas mixed with CO<sub>2</sub>**1. Introduction

CO<sub>2</sub> may be mixed in various proportions with nitrogen or an inert gas (e.g., argon), and the inhalation of such mixtures leads to hypercapnic-hypoxia and death when the oxygen concentration by volume is =2%. This method involves the introduction of animals into a *container* or apparatus containing the gases. Such mixtures do not induce immediate loss of consciousness, therefore the aversiveness of various gas mixtures containing high concentrations of CO<sub>2</sub> and the respiratory distress occurring during the induction phase, are important animal welfare considerations.

Pigs and poultry appear not to find low concentrations of CO<sub>2</sub> strongly aversive, and a mixture of nitrogen or argon with =30% CO<sub>2</sub> by volume and =2% O<sub>2</sub> by volume can be used for *killing* poultry and neonatal sheep, goats and pigs.

2. Requirements for effective use

- a) *Containers* or apparatus should allow the required gas concentrations to be maintained, and the O<sub>2</sub> and CO<sub>2</sub> concentrations accurately measured during the *killing* procedure.
- b) When animals are exposed to the gases individually or in small groups in a *container* or apparatus, the equipment used should be designed, constructed, and maintained in such a way as to avoid injury to the animals and allow them to be observed.
- c) Animals should be introduced into the *container* or apparatus after it has been filled with the required gas concentrations (with =2% O<sub>2</sub>), and held in this atmosphere until death is confirmed.
- d) Team members should ensure that there is sufficient time allowed for each batch of animals to die before subsequent ones are introduced into the *container* or apparatus.
- e) *Containers* or apparatus should not be overcrowded and measures are needed to avoid animals suffocating by climbing on top of each other.

3. Advantages

Low concentrations of CO<sub>2</sub> cause little aversiveness and, in combination with nitrogen or an inert gas, produces a fast induction of unconsciousness.

4. Disadvantages

- a) A properly designed *container* or apparatus is needed.
- b) It is difficult to verify death while the animals are in the *container* or apparatus.
- c) There is no immediate loss of consciousness.
- d) Exposure times required to kill are considerable.

5. Conclusion

The method is suitable for poultry and neonatal sheep, goats and pigs.

Article 3.7.6.14.

**Nitrogen and/or inert gasses**1. Introduction

This method involves the introduction of animals into a *container* or apparatus containing nitrogen or an inert gas such as argon. The controlled atmosphere produced leads to unconsciousness and death from hypoxia.

Research has shown that hypoxia is not aversive to pigs and poultry, and it ~~doesn't~~ does not induce any signs of respiratory distress prior to loss of consciousness.

2. Requirements for effective use

- a) *Containers* or apparatus should allow the required gas concentrations to be maintained, and the O<sub>2</sub> concentration accurately measured.
- b) When animals are exposed to the gases individually or in small groups in a *container* or apparatus, the equipment used should be designed, constructed, and maintained in such a way as to avoid injury to the animals and allow them to be observed.
- c) Animals should be introduced into the *container* or apparatus after it has been filled with the required gas concentrations (with =2% O<sub>2</sub>), and held in this atmosphere until death is confirmed.
- d) Team members should ensure that there is sufficient time allowed for each batch of animals to die before subsequent ones are introduced into the *container* or apparatus.
- e) *Containers* or apparatus should not be overcrowded and measures are needed to avoid animals suffocating by climbing on top of each other.

Appendix XXVII (contd)Appendix G (contd)3. Advantages

Animals are unable to detect nitrogen or inert gases, and the induction of hypoxia by this method is not aversive to animals.

4. Disadvantages

- a) A properly designed *container* or apparatus is needed.
- b) It is difficult to verify death while the animals are in the *container* or apparatus.
- c) There is no immediate loss of consciousness.
- d) Exposure times required to kill are considerable.

5. Conclusion

The method is suitable for poultry and neonatal sheep, goats and pigs.

Article 3.7.6.15.

**Lethal injection**1. Introduction

A lethal injection using high doses of anaesthetic and sedative drugs causes CNS depression, unconsciousness and death. In practice, barbiturates in combination with other drugs are commonly used.

2. Requirements for effective use

- a) Doses and routes of administration that cause rapid loss of consciousness followed by death should be used.
- b) Prior sedation may be necessary for some animals.
- c) Intravenous administration is preferred, but intraperitoneal or intramuscular administration may be appropriate, especially if the agent is non-irritating.
- d) Animals should be restrained to allow effective administration.
- e) Animals should be monitored to ensure the absence of brain stem reflexes.

3. Advantages

- a) The method can be used in all species.
- b) Death can be induced smoothly.

4. Disadvantages

- a) *Restraint* and/or sedation may be necessary prior to injection.

Appendix XXVII (contd)Appendix G (contd)

- b) Some combinations of drug type and route of administration may be painful, and should only be used in unconscious animals.
- c) Legal requirements and skill/training required may restrict use to *veterinarians*.
- d) Contaminated carcasses may present a risk to other wild or domestic animals.

5. Conclusion

The method is suitable for *killing* small numbers of cattle, sheep, goats, pigs and poultry.

Article 3.7.6.16.

**Addition of anaesthetics to feed or water**1. Introduction

An anaesthetic agent which can be mixed with poultry feed or water may be used to kill poultry in houses. Poultry which are only anaesthetised need to be killed by another method such as cervical dislocation.

2. Requirements for effective use

- a) Sufficient quantities of anaesthetic need to be ingested rapidly for effective response.
- b) Intake of sufficient quantities is facilitated if the birds are fasted or water is withheld.
- c) Must be followed by *killing* (see Article 3.7.6.17) if birds are anaesthetised only.

3. Advantages

- a) Handling is not required until birds are anaesthetised.
- b) There may be biosecurity advantages in the case of large numbers of diseased birds.

4. Disadvantages

- a) Non-target animals may accidentally access the medicated feed or water when provided in an open environment.
- b) Dose taken is unable to be regulated and variable results may be obtained.
- c) Animals may reject adulterated feed or water due to illness or adverse flavour.
- d) The method may need to be followed by *killing*.
- e) Care is essential in the preparation and provision of treated feed or water, and in the disposal of uneaten treated feed/water and contaminated carcasses.

5. Conclusion

The method is suitable for *killing* large numbers of poultry in houses.

Appendix XXVII (contd)Appendix G (contd)

Article 3.7.6.17.

**Killing methods for use on unconscious animals**1. Method 1: Cervical dislocation (manual and mechanical)

## a) Introduction

Poultry may be killed by either manual cervical dislocation (stretching) or mechanical neck crushing with a pair of pliers. Both methods result in death from asphyxiation and/or cerebral anoxia.

## b) Requirements for effective use

i) *Killing* should be performed either by manually or mechanically stretching the neck to sever the spinal cord or by using mechanical pliers to crush the cervical vertebrae with consequent major damage to the spinal cord.

ii) Consistent results require strength and skill so team members should be rested regularly to ensure consistently reliable results.

iii) Birds should be monitored continuously until death to ensure the absence of brain stem reflexes.

## c) Advantages

i) It is a non-invasive *killing* method.

ii) It can be performed manually on small birds.

## d) Disadvantages

i) Operator fatigue.

ii) The method is more difficult in larger birds.

## e) Conclusion

This method is suitable for *killing* unconscious poultry.

2. Method 2: Decapitation

## a) Introduction

Decapitation results in death by cerebral ischaemia using a guillotine or knife.

## b) Requirements for effective use

The required equipment should be kept in good working order.

## c) Advantages

The technique is effective and does not require monitoring.

Appendix XXVII (contd)Appendix G (contd)

## d) Disadvantages

The working area is contaminated with body fluids, which increases biosecurity risk.

## e) Conclusion

This method is suitable for *killing* unconscious poultry.

3. Method 3: Pithing

## a) Introduction

Pithing is a method of *killing* animals which have been stunned by a penetrating captive bolt, without immediate death. Pithing results in the physical destruction of the brain and upper regions of the spinal cord, through the insertion of a rod or cane through the bolt hole.

## b) Requirements for effective use

i) Pithing cane or rod is required.

ii) An access to the head of the animal and to the brain through the skull is required.

iii) Animals should be monitored continuously until death to ensure the absence of brain stem reflexes.

## c) Advantages

The technique is effective in producing immediate death.

## d) Disadvantages

i) A delayed and/or ineffective pithing due to convulsions may occur.

ii) The working area is contaminated with body fluids, which increases biosecurity risk.

## e) Conclusion

This method is suitable for *killing* unconscious animals which have been stunned by a penetrating captive bolt.

4. Method 4: Bleeding

## a) Introduction

Bleeding is a method of *killing* animals through the severance of the major blood vessels in the neck or chest that results in a rapid fall in blood pressure, leading to cerebral ischaemia and death.

## b) Requirements for effective use

i) A sharp knife is required.

ii) An access to the neck or chest of the animal is required.

iii) Animals should be monitored continuously until death to ensure the absence of brain stem reflexes.

Appendix XXVII (contd)

Appendix G (contd)

c) Advantages

The technique is effective in producing death after an effective *stunning* method which does not permit pithing.

d) Disadvantages

a) A delayed and/or ineffective bleeding due to convulsions may occur.

b) The working area is contaminated with body fluids, which increases biosecurity risk.

e) Conclusion

This method is suitable for *killing* unconscious animal.

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## SUPPORTING DOCUMENT FOR CHAPTER 2.3.13. OF THE TERRESTRIAL ANIMAL HEALTH CODE ON BOVINE SPONGIFORM ENEPHALOPATHY

This document is provided in support of the recommendations in the present *Terrestrial Code* chapter. It deals only with the risks associated with the presence of the bovine spongiform encephalopathy (BSE) agent in cattle (*Bos taurus* and *Bos indicus*) although the BSE ad hoc committee acknowledged there may be a need in the future to address the subject of BSE in small ruminants.

The availability of experimental infectivity data has significantly increased in the recent years. During the same interval, extremely sensitive tests have been developed, including those employing highly sensitive transgenic mice strains and potentially more sensitive laboratory PrP detection methods. With the development of such highly sensitive methods, the probability of detection of PrP<sup>BSE</sup> in tissues that are not currently listed as infectious is increasing. However, such findings need to be considered in context, and their relevance to establishing risk to consumers evaluated carefully when the quantity of PrP<sup>BSE</sup> detected is potentially below the limit of detection of intracerebral (i.c.) cattle to cattle bioassay. By June 2006, 156 variant Creutzfeldt-Jakob-Disease (vCJD)-cases had been detected in the United Kingdom (UK), a country where most probably the majority of the population was exposed to the BSE-agent. The latest models of the vCJD epidemic estimate that the potential scale of the clinical epidemic arising from food-borne exposure is unlikely to exceed 400 future cases (Clarke and Ghani, 2005). The relatively low number of predicted vCJD cases in relation to the massive exposure to the BSE agent is suggested to be due mainly to a significant species barrier between cattle and humans (Comer and Huntly, 2004, Bishop et al, 2006).

Therefore, data from cattle to cattle transmission studies (intracerebral) are taken as the baseline for recommendations in the *Terrestrial Animal Health Code*.

### Section 2.3.13.1

The list of tradable commodities is mainly based on insights from experimental transmission studies of BSE to cattle and from the epidemiological data relating to natural disease. Currently the formulation of this list does not take into account the BSE risk status of the cattle population in the *exporting country, zone or compartment* (Article 2.3.13.1) or the current conditions for trade in commodities according to the BSE status (Articles 2.3.13.8-2.3.13.16).

How the BSE agent behaves biologically in cattle was originally surmised from what was known about scrapie in small ruminants. However, subsequent data from examinations of tissues from field cases of BSE and from experimental pathogenesis studies of BSE in cattle indicate that the tissue distribution of BSE agent in cattle is more restricted than was originally inferred from the understanding of the pathogenesis of scrapie in sheep and goats.

**The search for infectivity in tissues of BSE-infected cattle has examined material either from natural cases or from experimental, sequential kill, time course studies using orally challenged cattle. Tissues have also been examined for the detection of the disease-specific form of PrP. The majority of tissue infectivity assays have been conducted in inbred mouse strains (RIII or C57Bl), although there have been a limited number of studies in cattle and, most recently, in transgenic (Tg) mice over-expressing the bovine PrP gene (Tg bov XV). The current situation with regard to tissues examined for infectivity or PrP<sup>BSE</sup> and their categorization according to level of infectivity, irrespective of the stage of disease is given in Table 1.<sup>1</sup>**

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<sup>1</sup> : Adapted from: Report of WHO TSE Consultation: Tissue Infectivity Distribution in Transmissible Spongiform Encephalopathies, 14-16 September 2005.

Appendix XXVIII (contd)**Infectivity/ PrP<sup>BSE</sup> detected in natural clinical cases**

In natural cases of clinically-affected cattle, BSE infectivity has been detected only in the brain, spinal cord and retina by assay in inbred mice (Fraser & Foster 1994; MAFF 1998; Buschmann & Groschup 2005). Assays of infectivity by intracerebral inoculation of cattle identified additionally infectivity in a pool of nictitating membranes, but not in pools of lymph nodes or spleens from natural cases (S.A.C. Hawkins, pers. comm). BSE infection has been transmitted to mice, by feeding affected brain (Barlow & Middleton, 1990 ) but not by feeding extraneural tissues (Middleton & Barlow 1993 ).

Transgenic bovinised mice (Tgbov XV mice), over expressing the bovine PrP gene, have been constructed with a sensitivity for detecting BSE infectivity in cattle which exceeds that of RIII mice by at least 10,000-fold, and even that of cattle by approximately 10-fold. These mice were challenged with brain and spleen pools from clinical BSE cases sourced in the UK, and a comprehensive range of tissues and fluids from a single, late-stage pregnancy, German case showing clinical signs of BSE (Buschmann & Groschup 2005 ). Transmissions were obtained from the UK-sourced brain pool, but not the spleen pool. From the German BSE case infectivity was detected in brain, spinal cord, retina and optic nerve, distal ileum, and peripheral nerve. Less than 100% attack rates and prolonged incubation periods characterized the transmissions from peripheral nervous system tissue (facial and sciatic nerves) and the titers can be conservatively estimated to be  $\sim 10^4$ - $10^5$  less per g than that of the CNS (brain stem). Additionally, a single mouse (of 10) developed disease after 520 days when inoculated with semi-tendinous muscle from the BSE-affected pregnant cow. The results support a conclusion that there is a limited distribution of BSE infectivity in bovine tissues (Buschmann and Groschup 2005).

PrP<sup>BSE</sup> detection has been reported in the peripheral nerves of a case of BSE in Japan (Iwamaru et al., 2005). Additionally, three 80- to 95-month-old Holstein dairy cattle slaughtered at abattoirs in Japan were examined for the distribution of PrP<sup>BSE</sup> by immunohistochemistry (IHC) and Western blot (WB) analyses. The cattle are reported to have shown no clinical signs relevant to BSE but were screened as positive by the Bio-Rad TeSeE test. These positive results were confirmed by IHC or WB in a specimen of the medulla oblongata. Histopathologically, these cattle showed no vacuolation in tissue sections from the central nervous system except for the medulla oblongata. Both IHC and WB analyses revealed PrP<sup>BSE</sup> accumulation in the brain, spinal cord, satellite and ganglionic cells of the dorsal root ganglia, and the myenteric plexus of the distal ileum. In addition, small amounts of PrP<sup>BSE</sup> were detected in the peripheral nerves of two of the cattle by WB. No PrP<sup>BSE</sup> was demonstrated by either method in the Peyer's patches of the distal ileum, additional lymphoid tissues including the palatine tonsils, lymph nodes, and spleen, or other tissues. These Japanese researchers noted that the distribution of PrP<sup>BSE</sup> accumulation in this naturally-occurring, preclinical stage was different from that reported for cattle inoculated experimentally with the BSE agent (Iwata et al., 2006), although the clinical signs recorded as being present at slaughter are considered consistent with some BSE cases identified in the UK (D Matthews, pers. comm.).

**Infectivity/ PrP<sup>BSE</sup> detected in cattle after experimental oral exposure to the BSE agent**

To determine the temporal and spatial development of infectivity and pathological changes following oral exposure, pathogenesis studies of experimental BSE in cattle were initiated. In experimentally oral exposed cattle, BSE infectivity has been detected by inbred mouse assay in the distal ileum (through much of the disease course from six months post exposure) and in the CNS and in sensory ganglia (dorsal root ganglia) of the peripheral nervous system from late in the incubation period (Wells et al 1994; 1996; 1998). Infectivity has also been detected in sternal bone marrow in cattle experimentally exposed to BSE agent by the oral route (but only at a single time point [38 months] during clinical illness) (Wells et al 1999).

Due to the species barrier (cattle-mice), the bioassay of BSE infectivity in mice is less sensitive than bioassay in cattle. A comparative bioassay in which pooled brains from five confirmed cases of BSE were titrated in cattle and mice, showed that the titer measured is 500 fold higher when assayed in cattle than in mice (i.e. the bioassay in mice of bovine tissues infected with BSE agent is less sensitive than bioassay in cattle) (Hawkins et al 2000; SSC 2002b). Assays in cattle of selected tissues from this sequential time point oral exposure study confirmed

infectivity in distal ileum (from six through 18 months after exposure and during clinical disease) and in the CNS at the earliest time post-exposure detected by the inbred mouse assay, but not before, and has detected infectivity in palatine tonsil (at a single time point 10 months post exposure), which was not detected by the mouse assay (Wells et al 2005). Immunohistochemical examination of tonsil from the donor cattle killed sequentially failed to reveal PrP<sup>BSE</sup> at any time in the incubation period or clinical phase (Wells et al 2005).

Bone marrow from experimentally exposed cattle in the clinical phase of disease has not transmitted by assay in cattle.

A wide range of other tissues (including most lymphoreticular tissues) from cattle with BSE, both naturally exposed and experimentally induced and from cattle in the incubation period after experimental exposure, have shown no detectable infectivity using conventional mouse bioassays or ongoing parallel bioassays in cattle to date (Wells et al 1996; 1998; 2005; SSC 2002b).

The localisation of PrP<sup>BSE</sup> has been examined by immunohistochemistry (IHC) in the distal ileum of cattle up to 40 months after they had been exposed orally to the agent of BSE, and from an additional group of cattle six months after a similar exposure, and in naturally occurring clinical cases of BSE (Terry et al 2003). PrP<sup>BSE</sup> was detected mainly in macrophages, in a small proportion of the follicles of the Peyer's patches in the distal ileum in the experimentally exposed cattle throughout much of the course of the disease. The earliest time point in the experimental disease at which PrP<sup>BSE</sup> could be detected in Peyer's patches was at 6 months post inoculation, 26 months prior to visualisation of PrP<sup>BSE</sup> in the CNS. The observations were in agreement with the infectivity data derived from mouse bioassays of the distal ileum (Wells et al 1998). In the later stages of the disease, the proportion of immunostained follicles increased as the total number of follicles decreased as a consequence of lymphoid tissue involution with age. In the additional experimental group of cattle, killed at six months post exposure, PrP<sup>BSE</sup> was confined to the Peyer's patches of the distal ileum but no immunolabelling was detected in the lymphoid tissue of the duodenum, jejunum or colon. PrP<sup>BSE</sup> could also not be detected in the distal ileum in naturally occurring clinical cases of BSE. In some of the cases, from all three groups of cattle tested, there was some sparse immunolabelling of the neurons of the distal ileal myenteric plexus.

It has to be noted that even with the greatly increased sensitivity of detection methods, the range of tissues in which infectivity had been found had not significantly changed (Table1).

In the recommendations, appropriate weight was given to the significant amount of data available as a result of the natural route of exposure of cattle and the outcomes of research involving cattle to cattle transmission studies where there is no species barrier.

### **2.3.13.1, 1a: Milk and milk products**

Supporting evidence for the safety of milk and milk products with regard to BSE transmission:

#### Experimental data:

Inoculation of RIII mice with udder from a BSE affected cow did not detect infectivity (Foster and Fraser 1994). An experiment using milk derived from cattle with BSE in early, mid and late lactation and either inoculated or fed to susceptible mice has revealed no evidence of infectivity (Taylor et al. 1995).

Experiments in which mice were fed milk and mammary gland from clinically affected cows have failed to transmit the disease within the natural lifespan of the recipients (Middleton & Barlow 1993 ).

Furthermore, milk samples from cows orally challenged as calves with bovine brain from clinically affected cows and followed over four lactations were tested for the presence of PrP<sup>BSE</sup> using a very sensitive ELISA and a Western blot test. The results of this study do not provide any evidence for the presence of PrP<sup>BSE</sup> in the milk from cattle incubating BSE at levels defined by the limits of sensitivity of the two analytical methods used. (Everest et al. (2006), *Journal of General Virology*, in press)

*In addition, colostrum from a clinical BSE case did not transmit infectivity when tested in highly sensitive transgenic mice (Buschmann & Groschup 2005 ).*

Appendix XXVIII (contd)**Epidemiological data**

Several studies have examined vertical/maternal transmission but none has shown evidence that transmission of the BSE agent occurs through milk (Wrathall *et al.*, 2002; Wilesmith and Ryan, 1997; Wilesmith *et al.*, 1997; SSC 2001).

In conclusion, experimental and epidemiological evidence do not indicate milk or its products to be a risk factor in transmitting the BSE agent.

**2.3.13.1, 1b: semen and in vivo derived cattle embryos collected and handled in accordance with the recommendations of the International Embryo Transfer Society**

Supporting evidence for the safety of semen and in vivo derived cattle embryos with regard to BSE transmission:

Experimental data

No detectable infectivity has been found in susceptible mice fed placenta from confirmed cases of BSE (Middleton & Barlow 1993, Barlow & Middleton 1990, Bradley 1990), nor in placenta, placental fluids, ovary or uterine caruncle following mouse inoculation (Fraser & Foster 1994; MAFF 1997, SSC 2000). Male reproductive tissues (testis, epididymis, prostate, semen, seminal vesicle) inoculated into mice showed no infectivity (Fraser & Foster 1994; MAFF 1999).

In another study to detect possible infectivity in the foetal membranes and placenta of cattle with clinical BSE, recipient cattle were dosed oro-nasally with a pooled tissue homogenate from BSE cattle. The recipients were killed at 24 and 84 months post infection (p.i.) with no evidence of disease (Bradley, 1996, SSC 2000).

In another study (Wrathall *et al.*, 2002) semen from 13 bulls, 8 with clinical BSE, was used for artificial insemination (AI) of 167 clinically affected cows in the terminal stages of BSE. The resultant embryos were treated according to the recommendation of the International Embryo Transfer Society (IETS). 587 viable embryos were transferred into 347 recipient heifers imported from NZ and 266 live offspring were born, of which 54,1% had a BSE positive sire as well as a BSE positive dam. The recipients and the offspring were monitored for 7 years after birth. All brains of recipients and offspring were examined for BSE by histopathology and the immunohistochemical detection of PrP<sup>BSE</sup> with negative results. Additionally, one thousand and twenty non-viable embryos were inoculated i.c. into 48 susceptible mice, which were all negative at 700 days p.i. Additionally, uterine flush fluid samples from 41 cows were tested for BSE infectivity by i.c. and intraperitoneal inoculation of 946 mice. One of these mice had some vacuolar pathology, but its relevance proved difficult to determine as the putative incubation period was inconsistent with the survival of remaining mice in the group. All other mice with injections of flush fluids from the same cow were negative when finally killed and examined.

In another study, caruncles and amniotic fluid derived from a clinically affected cow inoculated into highly sensitive transgenic mice showed no infectivity (Buschmann & Groschup, 2005).

Epidemiological data

In a cohort study, 316 offspring of BSE confirmed cows (cases) and 316 offspring from cows over six years old and without BSE from the same farm and age cohort (controls) have been observed under controlled conditions over a seven-year period. The purpose of the study was to determine whether maternal transmission occurs, and the incidence if it does. There was a statistically significant risk difference between the two cohorts examined i.e. calves born to dams with BSE and calves born to healthy dams >6 years old. This difference was 9.7% with a relative risk of 3.2 for offspring of cows that developed clinical BSE. This enhanced risk for the offspring of BSE dams appeared to decline the later the offspring was born after the 1988 feed ban was in place but increased the closer that parturition was to the onset of clinical disease in the dam. The results cannot distinguish between a genetic component and true maternal transmission for which there is no other evidence. A combination of a genetic cause (i.e. increased susceptibility to feed exposure which could have occurred in any cattle in the study)

Appendix XXVIII (contd)

or genuine transmission fits the computer model of the epidemic best (Curnow *et al.*, 1997; Gore *et al.*, 1997; Donnelly *et al.*, 1997a,b,c; Wilesmith *et al.*, 1997). Later studies by Donnelly *et al.* (2002) significantly reduced the estimated risk to offspring, although they recognized that the introduction of culling of offspring of confirmed cases made estimation of the risk impossible other than by back-calculation methods. The route for the hypothetical maternal transmission of BSE has not been established. Given that <1% of the offspring of affected cattle in the general epidemic may succumb to this means of exposure, it is likely to be difficult to determine the route.

Furthermore, Wilesmith and Ryan (1997) have found no cases of BSE in the offspring of beef suckler cows with BSE, suggesting that neither milk nor direct contact appear to be involved. However, all calves receive colostrum and beef calves are suckled for up to six months of age. Since there is little epidemiological evidence that maternal transmission occurs in BSE (the way that transmission from milk would be exhibited if it occurred), it can be concluded that bovine milk does not contain any infectivity. A specific analysis of data from the study on offspring of beef suckler cows with BSE which suckled their young for substantial periods showed no occurrence of BSE in the offspring (Wilesmith *et al.*, 1997), suggesting neither milk nor close contact was a factor.

No offspring of BSE cases have been reported with BSE outside the UK. Unfortunately relatively few offspring have been tested for BSE globally, and most are relatively young when culled and tested, making it difficult to conclusively rule out the possibility of transmission. Nevertheless, it seems clear that if vertical transmission is occurring, it is a rare event.

Scientific reviews, undertaken in 1999 and 2002 (SSC 1999 and 2002b) concluded it unlikely that bovine semen constitutes a risk factor for the transmission of BSE and that embryos need only be subjected to those measures prescribed by the International Embryo Transfer Society protocols.

In conclusion, experimental and epidemiological evidence do not indicate male and female reproductive tissues to be a risk factor in transmitting the BSE agent.

**2.3.13.1, 1c: hides and skins and  
2.3.13.1, 1d Gelatin and collagen prepared exclusively from hides and skins and  
2.3.13.14 gelatin and collagen prepared from bones and intended for food or feed, cosmetics,  
pharmaceuticals including biologicals, or medical devices**

Supporting evidence for the safety of hides, skins and bones and gelatin and collagen prepared from them with regard to BSE transmission:

Hides and skins

Experimental data

Hides and skin from natural cases of BSE contain no detectable infectivity when bioassayed in laboratory mice (Fraser and Foster, 1994) and intracerebrally in cattle (Wells *et al.*, 2005).

In conclusion, experimental evidence does not indicate hides and skins and gelatin and collagen prepared from them to be a risk factor in transmitting the BSE agent provided that slaughter procedures prevent contamination with CNS.

**Bones**

**Experimental data**

With respect to gelatin and collagen prepared from bones, studies of mice intracerebrally injected with bone marrow from cattle with naturally occurring clinical BSE have not demonstrated infectivity. These data for BSE are based on transmissions attempted from a very small number of animals but they are, in general, consistent

Appendix XXVIII (contd)

with those in studies of the pathogenesis of BSE in experimentally orally exposed cattle. In a single group of cattle challenged with 100g of BSE infected brain tissue (Wells *et al.*, 1996, 1998) and killed sequentially at approximately 4 month intervals from 2-40 months post exposure, infectivity was detected, at a level close to the limit of detectability by mouse bioassay, in the sternal bone marrow from animals killed in the clinical phase of the disease at 38 months p.i. (but not before and not after) (Wells *et al.*, 1999).

The inconsistent result of the absence of detectable infectivity in bone marrow in this study at the later time point of 40 months p.i. has raised, amongst other alternative explanations, the possibility that the finding of infectivity at 38 months p.i. may have been the result of an accidental procedural contamination. Nevertheless, there is limited evidence from previous studies of other TSEs that infection of bone marrow, although not part of the general pathogenesis pattern, could be a rare event occurring late in the incubation period.

Risk assessment results

With respect to gelatin and collagen prepared from bones, a quantitative risk assessment (EFSA Journal 2006 312) of the residual risk in bone-derived gelatin, assuming sourcing of bones from animals which passed ante and post mortem inspection, but regardless of the country of origin, calculated different scenarios resulting in different risk levels. This risk assessment did not consider the risk of sourcing bones other than those fit for human consumption. The risk assessment indicates that the relevant exposures are regarded as very small compared to the historical exposure (1980-2001) of the UK human population due to meat and meat products in its diet. Based on these results, the risk of exposure appears to be much lower than previously thought. The removal of skull and vertebral column from the source materials results only in a very small risk reduction.

However, the input parameters to the supporting risk assessment model sourced animals only from the healthy slaughter sub-population and did not address the scenario where material was sourced from cattle not subject to ante- and post-mortem inspection.

Based on these calculations, the conditions recommended for gelatin derived from bones could be modified for countries, zones or compartments of undetermined or controlled BSE risk, while allowing for the anticipated problems associated with the practical implementation of the recommendations.

*For both categories of status, the cattle must have passed ante- and post-mortem inspection and the commercial process for gelatin production must have been correctly carried out. For controlled risk countries, zones or compartments, the source of bones for gelatin production could be expanded to include vertebrae, and bones could be sourced from countries of undetermined risk provided that bones from the skull and vertebral column were excluded.*

There is no specific information with regard to the production of collagen from bones, nor to the safety of such a process.

In conclusion, there are indications that gelatin and collagen prepared from bones are not risk factors in transmitting the BSE agent, provided they are sourced from cattle subject to ante- and post-mortem inspection, without any additional conditions applied. However, consistent with the conservative approach adopted in respect of BSE, it was considered that some additional conditions for gelatin and collagen prepared from bones are necessary as a safety margin.

**2.3.13.1, 1e protein-free tallow (maximum level of insoluble impurities of 0.15% in weight); and Article 2.3.13.15. tallow (other than protein-free tallow as defined in Article 2.3.13.1.)**

Supporting evidence for the safety of tallow with regard to BSE transmission:

Tallow refers to a wide range of animal fats and covers edible products and animal by products

- a) edible products (such as discrete adipose tissues) produced from animals which have passed ante- and post-mortem inspection are usually melted in dedicated processing facilities. The tissues are gently heat-treated (<95 °C) to maintain the high quality of tallow and it is purified, mainly by separation and filtration, in order to reduce any residual insoluble impurities. Edible tallows have low initial levels of impurity and are usually produced with final total impurity levels of <0.02%
- b) products manufactured from animal by products (such as trimmings, bones, certain slaughter offals, etc.) are extracted by rendering a mixture of tissues at < 100°C or are also obtained by pressing after rendering at "133°C/20'/3 bar". The tallow is usually purified to below 0.15% insoluble impurities. The extracted residue is referred to as greaves and can be further refined to produce meat and bone meal.

### **Experimental data**

Tallow contains no detectable infectivity when bioassayed in mice. Insofar as rendering is concerned, the scientific studies with brain-spiked TSE-infected material demonstrate no detectable infectivity in tallow whether filtered or not (Taylor and Woodgate, 2003).

### **Risk assessment results**

With respect to tallow, a quantitative risk assessment (EFSA Journal 2005 221) assuming sourcing of tissues from animals which passed ante and post mortem inspection, calculated different scenarios resulting in different risk levels. The risk assessment indicates that when the tallow is processed either by fat melting or rendering, the risk is virtually negligible. Although the residual BSE risk as expressed in the paper varied by two logs depending upon the retention or removal of SRMs and the BSE risk posed by the country of origin, even the worst case scenario indicated a residual BSE risk considerably below that previously assumed.

However, the input parameters to the supporting risk assessment model sourced animals only from the healthy slaughter sub-population and did not address the scenario where material was sourced from cattle not subject to ante- and post-mortem inspection.

The level of insoluble impurities in the tallow did not significantly affect the risk of exposure, due to the very low risk which tallow inherently presents.

On the other hand, the source of the raw material is significant and may warrant further consideration such as an examination of the worst case scenario in which none of the contributing material was sourced from cattle subject to ante- and post-mortem inspection, but rather from fallen stock animals or animals condemned at AM and PM inspection in general proportions characteristic of the European experience.

In conclusion, there are indications that tallow is not a risk factor in transmitting the BSE agent at least when it is sourced from cattle subject to ante- and post-mortem inspection, without any additional conditions applied.

However, consistent with the conservative approach adopted in respect of BSE, it was considered that some additional conditions are necessary as a safety margin for tallow, which is not protein-free.

#### **2.3.13.16 Tallow derivatives (other than those made from protein-free tallow as defined in Article 2.3.13.1)**

Tallow is not used in pharmaceutical and cosmetic products, but tallow derivatives can be used and are considered as safe for any purpose provided these are produced by hydrolysis of tallow by approved methods using high temperature and pressure (eg from safe source tissues with a low risk of TSE infection) or by processes which give the same degree of assurance.

Appendix XXVIII (contd)**2.3.13.1, 1f Dicalcium phosphate (with no trace of protein or fat); and Article 2.3.13.15. dicalcium phosphate (other than dicalcium phosphate as defined in Article 2.3.13.1.)**

Supporting evidence for the safety of dicalcium phosphate with regard to BSE transmission:

Dicalcium phosphate (DCP) is a co-product of the alkaline or acid gelatin manufacturing process.

Tricalcium phosphate (TCP) can be manufactured as a by-product of the heat and pressure bone gelatine manufacturing processes and the manufacturing processes of hydrolysed collagen.

Both are obtained from degreased bones, almost exclusively from cattle and pigs (SSC, 2003).

The end use of these bovine-derived phosphates is in principle animal nutrition as an additive, mainly in monogastric animals, but they may also be used as fertiliser.

**Experimental data**

With respect to dicalcium phosphate prepared from bones, studies of mice intracerebrally injected with bone marrow from cattle with naturally occurring clinical BSE have not demonstrated infectivity. These data for BSE are based on transmissions attempted from a very small number of animals but they are, in general, consistent with those in studies of the pathogenesis of BSE in experimentally orally exposed cattle. In a single group of cattle challenged with 100g of BSE infected brain tissue (Wells *et al.*, 1996, 1998) and killed sequentially at approximately 4 month intervals from 2-40 months post exposure, infectivity was detected, at a level close to the limit of detectability by mouse bioassay, in the sternal bone marrow from animals killed in the clinical phase of the disease at 38 months p.i. (but not before and not after) (Wells *et al.*, 1999).

The inconsistent result of the absence of detectable infectivity in bone marrow in this study at the later time point of 40 months p.i. has raised, amongst other alternative explanations, the possibility that the finding of infectivity at 38 months p.i. may have been the result of an accidental procedural contamination. Nevertheless, there is limited evidence from previous studies of other TSEs that infection of bone marrow, although not part of the general pathogenesis pattern, could be a rare event occurring late in the incubation period.

**Risk assessment results**

With respect to dicalcium phosphate, a quantitative risk assessment (EFSA Journal 2006 339) assuming sourcing of tissues from animals which passed ante and post mortem inspection, calculated different scenarios resulting in different risk levels. The risk assessment indicates that when a limit of less than 1 resulting case per year within the exposed population is considered as negligible, no scenario of sourcing bovine bones, derived phosphates from GBR III or GBR IV countries leads to an average residual BSE risk equivalent to less than 1 case of BSE per year in either adult dairy or beef cattle.

This assessment, assuming different levels of contamination of bones with dorsal root ganglia and spinal cord, a very low level of infectivity of bone marrow and an infectivity reduction for the acid process of  $10^{4.2}$  -  $10^{4.8}$  and for the heat/pressure process of  $10^{6.2}$  -  $10^{6.8}$  indicates a very low risk.

However, the input parameters to the supporting risk assessment model sourced animals only from the healthy slaughter sub-population and did not address the scenario where material was sourced from cattle not subject to ante- and post-mortem inspection.

In conclusion, there are indications that DCP and TCP are not a risk factor in transmitting the BSE agent. However, the risk is only estimated for bones exclusively sourced from cattle subject to ante- and post-mortem inspection, which does not reflect the real practice.

Therefore, it was considered that some additional conditions are necessary as a safety margin for dicalcium phosphate with traces of protein or fat.

**2.3.13.1, 1g Deboned skeletal muscle meat and 2.3.13.9-11 fresh meat and meat products**

Supporting evidence for the safety of deboned skeletal muscle meat with regard to BSE transmission:

**Experimental data**

From studies of the pathogenesis of experimental BSE in cattle, no infectivity is found in assays of skeletal muscle pools (triceps, masseter, sternocephalicus and longissimus dorsi) completed in inbred mice and in progress in cattle (semitendinosus and longissimus dorsi) from selected kill time points of the oral exposure study (Wells et al, 2005). These studies are being terminated in 2006 and inoculated animals have so far shown no clinical evidence of infection (D Matthews, personal communication).

However, in the transgenic mice over-expressing the bovine PrP gene (Tg bov XV) infectivity was detected in one muscle (semitendinosus), from a single clinical case of BSE in Germany (Buschmann & Groschup 2005).

In light of the discussions above, data from cattle to cattle experiments are regarded as the baseline for inclusion of tissues in the list of SRM. Therefore, pure skeletal muscle meat itself is regarded as safe, if some additional measures involving compliance with recommended stunning practices (The EFSA Journal, 2004 123; TAFS, 2004) and the hygienic removal of SRM (The EFSA Journal, 2005 220) are applied.

The application of the 30 months age cut off for skeletal muscle meat in Article 2.3.13.1 is based on the significantly reduced risk associated with SRM from animals younger than that age (see Article 2.3.13.13 for list of SRM). For controlled risk countries, a lower age cut off could be considered. However, since Article 2.3.13.1 addresses meat from all categories of BSE risk, it was considered that 30 months should be retained as it added an element of safety regarding possible contamination from tissues listed in Article 2.3.13.13 originating from countries of undetermined BSE risk.

In conclusion, experimental evidence indicates that deboned skeletal muscle meat is not a risk factor in transmitting the BSE agent if the recommended mitigative measures are applied to prevent contamination with SRM.

**2.3.13.1, 1h blood and blood by-products**

Supporting evidence for the safety of blood and blood by products with regard to BSE transmission:

Experimental data

Blood (buffy coat) from experimentally infected BSE cases 6, 18, 26 and 32 months post infection contains no detectable infectivity when inoculated intracerebrally into cattle (Wells et al, 2005).

However, brain damage caused by certain stunning techniques can produce Central Nervous System (CNS) tissue emboli in venous blood draining the head (The EFSA Journal 2004 123).

In conclusion, experimental evidence indicates that blood and blood by-products are not risk factor in transmitting the BSE agent if recommended stunning procedures are applied.

**2.3.13.13 List of SRM**

The list of SRM was first based on the results of historical experiments on sheep scrapie. These were supplemented by later results from experiments in which tissues from cattle in the pathogenesis study described above were inoculated intracerebrally into mice or cattle. All tissues found positive in these experiments have so far been included in the list.

## Appendix XXVIII (contd)

Vertebral column and skull are included, although they have not shown to be infected, but because of their close association with the CNS and in the expectation that they will be contaminated as a result of that association and current carcass dressing procedures.

Approximately 90% of infectivity is associated with the brain, spinal cord, dorsal root and trigeminal ganglia. The other 10% is associated with the distal ileum (Comer and Huntly, 2004). Although it cannot be excluded that infectivity may be present in other tissues at a level below the limit of detection in the bovine bioassay, this additional infectivity would constitute less than 1% of the total infectivity associated with the carcass. Some re-adjustment of that calculation may now be necessary following the detection of infectivity in peripheral nerves of clinically affected cattle (Buschmann & Groschup 2005, Iwamaru et al., 2005, Iwata et al., 2006).

The age limit for SRM (except tonsil and distal ileum) from countries that have followed the recommendations to ensure they are in the controlled risk status, is set to 30 months and that for countries of undetermined risk status is 12 months.

The age limits are based on data from the pathogenesis study and the attack rate study (EFSA Journal 2005 220) as well as the observed epidemiology of BSE, especially with respect to age.

Evidence suggests that detectable infectivity appears in the CNS at about  $\frac{3}{4}$  of the incubation time. The average age of BSE cases has generally increased, e.g. from 76 to 95 months in healthy slaughtered animals in the EU from 2001 to 2005, since the implementation of control measures. Therefore, a cut-off at 30 months represents a considerable safety margin for commodities from countries with a controlled risk status. It is however likely that in the few years after the implementation of control measures, such as a fully enforced feed ban, countries may experience small numbers of cases that are younger than those reported from the EU above. This is no surprise as the age range for clinically affected BSE cases can be as little as 20 months in the case of the UK, or extend to the full natural lifespan of cows that are exposed to low dose or infected as adults. The mean age at onset of disease in the UK before the effects of intervention were seen was 60 months, with the majority of affected cattle being four to six years of age. Clinical cases at a young age, or CNS positive cases at an equivalent age, therefore represent only a very small proportion of infected animals, and therefore the likelihood that CNS will test positive and be infectious at less than 30 months is low. They become increasingly rare as the effects of feed bans are seen.

For countries with an undetermined risk the situation remains unclear; imposition of a conservative age limit of 12 months would cover even the youngest animals which might be encountered at the beginning or the peak of an epidemic in this scenario).

### **2.3.13.2.-2.3.13.5 BSE risk status of the cattle population**

History shows that the risk associated with commodities originating within the cattle population of a country, zone or compartment cannot be determined solely on the basis of reported BSE cases, even in the presence of an active, targeted surveillance program.

Therefore, the recommendations concerning BSE classification incorporate assessment of a broader series of considerations. They are primarily based on the outcome of a BSE risk assessment, along with additional considerations listed in Article 2.3.13.2 (factors such as disease awareness programs, a system of notification and investigation of BSE cases as well as available laboratory competence and the aforementioned implementation of a risk-based surveillance system). They are accompanied by assessment of the date of effective implementation of a number of strategic controls within the feed production process.

Only after evaluation of all these factors, countries, zones or compartments can be classified. The former five BSE Status categories: BSE free, BSE provisionally free, minimal risk, moderate risk, and high risk were changed in 2005 into 3 categories: negligible, controlled and undetermined BSE-risk.

For guidelines concerning the factors to consider in conducting the BSE risk assessment recommended in chapter 2.3.13., see Appendix 3.8.5.

### MAJOR CATEGORIES OF INFECTIVITY: TABLES Ia, Ib, Ic

The information in these Tables is based exclusively upon observations of tissue infectivity in naturally occurring disease, or primary experimental infection by the oral route (in cattle), and does not include data on models using strains of TSE that have been adapted to experimental animals, because passaged strain phenotypes can differ significantly and unpredictably from those of naturally occurring disease. Assay species include inbred mice, transgenic mice overexpressing the bovine PrP gene or cattle. Because the detection of misfolded host prion protein (PrP<sup>TSE</sup>) has proven to be a reliable indicator of infectivity, PrP<sup>TSE</sup> testing results have been presented in parallel with bioassay data. Tissues are grouped into three major infectivity categories, irrespective of the stage of disease:

- Ia: High-infectivity tissues: CNS tissues that attain a high titre of infectivity in the later stages of all TSEs, and certain tissues that are anatomically associated with the CNS.
- Ib: Lower-infectivity tissues: peripheral tissues that have tested positive for infectivity and/or PrP<sup>TSE</sup> in at least one form of TSE.
- Ic: Tissues with no detectable infectivity: tissues that have been examined for infectivity and/or PrP<sup>TSE</sup> with negative results.

Data entries are shown as follows:

- + Presence of infectivity or PrP<sup>TSE</sup>
- Absence of detectable infectivity or PrP<sup>TSE</sup>
- NT Not tested
- ? Controversial results
- ( ) Limited or preliminary data

It is possible that the detection of infectivity using transgenic mice that over-express the gene encoding the normal prion protein, or the detection of PrP<sup>TSE</sup> using various newly developed amplification methods, may be more sensitive than transmission studies in wild-type bioassay animals, and thus may not correlate with disease transmissibility in nature.

**It is also important to understand that categories of infectivity are not the same as categories of risk, which require consideration not only of the level of infectivity, but also of the route by which infection is transmitted and the amount of tissue to which a person or animal is exposed.**

Table 1a: High-infectivity tissues

<b>CNS tissues that attain a high titre of infectivity in the later stages of TSE and certain tissues anatomically associated with the CNS</b>		
<b>Tissues</b>	<b>Cattle BSE</b>	
	<b>Infectivity<sup>1</sup></b>	<b>PrP<sup>TSE</sup></b>
Brain	+	+
Spinal cord	+	+
Retina	+	NT
Optic nerve	+	NT
Dorsal Root ganglia	+	NT
Trigeminal ganglia	+	NT
Pituitary gland <sup>2</sup>	-	NT
Dura mater <sup>2</sup>	NT	NT

Table 1b: Lower-infectivity tissues

Peripheral tissues that have tested positive for infectivity and/or PrP <sup>TSE</sup> in at least one form of TSE		
Tissues	Cattle BSE	
	Infectivity	PrP <sup>TSE</sup>
<b>Peripheral Nervous system</b>		
Peripheral nerves	+	+
Enteric plexuses <sup>3</sup>	NT	+
<b>Lymphoreticular tissues</b>		
Spleen	-	-
Lymph nodes	-	-
Tonsil	+	-
Nictitating membrane	+	-
Thymus	-	NT
<b>Alimentary tract</b>		
Tongue <sup>4</sup>	-	NT
Esophagus	-	NT
Fore-stomach <sup>5</sup>	-	NT
Stomach/ abomasum	-	NT
Duodenum	-	NT
Jejunum	-	NT
Ileum <sup>6</sup>	+	+
Large intestine	-	NT
<b>Reproductive tissues</b>		
Placenta	-	NT
<b>Other tissues</b>		
Lung	-	NT
Liver	-	NT
Kidney	-	-
Adrenal	NT	NT
Pancreas	-	NT
Bone marrow	+	NT
Skeletal muscle <sup>7</sup>	(+)	NT
Blood vessels	-	NT
Nasal mucosa	-	NT
Salivary gland	-	NT
<b>Body fluids</b>		
CSF	-	NT
Blood <sup>8</sup>	-	?

**Table 1c: Tissues with no detected infectivity or PrP<sup>TSE</sup>**

Tissues with no detected infectivity		
Tissues	Cattle BSE	
	Infectivity	PrP <sup>TSE</sup>
<b>Reproductive tissues</b>		
Testis	-	NT
Prostate/Epididymis/ Seminal vesicle	-	NT
Semen	-	NT
Ovary	-	NT
Uterus (Non-gravid)	-	NT
Placenta fluids	-	NT
Fetus <sup>9</sup>	-	NT
Embryos <sup>9</sup>	-	NT
<b>Musculo-skeletal tissues</b>		
Bone	-	NT
Heart/pericardium	-	NT
Tendon	-	NT
<b>Other tissues</b>		
Gingival tissue	NT	NT
Dental pulp	NT	NT
Trachea	-	NT
Skin	-	NT
Adipose tissue	-	NT
Thyroid gland	NT	NT
Mammary gland/udder	-	NT
<b>Body fluids, secretions and excretions</b>		
Milk <sup>10</sup>	-	-
Colostrum <sup>10,11</sup>	(-)	-
Cord blood	-	NT
Saliva	NT	NT
Sweat	NT	NT
Tears	NT	NT
Nasal mucus	NT	NT
Bile	NT	NT
Urine	-	NT
Faeces	-	NT

**Footnotes**

1. Infectivity bioassays of cattle tissues have been conducted in either mice or cattle (or both). Differences in relative levels of infectivity are not indicated.
2. No experimental data about infectivity in bovine pituitary gland or dura mater have been reported, but human cadaveric dura mater patches, and growth hormone derived from cadaveric pituitaries have transmitted CJD to hundreds of people and therefore must be included in the category of high-risk tissues.
3. In cattle, limited to the distal ileum.
4. In cattle, infectivity bioassay was negative, but the presence of PrP<sup>TSE</sup> in palatine tonsil has raised concern about possible infectivity in lingual tonsillar tissue at the base of the tongue that may not be removed at slaughter [Wells et al., 2005].

5. Ruminant forestomachs (reticulum, rumen, and omasum) are widely consumed, as is the true stomach (abomasum). The abomasum of cattle is also a source of rennet.
6. In cattle only the distal ileum has been bioassayed for infectivity.
7. Muscle homogenates have not transmitted disease to cattle from cattle with BSE. However, intracerebral inoculation of a semi-tendinosis muscle homogenate (including nervous and lymphatic elements) from a single cow with BSE has transmitted disease to over-expressing transgenic mice at a rate indicative of only trace levels of infectivity [Buschmann and Groschup 2005], and recent published and unpublished studies have reported the presence of PrP<sup>TSE</sup> in skeletal muscle in experimental rodent models of scrapie and vCJD [Beekes et al, 2005], in experimental and natural infections of sheep and goats [Andreoletti et al., 2004]. Bioassays to determine whether PrP<sup>TSE</sup> is associated with transmissibility in these experimental or natural infections are in progress.
8. A wealth of data from studies of blood infectivity in experimental animal models of TSE has been extended by recent studies documenting infectivity in the blood of sheep with naturally occurring scrapie, and (from epidemiological observations) two blood-associated vCJD transmissions in humans. Blood has not been shown to transmit disease from patients with any form of 'classical' TSE, or from cattle with BSE (including fetal calf blood). However, several laboratories using new, highly sensitive methods to detect PrP<sup>TSE</sup> claim success in studies of plasma and/or buffy coat in a variety of animal and human TSEs. Because the tests are all in a preliminary stage of development (and do not yet include results on blinded testing of specimens from naturally infected humans or animals), it is too early to evaluate the validity of these tests with sufficient confidence to permit either a negative or positive conclusion.
9. Embryos from BSE-affected cattle have not transmitted disease to mice, but no infectivity measurements have been made on fetal calf tissues other than blood (negative mouse bioassay) [Fraser and Foster 1994]. Calves born of dams that received embryos from BSE-affected cattle have survived for observations periods of up to seven years, and examination of the brains of both the unaffected dams and their offspring revealed no spongiform encephalopathy or PrP<sup>TSE</sup> [Wrathall et al. 2002].
10. Evidence that infectivity is not present in milk includes temporo-spatial epidemiologic observations failing to detect maternal transmission; clinical observations of over a hundred calves nursed by infected cows that have not developed BSE; and experimental observations that milk from infected cows has not transmitted disease when administered intracerebrally or orally to mice [Middleton and Barlow 1993; Taylor et al. 1995]. Also, large volumes of milk and colostrum from experimentally infected cows have been concentrated and tested for the presence of PrP<sup>TSE</sup>, with negative results [Everest et al 2006].
11. A single bioassay in over-expressing transgenic mice of colostrum from a cow with BSE gave a negative result [Buschmann and Groschup 2005] – See also note 10.

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## Planned distribution of chapters and appendices into two volumes

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