

MEETING OF THE OIE TERRESTRIAL ANIMAL HEALTH STANDARDS COMMISSION**Paris, 1–10 September 2020****List of participants****MEMBERS OF THE CODE COMMISSION**

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MEETING OF THE OIE TERRESTRIAL ANIMAL HEALTH STANDARDS COMMISSION

Paris, 1–10 September 2020

Adopted agenda

- 1) **Welcome from the Deputy Director General**
- 2) **Meeting with the Director General**
- 3) **Adoption of agenda**
- 4) **Cooperation with other Specialist Commissions**
- 5) **Code Commission's work programme (except texts proposed for comments or adoption)**
 - 5.1. Ongoing priority topics (not by order of priority)
 - 5.1.1. Terminology: Definition of 'swill.'
 - 5.1.2. Control of Shiga toxin-producing *E. coli* (STEC) in food-producing animals
 - 5.1.3. General hygiene in semen collection and processing centres and Collection and processing of bovine, small ruminant and porcine semen (Chapters 4.6 and 4.7)
 - 5.1.4. Revision of Collection and processing of *in vivo* derived embryos from livestock and equids (Chapter 4.8), and Collection and processing of oocytes and *in vitro* produced embryos from livestock and horses (Chapter 4.9)
 - 5.1.5. Updates on OIE AMR Working Group and Codex Alimentarius Task Force on AMR (in relation to the revision of Chapter 6.10 Responsible and prudent use of antimicrobial agents in veterinary medicine)
 - 5.1.6. Surra and dourine
 - 5.1.7. Infection with *Echinococcus granulosus* (Chapter 8.5) and Infection with *Taenia solium* (Porcine cysticercosis) (Chapter 15.4)
 - 5.1.8. Provisions regarding importation of honey
 - 5.1.9. Slaughter of animals (Chapter 7.5) and Glossary Part B ('slaughter', 'euthanasia', 'stunning', 'death', 'pain', 'distress' and 'suffering')
 - 5.1.10. Infection with Rift Valley fever virus (Chapter 8.15)
 - 5.2. New requests/proposals
 - 5.2.1. Request received to draft a chapter on Camel pox
 - 5.2.2. Trichomonosis (Chapter 11.11): Request received to update the recommended tests for importation of bulls
 - 5.2.3. Revision of Collection and processing of *in vivo* derived embryos from livestock and equids (Chapter 4.8) to reclassify the category for Bluetongue
 - 5.2.4. Revision of Collection and processing of oocytes and *in vitro* produced embryos from livestock and horses (Chapter 4.9) to amend Article 4.9.5 on optional tests and treatments
 - 5.2.5. Revision of the Glossary definition for 'disinfection'
 - 5.2.6. Revision of Article 4.7.4. on Conditions applicable to testing of boars

Annex 2 (contd)5.3. Follow-up revisions of recently adopted chapters

Outstanding issues regarding Chapter 8.14 Infection with rabies virus

5.4. Prioritisation of items in the work programme**6. Texts proposed for adoption in May 2020**

- 6.1. Diseases, infections and infestations listed by the OIE (Articles 1.3.1, 1.3.2 and 1.3.9)
- 6.2. Quality of Veterinary Services, Evaluation of Veterinary Services and draft new chapter on Veterinary Services (Chapters 3.1, 3.2 and 3.X)
- 6.3. Zoning and compartmentalisation (Articles 4.4.6 and 4.4.7)
- 6.4. New chapter on animal welfare and laying hen production systems (Chapter 7.Z)
- 6.5. New chapter on infection with animal trypanosomes of African origin (Chapter 8.Y)
- 6.6. Infestation with *Aethina tumida* (Small hive beetle) (Article 9.4.5)
- 6.7. Infection with avian influenza viruses (Chapter 10.4) [together with Diseases, infections and infestations listed by the OIE (Articles 1.3.6)]
- 6.8. Infection with avian mycoplasmosis (Chapter 10.5)
- 6.9. Infection with equine influenza (Article 12.6.6)

7. Texts circulated for comments

- 7.1. Glossary definitions for ‘Competent Authority’, ‘Veterinary Authority’ and ‘Veterinary Services’
- 7.2. Infection with rabies virus (Chapter 8.14)
- 7.3. Stray dog population control (Chapter 7.7)
- 7.4. Infection with foot and mouth disease virus (Chapter 8.8)
- 7.5. Rinderpest (Chapter 8.16)
- 7.6. Bovine spongiform encephalopathy (Chapter 11.4) and application for official recognition by the OIE of free status for bovine spongiform encephalopathy (Chapter 1.8)
- 7.7. Theileriosis (Chapters 11.10 and 14.X)
- 7.8. Trichomonosis (Chapter 11.11)
- 7.9. Contagious equine metritis (Chapter 12.2)
- 7.10. Equine piroplasmiasis (Chapter 12.7)

8. Texts proposed for adoption in May 2020 and postponed

- 8.1. User's Guide
- 8.2. Glossary Part A ('epidemiological unit', 'captive wild [animal]', 'feral [animal]' and 'wild [animal]')
- 8.3. Animal health surveillance (Article 1.4.3)
- 8.4. Notification of diseases, infections and infestations, and provision of epidemiological information (Chapter 1.1)
- 8.5. Procedures for self-declaration and for official recognition by the OIE (Chapter 1.6)
- 8.6. Veterinary legislation (Chapter 3.4)
- 8.7. New chapter on official control programmes for listed and emerging diseases (Chapter 4.Y)
- 8.8. Infection with peste des petits ruminants virus (Articles 14.7.3, 14.7.7, 14.7.24 and 14.7.34)
- 8.9. Infection with classical swine fever virus (Chapter 15.2)

9. Other updates

- 9.1. Guidelines on compartmentalisation for African swine fever
- 9.2. Wildlife health management framework concept note

10. Date of next meeting

**WORK PROGRAMME FOR
THE TERRESTRIAL ANIMAL HEALTH STANDARDS COMMISSION**

| Subject | Issue by priority order | Status and Action (Onset of process / # of rounds for comments post-meeting) |
|----------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------------------------------------------------------------------------------------|
| Horizontal chapters | | |
| General aspects | 1) Work with AAHSC towards harmonisation, as appropriate, of the horizontal parts of the <i>Codes</i> , notably Glossary, User's Guide, Section 4 on Disease prevention and control and Section 5 on Trade measures, import/export procedures and veterinary certification | Ongoing |
| | 2) Work with BSC and SCAD for accurate disease description and diagnostic in the <i>Manual</i> and case definitions in the <i>Code</i> and names of diseases and country and zone disease status | Ongoing - Approach to the issue of 'case definitions' was agreed. |
| | 3) Revision and formatting of chapters (articles numbering, tables and figures) | Ongoing |
| | 4) Revision of the Users' Guide | Ongoing - Last amendments were proposed for adoption in May 2021. |
| | 5) Use of terms: - biosecurity / sanitary measures - disease / infection / infestation - animal health status | Ongoing |
| Glossary | 1) 'Epidemiological unit' | Proposed for adoption in May 2021 (Sep 2018/4 th) |
| | 2) 'Poultry' | Proposed for adoption in May 2021 |
| | 3) 'Captive wild [animal]', 'feral [animal]' and 'wild [animal]' | Proposed for adoption in May 2021 (Sep 2018/3 rd) |
| | 4) 'Competent Authority', 'Veterinary Authority', 'Veterinary Services' | Sent for comments (Sep 2018/2 nd) |
| | 5) - 'Death', 'euthanasia', 'slaughter' and 'stunning' - New definitions for 'distress', 'pain' and 'suffering' | AHG to address Member comments (Sep 2019/2 nd) |
| | 6) 'Case' | Preliminary discussion |
| | 7) New definitions for 'animal product', 'product of animal origin' and 'animal by-product' | Preliminary discussion |
| | 8) New definition for 'swill' | Preliminary discussion |
| | 9) Review the terms 'notify', 'notifiable disease', 'report' and 'reportable disease' | Preliminary discussion |

Annex 3 (contd)

| Subject | Issue by priority order | Status and Action (Onset of process / # of rounds for comments post-meeting) |
|---------------------------------------------------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------------------------------------------------------------------------------------------------------------------------------------|
| Horizontal issues not yet in the Code | | |
| Section 3. Veterinary Services | 1) New introductory CH in Section 3 | Proposed for adoption in May 2021 (Sep 2019/3 rd) |
| Section 4. Disease control | 1) New CH on official control programmes for listed and emerging diseases | Proposed for adoption in May 2021 (Feb 2017/ 7 th) |
| | 2) New CH on biosecurity | Preliminary discussion: – Work in progress regarding guideline on ASF compartmentalisation; – swill feeding to be considered |
| | 3) New CH on application of zoning | Preliminary discussion |
| Section 7 Animal welfare | 1) New CH on animal welfare and laying hen production systems | Proposed for adoption in May 2021 (Sep 2017/5 th) |
| Horizontal chapters in need of revision | | |
| Section 1. Animal disease diagnosis, surveillance and notification | 1) CH 1.6 on procedures for publication of a self-declaration of disease freedom, recognition of an official animal health status and endorsement of an official control programme by the OIE | Proposed for adoption in May 2021 (Feb 2018/5 th) |
| | 2) CH 1.1 on notification of diseases, infections and infestations, and provision of epidemiological information | Proposed for adoption in May 2021 (Sep 2018/4 th) |
| | 3) CH 1.3 on listed diseases: • Avian influenza | Proposed for adoption in May 2021 |
| | 4) CH 1.3 on listed diseases: • MERS-CoV • Trypanosomes | Proposed for adoption in May 2021 (Sep 2019/3 rd) |
| | 5) CH 1.3 on listed diseases: • <i>Mycobacterium tuberculosis</i> (in <i>Mycobacterium tuberculosis</i> complex) • Theileriosis (<i>T. lestoquardi</i> , <i>T. luwenshuni</i> , <i>T. uilenbergi</i> and <i>T. orientalis</i>) • West Nile fever • <i>M. paratuberculosis</i> | Ongoing or preliminary discussion |
| Section 3. Veterinary Services | 1) CH 3.4 on veterinary legislation | Proposed for adoption in May 2021 (Sep 2018/4 th) |
| | 2) CHs 3.1 and 3.2 on Veterinary Services | Proposed for adoption in May 2021 (Sep 2019/3 rd) |

Annex 3 (contd)

| Subject | Issue by priority order | Status and Action (Onset of process / # of rounds for comments post-meeting) |
|------------------------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------------------------------------------|
| Section 4. Disease control | 1) CH 4.4 on zoning and compartmentalisation | Proposed for adoption in May 2021 (Feb 2020/2 nd) |
| | 2) CH 4.6 on general hygiene in semen collection and processing centres | Ongoing |
| | 3) CH 4.7 on collection and processing of semen: – including resolving the lack of clarity of the text on brucellosis (Article 4.7.4) | Ongoing |
| | 4) CH 4.9 on collection and processing of oocytes and <i>in vitro</i> produced embryos from livestock and horses: – including inclusion of BVD in CH 4.9 – amendment of Article 4.9.5 | Ongoing |
| | 5) CH 4.8 on collection and processing of <i>in vivo</i> – derived embryos: – categorisation of bluetongue (Article 4.8.14) | Ongoing |
| | 6) CH 4.14 on disinfection: – consideration as to whether Glossary definition for ‘disinfection’ should be revised | Preliminary discussion |
| Section 5. Trade measures | 1) CHs 5.4 to 5.7 on measures applicable at departure and on arrival | Preliminary discussion |
| | 2) CH 5.11 on model certificates for dogs | Preliminary discussion (in relation to the revision of chapter on rabies) |
| | 3) CH 5.12 on model certificates for competition horses | Preliminary discussion and pending revision of CHs on horse diseases |
| Section 6. Veterinary public health | 1) CH 6.3 on meat inspection | Preliminary discussion pending AHG |
| | 2) CH 6.10 on responsible and prudent use of antimicrobial agents in veterinary medicine | Pending outcome of the Codex work |
| Section 7. Animal welfare | 1) CH 7.5 on slaughter and CH 7.6 on killing of animals | CH 7.5 – AHG to address some Member comments and finalise the drafting (Onset: Sep 2019) CH 7.6 – pending work of AHG |
| | 2) CH 7.7 on stray dog population control | Sent for comments (Sep 2020/1 st) |
| Diseases not yet in the Code | | |
| Disease-specific chapters | 1) New CH on animal trypanosomoses of African origin | Proposed for adoption in May 2021 (Sep 2019/3 rd) |
| | 2) New CH on surra | Pending progress in the work on new chapter on Trypanosomes of African origin |
| | 3) New CH on MERS-CoV | Preliminary discussion |

Annex 3 (contd)

| Subject | Issue by priority order | Status and Action (Onset of process / # of rounds for comments post-meeting) |
|-------------------------------------------------------------|-----------------------------------------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------|
| Disease-specific chapters (contd) | 4) New CH on leishmaniosis (listed disease without chapter) | Preliminary discussion |
| | 5) New CH on Crimean Congo hemorrhagic fever (MCs comments, listed disease without chapter) | Preliminary discussion |
| Listed disease chapters/articles in need of revision | | |
| Sections 8 to 15 | 1) CH 10.4 on avian influenza | Proposed for adoption in May 2021 (Sep 2018/4 th) |
| | 2) CH 14.7 on peste des petits ruminants (Harmonisation of articles regarding official status recognition by the OIE) | Proposed for adoption in May 2021 (Feb 2019/3 rd) |
| | 3) CH 15.2 on classical swine fever | Proposed for adoption in May 2021 (Feb 2017/4 th) |
| | 4) CH 12.6 on equine influenza | Proposed for adoption in May 2021 (Sep 2019/3 rd) |
| | 5) CH 10.5 on avian mycoplasmosis | Proposed for adoption in May 2021 (Feb 2020/2 nd) |
| | 6) CH 9.4 on <i>Aethina tumida</i> (Small hive beetle) | Proposed for adoption in May 2021 (Feb 2020/2 nd) |
| | 7) CH 11.4 on bovine spongiform encephalopathy and CH 1.8 Questionnaire | Sent for comments (Feb 2015/2 nd) |
| | 8) CH 8.15 on Rift Valley fever virus | Sent for comments (Feb 2019/3 rd) |
| | 9) CH 11.10 on Theileriosis and new CH 14.X on infection with <i>Theileria</i> in small ruminants | CH 11.10 – sent for comments (Sep 2017/2 nd) CH 14.X – pending development of guidance in the Manual (Sep 2017/1 st) |
| | 10) CH 8.8 on foot and mouth disease | Sent for comments (Sep 2015/2 nd) |
| | 11) CH 8.16 on rinderpest | Sent for comments (Sep 2020/1 st) |
| | 12) CH 12.2 on contagious equine metritis | Sent for comments (Sep 2020/1 st) |
| | 13) CH 12.7 on equine piroplasmiasis | Sent for comments (Sep 2020/1 st) |
| | 14) CH 11.11 on trichomonosis | Sent for comments (Sep 2020/1 st) |
| | 15) CH 12.3 on dourine | Pending progress in the work on new chapter on Trypanosomes of African origin |
| | 16) CH 14.8 on scrapie | Pending expert advice |

Annex 3 (contd)

| Subject | Issue by priority order | Status and Action (Onset of process / # of rounds for comments post-meeting) |
|--------------------------------------------------------|----------------------------------------------------------------------------------------------------|---------------------------------------------------------------------------------|
| Sections 8 to 15 (contd) | 17) CH 8.11 on <i>Mycobacterium tuberculosis</i> complex | Ongoing |
| | 18) CH 15.4 on porcine cysticercosis (request from WHO) | Ongoing |
| | 19) CH 8.5 on infection with <i>Echinococcus granulosus</i> (request from WHO) | Ongoing |
| | 20) Revision of safe commodities list to add lactose | Ongoing |
| | 21) Revision of Article 15.3.9 on import of semen from countries not free from PRRS | Pending expert advice |
| | 22) Pet food (for certification or safe commodities) | Pending expert advice |
| | 23) CH 11.5 Infection with contagious bovine pleuropneumonia | Preliminary discussion |
| | 24) CHs on equine encephalomyelitis (Eastern, Western, Venezuelan) – inclusion of case definitions | Preliminary discussion |
| | 25) CH 8.13 Paratuberculosis | Preliminary discussion |
| | 26) CH 10.3 Avian infectious laryngotracheitis | Preliminary discussion |
| | 27) CH 10.9 Infection with Newcastle disease virus | Preliminary discussion |
| Follow-up revision of chapters recently adopted | | |
| Recently adopted chapters | 1) CH 8.14 on rabies | Sent for comments (Sep 2020/1 st) |
| | 2) CH 6.2 on the role of Veterinary Services in food safety systems | Pending discussion on definitions of VS, VA and CA |

| List of abbreviations | |
|-----------------------|----------------------------------------------|
| AAHSC | Aquatic Animal Health Standards Commission |
| AHG | <i>Ad hoc</i> Group |
| BSC | Biological Standards Commission |
| CA | Competent Authority |
| CH | Chapter |
| MERS-CoV | Middle East respiratory syndrome coronavirus |
| SCAD | Scientific Commission for Animal Diseases |
| VA | Veterinary Authority |
| VS | Veterinary Services |
| WHO | World Health Organization |

CHAPTER 1.3.

**DISEASES, INFECTIONS AND INFESTATIONS
LISTED BY THE OIE**

Article 1.3.1.

The following are included within the category of multiple species diseases, *infections* and *infestations*:

- Anthrax
- Crimean Congo hemorrhagic fever
- Equine encephalomyelitis (Eastern)
- Heartwater
- Infection with animal trypanosomes of African origin (*T. vivax*, *T. congolense*, *T. simiae* and *T. brucei*)
- Infection with Aujeszky's disease virus
- Infection with bluetongue virus
- Infection with *Brucella abortus*, *Brucella melitensis* and *Brucella suis*
- Infection with *Echinococcus granulosus*
- Infection with *Echinococcus multilocularis*
- Infection with epizootic hemorrhagic disease virus
- Infection with foot and mouth disease virus
- Infection with *Mycobacterium tuberculosis* complex
- Infection with rabies virus
- Infection with Rift Valley fever virus
- Infection with rinderpest virus
- Infection with *Trichinella* spp.
- Japanese encephalitis
- New World screwworm (*Cochliomyia hominivorax*)
- Old World screwworm (*Chrysomya bezziana*)
- Paratuberculosis
- Q fever
- Surra (*Trypanosoma evansi*)
- Tularemia
- West Nile fever.

Article 1.3.2.

The following are included within the category of cattle diseases and *infections*:

- Bovine anaplasmosis
- Bovine babesiosis
- Bovine genital campylobacteriosis
- Bovine spongiform encephalopathy
- Bovine viral diarrhoea

Annex 4 (contd)

- Enzootic bovine leukosis
- Haemorrhagic septicaemia
- Infection with lumpy skin disease virus
- Infection with *Mycoplasma mycoides* subsp. *mycoides* SC (Contagious bovine pleuropneumonia)
- Infectious bovine rhinotracheitis/infectious pustular vulvovaginitis
- Theileriosis
- Trichomonosis
- Trypanosomosis (tsetse-transmitted).

[...]

Article 1.3.9.

The following are included within the category of other diseases and *infections*:

- Camelpox
 - ≡ Infection of dromedary camels with Middle East Respiratory Syndrome Coronavirus
 - Leishmaniosis.
-

DRAFT CHAPTER 3.1.

QUALITY OF VETERINARY SERVICES

Article 3.1.1.

General considerations

The quality of *Veterinary Services* depends on ethical, organisational, legislative and technical factors.

Compliance with standards of quality is critical for *Veterinary Services* to meet their animal health, *animal welfare*, and veterinary public health objectives, and is important for the establishment and maintenance of trust in *international trade*.

Veterinary Services should conform to the fundamental operating principles in Article 3.1.2., regardless of the political, economic or social situation of their country.

The key components of a country's *Veterinary Services* are presented in Articles 3.1.3 to 3.1.12. Four components are focused on governance aspects: Policy and Management, Personnel and Resources, the Veterinary Profession, and Stakeholders; and six components are focused on technical aspects: Animal Health, Animal Production Food Safety, Veterinary Medicinal Products, Laboratories, Animal Welfare and International Trade.

This chapter should be read in conjunction with other chapters in the *Terrestrial Code*, relevant chapters of the *Terrestrial Manual* with regards to quality of *laboratories*, diagnosis and vaccines, as well as relevant Codex Alimentarius texts.

Article 3.1.2.

Fundamental operating principles

Veterinary Services should comply with the following interrelating principles to ensure the quality of their activities:

1. Professional judgement

The personnel should have the relevant qualifications, expertise and experience to give them the competence to make sound professional judgements.

2. Independence and objectivity

Care should be taken to ensure that personnel are free from any undue commercial, financial, hierarchical, political or other pressures which might adversely affect their judgement or decisions. The *Veterinary Services* should, at all times, act in an objective manner.

3. Impartiality

Veterinary Services should be impartial. In particular, all the parties affected by their activities have a right to expect that their services are delivered reasonably and without discrimination.

4. Integrity

Veterinary Services should maintain a consistently high level of integrity. Any fraud, corruption or falsification should be identified and addressed.

Annex 5 (contd)5. Transparency

Veterinary Services should be as transparent as possible in all their governance and technical activities, including but not limited to, disease reporting, policy and programme decision-making, human resources and financial issues.

6. Scientific basis

Veterinary Services should develop and implement their activities on a scientific basis, incorporating relevant inputs from fields such as *risk analysis*, epidemiology, ~~and~~ economics and social science.

7. Intersectoral collaboration

Veterinary Services should operate in a One Health approach, sharing professional knowledge and experience with all relevant sectors and actors while optimising the use of resources.

Article 3.1.3.

Policy and management

Veterinary Services should have the leadership, organisational structure and management systems to develop, implement and update policies, legislation and programmes, incorporating *risk analysis* and sound epidemiological principles. *Veterinary Services'* decision making should be free from undue financial, political and other non-scientific influences.

The *Veterinary Authority* should coordinate with other Competent Authorities governmental authorities, and should undertake active international engagement with OIE and other relevant regional and international organisations.

This component should comprise the following specific elements:

- 1) Comprehensive national *veterinary legislation* in accordance with Chapter 3.4, regularly updated with reference to changing international standards and ~~science~~ new scientific evidence.
- 2) Implementation of *veterinary legislation* through a programme of communications and awareness, as well as formal, documented inspection and compliance activities.
- 3) Capability to perform *risk analysis* and cost-benefit analysis to define and adapt policies and programmes.
- 4) Policies or programmes that are well documented, resourced and sustained, appropriately reviewed and updated to improve their effectiveness and efficiency, and addressing emerging issues.
- 5) Quality management systems with quality policies, procedures and documentation suited to the *Veterinary Services'* activities, including procedures for information sharing, complaints and appeals and for internal audits.
- 6) Information management systems for collecting data to monitor and evaluate *Veterinary Services'* policies and activities and to perform *risk analysis*.
- 7) Organisational structures with defined roles and responsibilities for effective internal coordination from central to field levels (chain of command) for activities, which are periodically reviewed and updated as necessary.
- 8) Formal external coordination mechanisms with clearly described procedures or agreements for activities (including preparedness and response mechanisms) between the *Veterinary Authority*, *Competent Authorities* and stakeholders, incorporating a One Health approach.
- 9) Appropriate levels of official representation at international multilateral fora, with ~~pre~~-consultation with stakeholders, active participation and sharing of information, and follow up on meeting outcomes.

Article 3.1.4.

Personnel and resources

Veterinary Services should be appropriately staffed, including *veterinarians*, *veterinary paraprofessionals* or other personnel, with appropriate competencies through initial and continuing education to allow for their functions to be undertaken effectively and efficiently.

Veterinary Services should have functional and well-maintained physical resources, adequate operational resources for their ongoing and planned activities, and access to extraordinary resources to respond effectively to emergency situations or new emerging issues.

This component should comprise the following specific elements:

- 1) A core of full-time civil service employees with qualified *veterinarians* and *veterinary paraprofessionals*.
- 2) Formal, consistent and merit-based recruitment and promotion procedures.
- 3) Job descriptions, formal performance assessment and management procedures for *veterinarians*, *veterinary paraprofessionals* and other personnel that are defined and being implemented.
- 4) Personnel remuneration, sufficient to minimise the risk of conflicts of interest and to preserve independence.
- 5) *Veterinarians'* and *veterinary paraprofessionals'* education, knowledge, skills and practices, standardised and sufficient to perform relevant activities of the *Veterinary Services*.
- 6) *Veterinary paraprofessionals* are adequately supervised by *veterinarians*.
- 7) All personnel have access to professional development, including continuing education programmes that are reviewed and updated as necessary.
- 8) Established procedures for *Veterinary Services* to access personnel and other resources, including in emergencies.
- 9) Access to suitable physical resources at all levels (national, state/provincial and local), including, but not limited to, functional buildings, furniture, equipment, communications, information technology, transport and cold chain, which are maintained or renewed as necessary.
- 10) Access to sufficient operational resources for planned and continued activities, as well as for new or expanded operations, including but not limited to, contracts, fuel, per diem, vaccines, diagnostic reagents, personal protective equipment and other consumables.

Article 3.1.5.

The veterinary profession

Veterinarians and *veterinary paraprofessionals* are an essential component of *Veterinary Services*, whether as part of governmental authorities or as private service providers.

The *Veterinary Statutory Body* should regulate *veterinarians* and *veterinary paraprofessionals* to effectively and independently maintain educational and professional standards relevant to their roles, including ~~for both~~ official tasks, and veterinary clinical services and other veterinary tasks as appropriate. Mechanisms for coordination between the *Veterinary Authority*, the *Veterinary Statutory Body* and veterinary educational establishments should be in place.

The OIE has produced guidelines on the expected competencies for *veterinarians* and *veterinary paraprofessionals* as well as guidelines on the curricula necessary to deliver those competencies.

Annex 5 (contd)

This component should comprise the following specific elements:

- 1) An independent *Veterinary Statutory Body*, legally responsible and adequately resourced for:
 - a) licensing and registration of *veterinarians* and *veterinary paraprofessionals* to perform defined activities of veterinary science or animal health;
 - b) setting minimum standards of education required to be registered or licensed as *veterinarians* or *veterinary paraprofessionals*;
 - c) setting minimum standards of professional conduct and competence of registered *veterinarians* and *veterinary paraprofessionals* and ensuring that these standards are met and maintained;
 - d) investigating complaints and applying disciplinary measures.
- 2) Independence of the *Veterinary Statutory Body* is ensured through transparent governance and funding arrangements including an elected, representative council or equivalent, and financial arrangements for the collection and management of registration fees.
- 3) Sufficient quality veterinary clinical services are available ~~of sufficient quality~~ to meet the needs of animal owners, including their access to essential animal disease and injury diagnosis and treatment.

Article 3.1.6.

Stakeholders

A range of individuals or organisations have an interest or concern in the activities of the *Veterinary Services*, for example livestock farmers, processors, traders, feed manufacturers, wildlife managers, researchers, private *veterinarians* and *veterinary paraprofessionals*, as well as relevant non-governmental organisations (NGOs) and the general public.

Veterinary Services should communicate with these stakeholders in an effective, transparent and timely manner on *Veterinary Services* activities and developments in animal health, *animal welfare* and veterinary public health. They should also consult effectively with relevant stakeholders on *Veterinary Services* policies and programmes, involving mechanisms that actively seek their views for consideration and response.

Competent Authorities should, where applicable, have the authority and capability to develop or engage in public private partnerships to deliver animal health, *animal welfare* or veterinary public health outcomes. That is:

- to accredit, authorise or delegate to the private sector;
- ~~the to development~~ or ~~participation~~ in collaborative joint programmes with producers or other stakeholders.

The OIE has produced guidelines for both public and private sectors to help advocate for, develop and implement public private partnerships in the veterinary domain.

This component should comprise the following specific elements:

- 1) Good governance relevant to all stakeholder engagement is in place to ensure compliance with Article 3.1.2, incorporating transparency and effective monitoring and evaluation.
- 2) Ongoing, targeted and effective communication with stakeholders in accordance with Chapter 3.3.
- 3) Consultation mechanisms, including written invitation, meetings or workshops with non-government stakeholder representatives, with consultation inputs documented and duly considered.
- 4) Public private partnerships, in the form of official delegation or joint programmes, have the legal authority, formal agreements, and documented procedures, in accordance with Chapter 3.4.

Article 3.1.7.

Animal health

Veterinary Services should organise and implement programmes to prevent, control or eradicate animal diseases, and should be able to identify *animals* to trace and control their movements.

Veterinary Services should organise and implement an effective animal health surveillance system and be prepared to respond effectively to sanitary emergencies.

This component should comprise the following specific elements:

- 1) Effective surveillance for the early detection, monitoring and reporting of **known and emerging** animal diseases, **including in wildlife**, via an appropriate field animal health network, using laboratory confirmation and epidemiological disease investigation with prompt and transparent reporting **and data analysis technologies**, in accordance with relevant chapters, including Chapters 1.1., 1.2., 1.3., 1.4. and 1.5.
- 2) An updated list of *notifiable diseases* that includes relevant *listed diseases*.
- 3) Use of the formal procedures for self-declaration and official recognition by the OIE for both disease freedom and disease control programmes, in accordance with Chapter 1.6.
- 4) Emergency management, including preparedness and response planning, a legal framework, and access to the human, physical and financial resources to respond rapidly to sanitary emergencies in a well-coordinated manner, including for disposal and *disinfection* in accordance with Chapters 4.13. and 4.14.
- 5) *Official control programmes* for priority diseases with scientific and risk-based evaluation of their efficacy and efficiency, in accordance with the relevant chapters of the *Terrestrial Code*.
- 6) A programme for managing the risks to animal health from germplasm, including the collection, processing and distribution of semen, oocytes or embryos, in accordance with the relevant chapters in Section 4.
- 7) A programme for the official health control of bee diseases, in accordance with Chapter 4.15.
- 8) A programme for managing the risks to animal and public health from animal *feed*, including feeding animal materials to susceptible ~~livestock~~ **animals**, in accordance with Chapter 6.4.
- 9) A system for *animal identification*, *animal traceability* and movement control for specific animal *populations* as required for traceability or disease control, in accordance with Chapters 4.1. and 4.2.

Article 3.1.8.

Animal production food safety

Veterinary Services should contribute to assuring the safety of food of animal origin for domestic and export markets as part of a food safety system, with effective coordination of official controls between relevant *Competent Authorities*.

This component should comprise the following specific elements:

- 1) Regulation, inspection, authorisation, ~~and supervision~~ **and auditing** of establishments and processes for production and processing of food of animal origin (~~slaughtering~~, rendering, dairy, egg, honey and other animal product processing **establishments**) for export, national and local markets, including the inspection, sampling and testing of products, in accordance with Chapters 6.1. and 6.2.
- 2) Implementation of procedures for ante-mortem and post-mortem inspection at slaughter facilities, **including slaughter associated with live animal markets**, incorporating *risk analysis* and principles of Hazard Analysis and Critical Control Point (HACCP), veterinary supervision, independent inspection, and the collection of information relevant to ~~livestock animal~~ diseases **and including** zoonoses, in accordance with Chapters 6.2. and 6.3. and the relevant Codex Alimentarius texts.

Annex 5 (contd)

- 3) Regulation and implementation of controls on animal *feed* safety covering processing, handling, storage, distribution and use of both commercial and on-farm produced animal *feed* and *feed ingredients*, including risks such as microbial, physical, chemical and toxin contamination.
- 4) A residue monitoring programme for veterinary medicines (e.g. antimicrobials and hormones), chemicals, pesticides, radionuclides, heavy metals, etc. and the capacity to respond appropriately to adverse findings.
- 5) Identification and traceability of products of animal origin for the purposes of food safety, animal health or trade, in accordance with Chapter 6.2.
- 6) Procedures for corrective actions ~~or~~ and for proportional and dissuasive sanctions in response to regulatory non-compliance to mitigate risks to the safety of food of animal origin for export or domestic markets in accordance with Article 6.2.3.
- 7) Preparedness and response planning to manage food or *feed* safety incidents of animal origin.

Article 3.1.9.

Veterinary medicinal products

Veterinary Services should regulate all *veterinary medicinal products* such as veterinary medicines, biologicals and medicated *feed*, in order to ensure their quality and safety, as well as their responsible and prudent use, including *monitoring* antimicrobial use and antimicrobial resistance, and minimising the associated risks.

This article should be read in conjunction with the *Terrestrial Manual*, which set standards for the production and control of vaccines and other biological products.

This component should comprise the following specific elements:

- 1) Effective regulatory and administrative control, in accordance with Article 3.4.11., including communications and compliance programmes for:
 - a) the market authorisation of *veterinary medicinal products*, including registration, import, manufacture, quality control, and reducing the risk from illegal imports;
 - b) responsible and prudent use of *veterinary medicinal products*, including the labelling, distribution, sale, dispensing, prescription and administration of these products.
- 2) *Risk management* and *risk communication* for antimicrobial use and antimicrobial resistance, based on *risk assessment*. This includes *surveillance* and control of the use of antimicrobials and the development and spread of antimicrobial resistant pathogens in animal production and, animal origin food products of animal origin, via. This should be coordinated using a One Health approach, and in accordance with Chapter 3.4. and relevant chapters of Section 6.

Articles 3.1.10.

Laboratories

Veterinary Services should have access to quality *laboratory* diagnosis through a sustainable network of *laboratories*, capable of accurately identifying and reporting *infections* and *infestations* or other relevant *hazards*.

Veterinary Services require *laboratory* services for purposes such as early detection, measuring disease prevalence and progress with control, ~~assessing the *veterinary medicinal products* quality and protection effectiveness of *veterinary medicinal products*, implementing~~ antimicrobial resistance *surveillance*, assessing the safety of food or *feed*, or supporting *international trade* (e.g. demonstration of *freedom animal health status*), as well as for associated *research*. The *laboratory* services include official government *laboratories* and other *laboratories* authorised by the *Competent Authorities* to conduct official testing, including private *laboratories* or those overseas abroad.

This article should be read in conjunction with the *Terrestrial Manual*, which sets *laboratory* diagnostic standards for all OIE *listed diseases* as well as several other diseases of global importance.

Annex 5 (contd)

This component should comprise the following specific elements:

- 1) access to *laboratory* diagnosis that meets the needs of the *Veterinary Services*, which is efficient and sustainable with an appropriate throughput of samples, in accordance with the *Terrestrial Manual*;
- 2) access to approved *laboratories*, such as national, regional or international reference laboratories, to obtain or confirm a correct diagnosis for *notifiable diseases* and to investigate *emerging diseases* or *hazards*, in accordance with the *Terrestrial Manual*;
- 3) appropriate levels of laboratory biosafety and *biosecurity*;
- 4) formal *laboratory* Quality Management Systems and proficiency testing programmes, in accordance with the *Terrestrial Manual*.

Article 3.1.11.

Animal welfare

Veterinary Services should implement policies, legislation and programmes in accordance with Section 7.

This component should comprise the following specific elements:

- 1) *animal welfare* programmes, supported by suitable legislation, with appropriate stakeholder and public awareness and compliance inspection activities;
- 2) communication, consultation and coordination with stakeholders.

Article 3.1.12.

International trade

Through the implementation of OIE standards, *Veterinary Services* play a critical role in ensuring the safety of *international trade* of *commodities* and *veterinary medicinal products*, while avoiding unjustified barriers.

Veterinary Services should implement risk-based measures for import and export following relevant provisions in the *Terrestrial Code* and in accordance with Chapter 5.3. Quality of *Veterinary Services* is essential for these measures to be recognised and trusted.

This component should comprise the following specific elements:

- 1) *Sanitary measures* developed and implemented in accordance with Chapter 2.1. and other relevant chapters of the *Terrestrial Code*.
- 2) Effective implementation of *official veterinary controls* to prevent the entry of diseases and other *hazards* through effective border inspection and quarantine operations, in accordance with Chapter 5.6.
- 3) Effective application of relevant animal health measures at or before departure for exports, during transit through the country, and on arrival for imports, in accordance with Chapters 5.4., 5.5. and 5.7.
- 4) Effective development and implementation of international veterinary certification for *animals*, animal products, services and processes for export under their mandate, in accordance with *importing country* requirements and relevant chapters in Section 5.
- 5) Effective development, implementation and maintenance of equivalence and other types of sanitary agreements with trading partners, where applicable, in collaboration with national stakeholders, and in accordance with Chapter 5.3.
- 6) Regular and timely official notification to the OIE, WTO, trading partners and other relevant organisations of changes in animal disease status, regulations and *sanitary measures* and systems, in accordance with the procedures established by these organisations, including Chapters 1.1. and 1.3.

Annex 5 (contd)

- 7) Where applicable, effective implementation and maintenance of disease-free *zones*, *compartments* or other high health status *subpopulations* for the purposes of trade, in collaboration with producers and other stakeholders, and in accordance with relevant chapters in Sections 4 and 5.
 - 8) Active participation in the OIE and Codex Alimentarius standard setting processes.
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DRAFT CHAPTER 3.2.

EVALUATION OF VETERINARY SERVICES

Article 3.2.1.

General considerations

This chapter covers the evaluation of a country's *Veterinary Services*, including the various objectives and types of evaluation that may be considered.

Member Countries may develop their own mechanisms and methods for the evaluation of their *Veterinary Services*. The evaluation of the quality of *Veterinary Services* should be in accordance with Chapter 3.1.

The OIE Tool for the Evaluation of Performance of Veterinary Services (OIE PVS Tool) provides a thorough, benchmarked methodology for the consistent, comprehensive evaluation of *Veterinary Services*. The OIE PVS Tool is aligned with the OIE standards, in particular, with the quality standards for *Veterinary Services* defined in Chapter 3.1. Based on the OIE PVS Tool, the OIE has developed a capacity building platform, the PVS Pathway, for the sustainable improvement of a country's *Veterinary Services*' compliance with OIE standards.

Article 3.2.2.

Objectives of the Evaluation of Veterinary Services

The evaluation of *Veterinary Services* has the following objectives:

- 1) to provide an independent, objective perspective on the performance of *Veterinary Services*;
- 2) to verify performance, provide confidence, enhance reputation and avoid complacency, and as part of a process of continuous improvement;
- 3) to demonstrate compliance of the *Veterinary Services* with Chapter 3.1.;
- 4) to better advocate for, allocate and prioritise resources;
- 5) to generate trust between trading partners in the quality and integrity of *Veterinary Services*.

The evaluation of *Veterinary Services* can be performed by the country itself (self-evaluation), by another country or countries, or by OIE experts under the auspices of the OIE as part of the PVS Pathway.

Article 3.2.3.

Self-evaluation of the Veterinary Services of a Member Country

- 1) Member Countries should undertake a self-evaluation of their *Veterinary Services* periodically as part of their quality management system.
- 2) Self-evaluation may be undertaken by **the Competent Authorities** for the whole or part of the *Veterinary Services*. **The Competent Authorities should consider the principle of independence when carrying out self-evaluations.**
- 3) Self-evaluation at the sub-national level such as of individual regions, provinces or states can usefully supplement national level evaluation.
- 4) The use of the OIE PVS Tool is encouraged.

Annex 6 (contd)

Article 3.2.4.

Evaluation of the Veterinary Services of a Member Country by another Member Country

- 1) Every Member Country should recognise the right of another Member Country to request, in a non-discriminatory manner, an evaluation of its *Veterinary Services* to facilitate decision-making on trade.
- 2) The evaluation should be in accordance with Chapter 3.1.
- 3) The evaluation process may be desktop or field based, and cover whole or part of the *Veterinary Services*, depending on its objective.
- 4) A Member Country which intends to conduct an evaluation of another Member Country's *Veterinary Services* should give them notice in writing. This should define the purpose and scope of the evaluation and detail the information required.
- 5) Prior to the evaluation, the parties should agree on the objective, scope and approach of the evaluation, including any financing and confidentiality requirements ~~of confidentiality~~.
- 6) The evaluation should be conducted in accordance with the Fundamental Operating Principles set-out for *Veterinary Services* in Article 3.2.2 in a timely and efficient manner, ensuring the level of evaluation activity is undertaken only to the extent necessary.
- 7) The evaluation should start with a review of available information including existing PVS Pathway or other reports, analysis of publicly available or previously provided information, or historical performance such as relating to safe trade or transparency.
- 8) The outcome of the evaluation conducted by another Member Country should be provided in writing to the evaluated country as soon as possible. The evaluation report should detail any findings which affect trade prospects. The Member Country which conducts the evaluation should clarify any points of the evaluation on request, and provide the opportunity for the evaluated country to clarify or respond to the findings before the production of the final evaluation report.
- 9) The use of the OIE PVS Tool is encouraged.

Article 3.2.5.

Evaluation of the Veterinary Services of a Member Country by OIE experts, under the auspices of the OIE

- 1) The OIE has established procedures for the evaluation of the *Veterinary Services* of a Member Country using the OIE PVS Tool, following a voluntary request from the Member Country.
 - 2) The report of such an evaluation belongs to the *Veterinary Authority* of the Member Country. The OIE encourages Member Countries to make their reports publicly available.
 - 3) Member Countries are encouraged to use these reports in a transparent way to achieve some or all of the objectives listed in Article 3.2.2.
 - 4) Support for further use of the evaluation report in national planning and targeted capacity building is available from the OIE as part of its PVS Pathway.
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DRAFT CHAPTER 3.X.

**INTRODUCTION TO RECOMMENDATIONS
ON VETERINARY SERVICES**

Article 3.X.1.

Veterinary Services are critical to global and national health security, food security and food safety, agricultural and rural development, poverty alleviation, safe **national and international trade**, **wildlife health** and environmental protection; as such they are considered a global public good. To achieve these goals, *Veterinary Services* require good governance, including effective policy and management, personnel and resources, veterinary professionals and interaction with stakeholders **in a One Health approach**.

Member Countries have the sovereign right to structure and manage the delivery of animal health, *animal welfare* and veterinary public health in the veterinary domain in their countries as they see fit. The veterinary domain covers a broad scope of possible activities. Section 3 focuses on aspects of the *Veterinary Services* that enable the OIE standards to be met even when under the responsibility of one or more *Competent Authorities*.

Member Countries should implement the OIE standards across their whole territory and should meet their obligations at the international level through representation by their respective OIE Delegate. The *Veterinary Authority*, including the OIE Delegate, should coordinate with other *Competent Authorities* to ensure international standards and responsibilities are met.

Veterinary Services have responsibility for implementing the activities necessary for the Member Country to comply with OIE standards. These activities can be delivered by a combination of individuals or organisations, public or private that are responsible to one or more *Competent Authorities*. *Veterinary Services* also include the personnel of the *Competent Authorities* themselves. The term *Veterinary Services* refers to the combination of a number of separate actors, with different organisational affiliations.

Section 3 provides standards to assist the *Veterinary Services* of Member Countries in meeting their objectives of improving terrestrial animal health and *animal welfare* and veterinary public health, as well as to establish and maintain confidence in their *international veterinary certificates*.

CHAPTER 4.4.

ZONING AND COMPARTMENTALISATION

[...]

Article 4.4.6.

Protection zone

A *protection zone* may be established to preserve the *animal health status* of an *animal population* in a free country or a *free zone* by preventing the introduction of a pathogenic agent of a specific *infection* or *infestation* from neighbouring countries or zones of different *animal health status*. ~~to that animal population~~

A *protection zone* ~~can~~ **may** be established as a temporary measure in response to an increased risk of disease. The protection zone can be established within or outside a free zone or within a free country. Based on the results of a risk assessment, more than one protection zone may be established.

Biosecurity and *sanitary measures* should be implemented in the *protection zone* based on the animal management systems, the epidemiology of the disease under consideration and the epidemiological situation prevailing in the neighbouring infected countries or zones.

~~Increased surveillance, in accordance with Chapter 1.4. and the relevant disease-specific chapter, should be implemented in the protection zone and the rest of the country or zone, including surveillance of wildlife and vectors as relevant.~~

In addition to the general considerations in Article 4.4.2. and the principles in Article 4.4.3., these measures should include intensified movement control, ~~and surveillance and specific animal identification and animal traceability~~ to ensure that *animals* in the *protection zone* are clearly distinguishable from other populations. Vaccination of susceptible animals in accordance with Chapter 4.18. may also be applied.

~~Increased surveillance, in accordance with Chapter 1.4. and the relevant disease-specific chapter, should be implemented in the protection zone and the rest of the country or zone, including surveillance of wildlife and vectors as relevant.~~

- ~~1) vaccination of all or at risk susceptible animals;~~
- ~~2) testing or vaccination of animals moved;~~
- ~~3) specific procedures for sample handling, dispatching and testing;~~
- ~~4) enhanced biosecurity including disinfection and disinsection procedures for vehicles/vessels and vehicles used for transportation of animal products, feed or fodder, and possible compulsory routes for their movements within, to or from the zone;~~
- ~~5) specific surveillance of susceptible wildlife and relevant vectors;~~
- ~~6) awareness campaigns aimed at the public or targeted at breeders, traders, hunters or veterinarians.~~

~~Anytime the status of the protection zone changes, the status of the country or zone in which it was established should be redetermined in accordance with the relevant listed disease specific chapters.~~

Unless otherwise specified in the relevant disease-specific chapters of the Terrestrial Code, if the animal health status of an established protection zone changes due to the occurrence of a case or implementation of vaccination, the animal health status of the rest of the country or zone is not affected, provided the measures in place prevent the spread of disease and allow for the subsequent establishment of a containment zone in accordance with the criteria in Article 4.4.7.

Annex 8 (contd)

Unless otherwise specified in the relevant disease-specific chapters of the *Terrestrial Code*, if the *animal health status* of an established *protection zone* changes due to *vaccination*, the *animal health status* of the rest of the country or zone is not affected.

Regarding diseases for which the OIE grants official recognition of *animal health status*:

- ≡ a *protection zone* is considered as effectively established when the conditions described in this article and in the relevant disease-specific chapters have been applied and documented evidence is submitted to and was accepted by the OIE;
- ≡ Aa *protection zone* established on a temporary basis should be limited to less than 24 months from the date of its approval by the OIE;
- ≡ if a Member wishes to make the *protection zone* permanent, the process for official recognition by the OIE should be followed in accordance with Chapter 1.6. and the relevant disease-specific chapters.

Article 4.4.7.

Containment zone

- 1) In the event of *outbreaks* in a country or zone previously free from a disease, a *containment zone*, which includes all epidemiologically linked *outbreaks* may be established to minimise the impact on the rest of the country or zone.
- 2) A *containment zone* is an *infected zone* that should be managed in such a way that *commodities* for *international trade* can be shown to have originated either from inside or outside the *containment zone*.
- 3) Establishment of a *containment zone* should be based on a rapid response, prepared in a contingency plan, and that includes:
 - appropriate control of movement of *animals* and other *commodities* upon declaration of suspicion of the specified disease;
 - epidemiological investigation (trace-back, trace-forward) after confirmation of *infection* or *infestation*, demonstrating that the *outbreaks* are epidemiologically related and all contained within the defined boundaries of the *containment zone*;
 - a *stamping-out policy* or another effective emergency control strategy aimed at eradicating the disease;
 - *animal identification* of the susceptible population within the *containment zone* enabling its recognition as belonging to the *containment zone*;
 - increased passive and targeted *surveillance* in accordance with Chapter 1.4. in the rest of the country or zone demonstrating no occurrence of *infection* or *infestation*;
 - *biosecurity* and *sanitary measures*, including ongoing *surveillance* and control of the movement of *animals*, other *commodities* and fomites within and from the *containment zone*, consistent with the *listed disease-specific* chapter, when there is one, to prevent spread of the *infection* or *infestation* from the *containment zone* to the rest of the country or zone.
- 4) A *containment zone* is considered as effectively established when the following is demonstrated, unless otherwise specified in the disease-specific chapter:

EITHER

- a) there have been no new *cases* in the *containment zone* within a minimum of two *incubation periods* from the disposal of the last detected case;

Annex 8 (contd)

OR

- b) ~~the containment zone~~ it comprises ~~an infected~~ an inner zone where cases may continue to occur and a ~~protection~~ an outer zone where no *outbreaks* have occurred for at least two *incubation periods* after the control measures above are in place and ~~which~~ that separates ~~the inner zone where cases may continue to occur~~ the *infected zone* from the rest of the country or zone.
- 5) The free status of the areas outside the *containment zone* is suspended pending the effective establishment of the *containment zone*. Once the *containment zone* has been established, the areas outside the *containment zone* regain free status.
- 6) The free status of the *containment zone* should be regained in accordance with the relevant *listed disease-specific chapters* or, if there are none, with Article 1.4.6.
- 7) In the event of an occurrence of a case of the *infection* or *infestation* for which the *containment zone* was established, either in the *containment zone* ~~defined~~ described in point 4a) or in the ~~protection~~ outer zone where no outbreaks had occurred as defined ~~described~~ in point 4b), the rest of the country or zone is considered infected.
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DRAFT CHAPTER 7.Z.

**ANIMAL WELFARE AND LAYING HEN
PRODUCTION SYSTEMS**

Article 7.Z.1.

Definitions

For the purposes of this chapter:

Laying hens: means sexually mature female birds of the species *Gallus gallus domesticus* kept for the commercial production of eggs for human consumption. Breeding hens are not included.

End-of-lay hens: means laying hens at the end of their productive lives.

Layer pullets: means female birds of the species *Gallus gallus domesticus* raised for commercial layer production purposes from hatch until the onset of sexual maturity.

Article 7.Z.2.

Scope

This chapter provides recommendations for the *animal welfare* aspects of commercial laying hen production systems. It covers the production period from the arrival of *day-old birds* onto the pullet-rearing farm through to the removal of end-of-lay hens from the laying production facilities. **Layer pullet and Laying** hens kept in village or backyard flocks and used to produce eggs for personal consumption are not included.

Commercial laying hen production systems involve the confinement of layer pullets and laying hens, the application of *biosecurity* and trade in eggs or pullets.

These recommendations address the welfare aspects of layer pullets or laying hens kept in cage or non-cage systems, whether indoors or outdoors.

Commercial layer pullet or laying hen production systems include:

1. Completely housed systems

Layer pullets or laying hens are completely confined in a poultry house, with or without mechanical environmental control.

2. Partially housed systems

Layer pullets or laying hens are kept in a poultry house with access to a designated outdoor area.

3. Completely outdoor systems

Layer pullets or laying hens are not confined inside a poultry house during the day but are confined in a designated outdoor area.

This chapter should be read in conjunction with Chapters 6.5., 7.1., 7.2., 7.3., 7.4., 7.5. and 7.6.

Annex 9 (contd)

Article 7.Z.3.

Outcome-based criteria (or measurables) for the welfare of layer pullets and laying hens

The welfare of layer pullets and laying hens should be assessed using outcome-based criteria or measurables, preferably animal-based measurables, as described in Article 7.1.4. Outcome-based criteria or measurables are particularly useful for evaluating compliance and improving *animal welfare*. Animal-based outcomes are usually the most sensitive measurables (e.g. mortality rate). However, resource and management-based outcomes can also have important applications (e.g. for example, interpretation of mortality rate data may be informed by decisions made to euthanise). There is no one single measurable that addresses all aspects of *animal welfare*. The use of measurables and the appropriate thresholds should be adapted to the different situations in which layer pullets and laying hens are kept, also taking into account the genetics used, resources provided, and the design and management of the system. Animal-based criteria or measurables can be considered as tools to monitor and refine these factors.

Criteria (or measurables) that can be used at farm level include conditions such as skeletal and foot problems, disease and *infection* or *infestation* that can be assessed during routine or targeted *monitoring*, or at depopulation. It is recommended that target values or thresholds for *animal welfare* measurables be determined by taking into account current scientific knowledge and appropriate national, sectorial or regional data and recommendations for layer pullets or laying hens. Determining the age and stage of production at which problems are detected may help to determine the cause.

The following animal-based and outcome-based measurables, in alphabetical order in English, may be useful indicators of layer pullet or laying hen welfare:

1. Beak condition

Evaluation of beak condition provides useful information about the extent to which layer pullets and laying hens are able to engage in normal behaviour, such as foraging, feeding, drinking and preening [Dennis and Cheng, 2012; Vezzoli *et al.*, 2015]. Tools for assessing beak condition have been developed and implemented in *animal welfare* assessment programmes [e.g., Kajlich *et al.*, 2016].

2. Behaviour

The presence or absence of certain behaviours may indicate either good *animal welfare* or an *animal welfare* problem, such as fear, pain or sickness. Some behaviours may not be uniquely indicative of one type of problem; they may be exhibited for a variety of reasons. *Gallus gallus domesticus* has evolved behaviours that it is motivated to perform, and a good understanding of layer pullet and laying hens normal behaviour [Nicol, 2015], including its social interactions [Estevez *et al.*, 2007; Rodríguez-Aurrekoetxea A. and Estevez I., 2014], is required for appropriate management and decision-making. Opportunities to display these behaviours are influenced by the physical and social environment [Widowski *et al.*, 2016; Lay *et al.*, 2011; O'Connor *et al.*, 2011].

a) Dust bathing

Dust bathing is a motivated behaviour providing body maintenance benefits. During dust bathing, layer pullets and laying hens work loose substrate material, such as litter, through their feathers. This behaviour helps remove stale lipids [van Liere and Bokma, 1987], which contributes to the maintenance of plumage condition. Good plumage condition helps to regulate body temperature and protect against skin injury. Reduced dust bathing behaviour in the *flock* may indicate problems with substrate or range quality, such as the substrate or ground being wet or not friable [Olson and Keeling, 2005; Van Liere and Bokma, 1987]. The performance of complete sequences of dust bathing may be associated with positive affect [Widowski and Duncan, 2000].

b) Fear behaviour

Fearful layer pullets and laying hens show high reactivity to various stimuli [Jones, 1987; Zeltner and Hirt, 2008] and this may result in traumatic injuries or suffocation if the layer pullets or laying hens pile on top of one another. Fearful layer pullets and laying hens may be less productive [Barnett *et al.*, 1992] and more prone to injurious feather pecking behaviour [de Haas *et al.*, 2014]. Methods have been developed for evaluating fearfulness [Forkman *et al.*, 2007], for example by observing layer pullet and laying hen behaviour in response to novel objects or when people, including *animal handlers*, walk through the pullet and hen areas of the poultry house [Jones, 1996; Waiblinger *et al.*, 2006].

c) Feeding and drinking behaviour

Changes in feeding or drinking behaviour may indicate management problems, including inadequate spaces for, or inappropriate placement of, feeders or drinkers, dietary imbalances, poor *feed* or water quality, or *feed* contamination [Garner *et al.*, 2012; Thogerson *et al.*, 2009a; Thogerson *et al.*, 2009b]. *Feed* and water intake is often reduced when pullets or hens are ill. *Feed* or water intake may also change as a result of heat stress [Lara *et al.* & Rostagno, 2013; Lin H. *et al.*, 2006] or cold stress [Alves *et al.*, 2012].

d) Foraging behaviour

Foraging is a motivated behaviour [de Jong *et al.*, 2007, Nicol *et al.*, 2011]. Foraging is the act of searching for *feed*, typically by pecking or scratching the substrate. Reduced foraging activity may suggest problems with substrate quality or the presence of conditions that decrease foraging opportunity [Appleby *et al.*, 2004; Lay *et al.*, 2011; Weeks and Nicol, 2006]. When in the presence of an adequate substrate, laying hens spend a large amount of time foraging even when *feed* is readily accessible [Weeks and Nicol, 2006].

e) Injurious feather pecking and cannibalism

Injurious feather pecking can result in significant feather loss and may lead to cannibalism. Cannibalism is the tearing of the flesh of another layer pullet or laying hen, and may result in severe injury, secondary *infection* or death. These behaviours can have multifactorial causes and be difficult to control [Nicol, 2018; Hartcher, 2016; Estevez, 2015; Nicol *et al.*, 2013; Rodenburg, 2013; Lambton, 2013; Newberry, 2004].

f) Locomotory and comfort behaviours

Layer pullets and laying hens may display a variety of locomotory and comfort behaviours, including walking, running, leaping, turning, stretching legs and wings, wing flapping, feather ruffling, tail wagging, and preening [Bracke and Hopster, 2006; Harthcher and Jones, 2017; Dawkins and Hardie, 1989; Shipov *et al.*, 2010; Norgaard, 1990]. Some of these behaviours have been shown to be important for skeletal, body and plumage development and maintenance. For example, walking and wing movements contribute to improved leg and wing bone strength [Knowles and Broom, 1990], and preening helps remove stale lipids from the skin [Vezzoli *et al.*, 2015] and keeps the feathers flexible and intact [Shawkey *et al.*, 2003].

g) Nesting

Nesting is a motivated behaviour that includes nest site selection, nest formation and egg laying [Cooper and Albentosa, 2003; Weeks and Nicol, 2006; Cronin *et al.*, 2012; Yue and Duncan, 2003]. Uneven nest box utilisation, delayed oviposition, increased pacing and egg laying outside the nest may be indicative of problems with environmental or social factors such as access to, or the suitability of nesting sites or disturbance by other layer pullets and laying hens [Cronin *et al.*, 2012; Cooper and Appleby, 1996; Gunnarsson *et al.*, 1999; Yue and Duncan, 2003; Widowski *et al.*, 2013].

h) Perching

Perching is a motivated behaviour. Layer pullets and laying hens may seek elevation during the day; however, the motivation to seek elevation is particularly strong at night when pullets and hens select a site for resting or sleeping [EFSA, 2015]. Reduced perching behaviour in the *flock* may indicate problems with environmental factors, such as inadequate perch or poor space design, injuries or pullet rearing experience [Janczak and Riber, 2015; Gunnarsson *et al.*, 1999].

i) Resting and sleeping

Sleep is an adaptive state that allows animals to recover from daily stress, conserve energy and consolidate memory [Siegel, 2009]. Layer pullets and laying hens display synchronised resting and sleeping behaviours, which can be disrupted by light intensity, photoperiod, environmental or social factors [Malleau *et al.*, 2007; Alvino *et al.*, 2009].

Annex 9 (contd)

j) Social behaviour

Layer pullets and laying hens are social and engage in synchronised behaviour [Olsson *et al.*, 2002; Olsson and Keeling, 2005]. Social behaviour may differ according to the characteristics of the social environment [Estevez *et al.*, 2002; 2007]. Problems in social behaviour can be assessed using scoring systems for measuring the degree of damage caused by aggression and competition for resources [Estevez *et al.*, 2002; Blatchford *et al.*, 2016].

k) Spatial distribution

Uneven spatial distribution of layer pullets and laying hens may indicate fear reactions, thermal discomfort or, uneven availability or use of resources such as light, *feed* or water, shelter, nesting areas or comfortable resting locations [Rodríguez-Aurrekoetxea and Estevez, 2016; Bright and Johnson, 2011].

l) Thermoregulatory behaviour

Prolonged or excessive panting and wing spreading are observed during heat stress [Mack, 2013; Lara and Rostagno, 2013]. Indicators of cold stress include feather ruffling, rigid posture, trembling, huddling and distress vocalisations.

m) Vocalisation

Vocalisation may indicate emotional states, both positive and negative. A good understanding of *flock* vocalisations and their causes is useful for good *flock* management [Zimmerman *et al.*, 2000; Bright, 2008; Koshiba *et al.*, 2013].

3. Body condition

Poor body condition may indicate *animal welfare* problems for individual layer pullets and laying hens. At *flock* level, uneven body condition may be an indicator of poor *animal welfare*. Body condition can be evaluated using on-farm sampling methods for body weight or body condition scores [Gregory and Robins, 1998; Craig and Muir, 1996; Elson and Croxall, 2006; Keeling *et al.*, 2003]. The choice of sampling methods should take into account the fact that feather cover can mask actual body condition.

4. Eye conditions

Conjunctivitis may indicate disease or the presence of irritants such as dust and ammonia. High ammonia levels may also cause corneal burns and eventual blindness. Abnormal eye development may be associated with very low light intensity (<5 lux) [Jenkins *et al.*, 1979; Lewis and Gous, 2009; Prescott *et al.*, 2003].

5. Foot problems

Hyperkeratosis, bumblefoot, contact dermatitis, excessive claw growth, broken claws and toe injuries are painful conditions associated with, amongst other things, inappropriate flooring, poorly designed perches, poorly maintained substrate [EFSA, 2005; Lay *et al.*, 2011; Abrahamsson and Tauson, 1995; Tauson and Abrahamson, 1996; Abrahamsson and Tauson, 1997] and inadequate maintenance of the production system.

If severe, the foot and hock problems may contribute to locomotion problems and lead to secondary *infections*. Scoring systems for foot problems have been developed [Blatchford *et al.*, 2016].

6. Incidence of diseases, including infections, infestations and metabolic disorders

Ill-health, regardless of the cause, is an *animal welfare* concern and may be exacerbated by poor environmental or husbandry management.

7. Injury rate and severity

Injuries are associated with pain and risk of *infection*. They may be a consequence of the actions of other layer pullets and laying hens (e.g., scratches, feather loss or wounding), management (e.g., nutritional deficits leading to skeletal problems), environmental conditions (e.g., poor flooring leading to foot injury), genetics used or human intervention (e.g., during handling and catching). It is important to assess both the rate and severity of injuries.

8. Mortality, culling and morbidity rates

Daily, weekly and cumulative mortality, culling and morbidity rates should be within expected ranges. Any unforeseen increase in these rates may reflect an *animal welfare* problem. Recording these rates and evaluating their causes of morbidity and mortality can be useful aids in diagnosing and remediating *animal welfare* problems.

9. Performance

Daily, weekly and cumulative performance should be within expected ranges. Any unforeseen reduction in these rates may reflect an *animal welfare* problem. Types of measures that can be used include:

- a) layer pullet growth rate, which measures average daily mass gain per pullet and flock uniformity;
- b) layer pullet flock uniformity, which measures the range in weight of the flock;
- cb) layer pullet feed conversion, which measures the quantity of *feed* consumed by a *flock* relative to the total live mass produced, expressed as the mass of *feed* consumed per unit of body mass;
- ed) laying hen feed conversion, which measures quantity of *feed* consumed by a *flock* relative to the unit of egg production;
- de) egg production, which measures the number, size and weight of eggs per hen housed;
- ef) egg quality and downgrades, which can be measured by, for example, grade percentage, shell strength, Haugh units, abnormalities and mis-laid or floor eggs.

10. Plumage condition

Evaluation of plumage condition provides useful information about aspects of *animal welfare* in terms of feather pecking and cannibalism, ability to thermoregulate, illness, and protection from injury [Rodriguez-Aurrekoetxea and Estevez, 2016; Drake *et al.*, 2010]. Dirty plumage may be associated with illness, environmental conditions or the layer pullet and laying hen housing system. Plumage cover and cleanliness scoring systems have been developed for these purposes [Blokhuis, 2007; Blatchford *et al.*, 2016].

11. Water and feed consumption

Monitoring and evaluating daily water and *feed* consumption is a useful tool which may indicate thermal stress, disease, *infection* or *infestation* and other conditions impacting *animal welfare*, taking into consideration ambient temperature, relative humidity and other related factors. Changes in intake, crowding at feeders and drinkers and wet substrate may be associated with problems with the quality or supply of water, or *feed*.

Article 7.Z.4.

Recommendations for layer pullets and laying hens

Ensuring good welfare of layer pullets and laying hens is contingent upon several management factors, such as system design, environmental management practices, and animal management practices including responsible husbandry and provision of appropriate care, and the genetics used. Serious animal welfare problems may arise in any system if there are problems with one or more of these factors are lacking.

Articles 7.Z.5. to 7.Z.29. provide recommendations for layer pullets and laying hens.

Annex 9 (contd)

Each recommendation includes a list of relevant outcome-based criteria or measurables derived from Article 7.Z.3. and when appropriate other criteria or measurables. The suitability of some of these criteria or measurables should be determined in accordance with the system in which the layer pullets and laying hens are housed.

Article 7.Z.5.

Location, design, construction and equipment of establishments

The location of layer pullet and laying hen *establishments* should be safe from the effects of fires and floods and other natural disasters to the extent practicable. In addition, *establishments* should be located or designed to avoid or minimise disease risks and exposure of layer pullets and laying hens to chemical and physical contaminants, noise and adverse climatic conditions.

Good welfare outcomes for layer pullets and laying hens can be achieved in a range of housing systems. Houses, outdoor areas and accessible equipment should be designed after considering the opportunities for layer pullets and laying hens to perform motivated behaviours, as well as health, environmental factors, and animal management capability. They should also be maintained to avoid injury or discomfort. Layer pullet and laying hen houses should be constructed with materials, electrical and fuel installations that minimise the risk of fire and other hazards and are easy to clean and maintain. Producers should have a maintenance programme in place, including record-keeping for all equipment and contingency plans to address failures that could jeopardise the welfare of layer pullets and laying hens.

Outcome-based measurables **include**: body condition, dust bathing, fear behaviour, feeding and drinking behaviour, foot problems, foraging behaviour, incidence of diseases, *infections* and *infestations* and metabolic disorders, injury rates and severity, locomotory and comfort behaviours, mortality, culling and morbidity rates, nesting, perching, performance, plumage condition, resting and sleeping, social behaviour and spatial distribution, thermoregulatory behaviour and vocalisations.

Article 7.Z.6.

Matching the layer pullets and laying hens with the housing and production system

Animal welfare and health considerations should balance any decisions on performance when choosing the genetics to be used for a particular location, housing and production system. The **layer** pullet rearing system should pre-adapt **these birds** for the intended **laying hen** production system [Aerni *et al.*, 2005].

Outcome-based measurables **include**: dust bathing, feeding and drinking behaviours, foraging behaviour, incidence of diseases, *infections*, *infestations* and metabolic disorders, injurious feather pecking and cannibalism, injury rate and severity, locomotory and comfort behaviours, mortality, culling and morbidity rates, nesting, perching, performance, plumage condition, resting and sleeping, social behaviour, and spatial distribution.

Article 7.Z.7.

Space allowance

Layer pullets and laying hens should be housed with a space allowance that allows them to have adequate access to resources and to adopt normal postures. Providing sufficient space for the expression of locomotory and comfort behaviours that contribute to good musculoskeletal health and plumage condition is desirable. Problems with space allowance may increase stress and the occurrence of injuries.

The following factors, in alphabetical order in English, should be considered when determining space allowance:

- age and weight of layer pullets and laying hens,
- ambient conditions,
- *biosecurity* strategy,

- equipment selection,
- feed and watering systems,
- flooring substrate,
- genetics,
- housing design,
- management capabilities,
- production system,
- usable space,
- ventilation.

Outcome-based measurables **include**: dust bathing, feeding and drinking behaviour, foraging behaviour, incidence of diseases, *infections*, *infestations* and metabolic disorders, injurious feather pecking and cannibalism, injury rate and severity, locomotory and comfort behaviours, mortality rate, culling and morbidity rates, nesting, perching, performance, plumage condition, resting and sleeping, social behaviour, and spatial distribution.

Article 7.Z.8.

Nutrition

Layer pullets and laying hens should be fed a diet appropriate to their age, production stage and genetics. The form of the *feed* should be acceptable to the layer pullets and laying hens and contain adequate nutrients to meet requirements for good *animal welfare* and health. *Feed* and water should be free from contaminants, debris and **pathogenic** microorganisms or other potential *hazards*.

The feeding and watering systems should be inspected regularly and cleaned as needed, to prevent the growth of hazardous microorganisms.

Layer pullets and laying hens should be provided with adequate access to *feed* on a daily basis. Water should be continuously available except under veterinary advice. Special provisions should be made to enable newly hatched layer pullets to access appropriate *feed* and water.

Outcome-based measurables **include**: body condition, foraging behaviour, incidence of diseases, *infections*, *infestations* and metabolic disorders, mortality, culling and morbidity rates, performance, plumage condition, vocalisations and water and *feed* consumption.

Article 7.Z.9.

Flooring

The slope, design and construction of the floors should provide adequate support for the **locomotion of** layer pullets and laying hens, prevent injuries and entrapments, promote good health and allow the performance of behaviours, such as comfort and locomotory behaviours. Changes of flooring types from **layer** pullet to **laying** hen housing should be avoided. Manure contamination from other layer pullets and laying hens within the house should be minimised through appropriate floor design and other elements of system design. The flooring should be easy to clean and disinfect.

When substrate is provided, it should allow the performance of behaviours, such as comfort and locomotory behaviours and be managed to remain dry and friable, and adequately treated or replaced when required to prevent disease and minimise any detrimental effects on *animal welfare*.

Annex 9 (contd)

Outcome-based measurable **include**: dust bathing, foot problems, foraging behaviour, incidence of diseases, *infections*, *infestations* and metabolic disorders, injurious feather pecking, injury rate and severity, locomotory and comfort behaviours, performance, plumage condition and resting and sleeping.

Article 7.Z.10.

Dust bathing areas

Access to friable, dry substrate to encourage dust bathing is desirable. When provided, dust bathing areas should be designed and positioned to encourage dust bathing, allow synchronised behaviour, prevent undue competition and not cause damage or injuries. Dust bathing areas should be easy to inspect and maintain [Weeks and Nicol, 2006].

Outcome-based measurables **include**: dust bathing, incidence of diseases, *infections*, *infestations* and metabolic disorders, injurious feather pecking and cannibalism, injury rate and severity, plumage condition and, spatial distribution.

Article 7.Z.11.

Foraging areas

Access to substrate that encourages foraging behaviour ~~activity~~ is desirable. When provided, foraging areas should be designed and positioned to encourage synchronised behaviour, prevent undue competition and not cause damage or injuries. Foraging areas should be easy to inspect and maintain.

Outcome-based measurables **include**: foraging behaviour, incidence of diseases, *infections*, *infestations* and metabolic disorders, injurious feather pecking and cannibalism, injury rate and severity and spatial distribution.

Article 7.Z.12.

Nesting areas

Access to nesting areas is desirable. When provided nesting areas should be built of suitable materials, and designed and positioned to encourage nesting, prevent undue competition and not cause damage or injuries. Nesting areas should be easy to inspect, clean and maintain.

Outcome-based measurables **include**: incidence of diseases, *infections*, *infestations* and metabolic disorders, injurious feather pecking and cannibalism, injury rate and severity, nesting, performance (mis-laid or floor eggs), and spatial distribution.

Article 7.Z.13.

Perches

Access to perches is desirable. When provided, perches should be built of suitable materials, designed, elevated and positioned to encourage perching by all layer pullets and laying hens, prevent undue competition, minimise keel bone deformation, foot problems or other injuries, and to ensure stability during perching. In the absence of designated perches, other structures such as platforms, grids or slats that are perceived by the layer pullets and laying hens as elevated and that do not cause damage or injuries, may be a suitable alternative. When provided, perches or their alternatives should be made available from an early age, be easy to clean and maintain, and be positioned to minimise faecal fouling [Hester, 2014; EFSA, 2015].

Outcome-based measurables **include**: foot problems, injurious feather pecking and cannibalism, incidence of diseases, *infections*, *infestations* and metabolic disorders, injury rate and severity, perching, plumage condition, resting and sleeping and spatial distribution.

Article 7.Z.14.

Outdoor areas

Layer pullets and laying hens may be given access to outdoor areas when they have sufficient feather cover and can range safely. Where layer pullets and laying hens are partially housed, there should be sufficient appropriately designed openings to allow them to leave and re-enter the poultry house freely.

Management of outdoor areas is important. Land and pasture management measures should be taken to reduce the risk of layer pullets and laying hens becoming infected by pathogenic agents or infested by parasites or being injured. This may include limiting the stocking density or using several pieces of land consecutively in rotation.

Outdoor areas should be located on well-drained ground and managed to minimise **stagnant standing** water and mud. The outdoor area should be able to contain the layer pullets and laying hens and prevent them from escaping. Outdoor areas should be designed, built and maintained to allow layer pullets and laying hens to feel safe outdoors and to encourage them to utilise the range optimally, while mitigating predation, disease risks, and adverse climatic conditions [Gilani *et al.*, 2014; Hegelund *et al.*, 2005; Nagle and Glatz, 2012]. Layer pullets and laying hens should be habituated early to the outdoor area [Rodríguez–Aurrekoetxea and Estevez, 2016]. Outdoor areas should be free from harmful plants and contaminants. **Good rearing conditions can prepare layer pullets and laying hens for outdoor access [Bari *et al.*, 2020].**

Outcome-based measurables **include**: fear behaviour, foot problems, foraging behaviour, incidence of diseases, *infections*, *infestations* and metabolic disorders, injury rate and severity, locomotory and comfort behaviours, mortality, culling and morbidity rates, performance, plumage condition, social behaviour, spatial distribution, thermoregulatory behaviour and vocalisation.

Article 7.Z.15.

Thermal environment

Thermal conditions for layer pullets and laying hens should be maintained within a range that is appropriate for their stage of life and the genetics used; extreme heat, humidity and cold should be avoided. A heat index can assist in identifying the thermal comfort zones for layer pullets and laying hens at varying temperatures, air velocities and relative humidity levels [Xin and Harmon, 1998], and can be found in management guidelines provided by laying hen genetics companies.

Although layer pullets and laying hens can adapt to a range of thermal environments, particularly if appropriate breeds and housing are used for the anticipated conditions, sudden fluctuations in temperature can cause heat or cold stress.

When environmental conditions move outside of these zones, strategies should be used to mitigate the adverse effects on the layer pullets and laying hens. These may include adjusting air speed, provision of heat or evaporative cooling [Yahav, 2009].

The thermal environment should be monitored regularly so that problems with the system can be detected and corrected before they cause an *animal welfare* problem.

Outcome-based measurable **include**: mortality, culling and morbidity rates, performance, spatial distribution, temperature and **relative** humidity, thermoregulatory behaviours and water and *feed* consumption.

Article 7.Z.16.

Air quality

Ventilation, housing, space allowance and manure management can affect air quality. Actions are required to maintain air quality at levels required for good *animal welfare*, including the removal or mitigation of noxious gases such as carbon dioxide and ammonia, dust and excess moisture in the environment.

Ammonia concentrations should not routinely exceed 25 ppm at layer pullet and laying hen level [David *et al.*, 2015; Miles *et al.*, 2006; Olanrewaiu, 2007].

Annex 9 (contd)

Dust levels should be kept to a minimum [David *et al.*, 2015].

Outcome-based measurables **include**: ammonia level, carbon dioxide level, dust level, eye conditions, incidence of diseases, *infections*, *infestations* and metabolic disorders, morbidity, culling and mortality rates, plumage condition, performance, temperature, and **relative** humidity and thermoregulatory behaviours.

Article 7.Z.17.

Lighting

There should be an adequate period of continuous light. The light intensity during the light period should be sufficient and homogeneously distributed to promote normal development, to allow layer pullets and laying hens to find *feed* and water, to stimulate activity, to stimulate onset of lay, to minimise the likelihood of injurious feather pecking and cannibalism, and to allow adequate inspection [Prescott *et al.*, 2003; Prescott and Wathes, 1999; Green *et al.*, 2000].

There should also be an adequate period of darkness during each 24-hour cycle to allow layer pullets and laying hens to rest and sleep, to reduce stress and promote circadian rhythms [Malleau *et al.*, 2007].

Changes in lighting should occur gradually or in a step-wise fashion, as needed, except if moulting is practised, during which rapid adjustments to lighting should be considered [Tanaka and Hurnik, 1990; Kristenson, 2008].

Outcome-based measurables **include**: eye conditions, injurious feather pecking and cannibalism, injury rate and severity, locomotory and comfort behaviours, nesting, perching, performance, plumage condition, resting and sleeping and spatial distribution.

Article 7.Z.18.

Noise

Although layer pullets and laying hens can adapt to different levels and types of noise, exposure of layer pullets and laying hens to unfamiliar noises, particularly those that are sudden or loud, should be minimised to prevent stress and fear reactions, such as piling up [Bright and Johnson, 2001]. Ventilation fans, machinery and other indoor or outdoor equipment should be constructed, placed, operated and maintained in such a way as to cause the least possible amount of noise [Chloupek *et al.*, 2009].

Location of *establishments* should, where possible, consider existing local sources of noise. Strategies should be implemented to acclimatise the layer pullets and laying hens to the conditions [Candland *et al.*, 1963; Morris, 2009].

Outcome-based measurables **include**: fear behaviours, injury rate and severity, morbidity, culling and mortality rates, performance, resting and sleeping, and vocalisation.

Article 7.Z.19.

Prevention and control of injurious feather pecking and cannibalism

Injurious feather pecking and cannibalism are challenges in layer pullet and laying hen production systems.

Management methods that may reduce the risk of occurrence include:

- adapting the diet and form of *feed* during rearing and lay [Lambton *et al.*, 2010],
- choosing genetics associated with a low propensity for injurious feather pecking [Craig and Muir, 1996; Kjaer and Hocking, 2004],
- increasing age at onset of lay [Pöttsch, 2001],
- increasing space allowance during rearing [Jung and Knierim, 2018],
- managing light during rearing and lay [Nicol *et al.*, 2013; van Niekerk *et al.*, 2013],
- minimising fear-related stimuli [Uitdehaag K. A. *et al.*, 2009],

Annex 9 (contd)

- providing elevated perches during rearing and lay [Green *et al.*, 2000],
- providing nesting areas during lay [Shi *et al.*, 2019a; Shi *et al.*, 2019b],
- providing foraging or other manipulable materials during rearing and lay [Huber-Eicher and Wechsler, 1998; de Jong *et al.*, 2010; Daigle *et al.*, 2014; Dixon *et al.*, 2010; Nicol, 2018],
- reducing group size during rearing and lay [Bilcik and Keeling, 1999].

Management methods should be implemented, where applicable, and in the event of injury affected layer pullets and laying hens should be promptly removed and treated or euthanised.

If these management methods are unsuccessful, partial beak removal [Gentle *et al.*, 1997] may be considered as a final course of action.

Outcome-based measurables include: foraging behaviour, injurious feather pecking and cannibalism, injury rate and severity, mortality, culling and morbidity rates, plumage condition, and vocalisation.

Article 7.Z.20.

Moulting

Induced moulting may lead to *animal welfare* problems if not well managed [Nicol *et al.*, 2017; Sariozkan *et al.*, 2016; Holt, 2003, Ricke, 2003, Webster, 2003]. When induced moulting is practised, methods that do not involve withdrawal of *feed* and are consistent with Article 7.Z.8. should be used. Laying hens should have access to lights and water at all times [Anderson, 2015] and adequate periods of light. Only laying hens in good body condition and health should be moulted. During the moulting period, loss of body mass should not compromise the welfare of laying hens, including their welfare during the subsequent laying period. Total mortality and culling rates during the moulting period should not exceed normal variations in *flock* mortality and culling rates.

Outcome-based measurables include: body condition, feeding and drinking, foraging behaviour [Biggs *et al.*, 2004; Sariozkan *et al.*, 2016; Petek and Alpay, 2008], injurious feather pecking and cannibalism, injury rate and severity, mortality, culling and morbidity rates, performance, plumage condition and social behaviour.

Article 7.Z.21.

Painful procedures

Painful procedures should not be practised unless necessary and should be performed in such a way as to minimise any pain, distress and suffering. If used, partial beak removal should be carried out at the earliest age possible and care should be taken to remove the minimum amount of beak necessary using a method that minimises pain and controls bleeding. If management methods to control injurious feather pecking and cannibalism are not successful, therapeutic partial beak removal may be considered as a final course of action [Gentle *et al.*, 1991; Marchand-Forde *et al.*, 2008; Marchand-Forde *et al.*, 2010; McKeegan and Philbey, 2012; Freire *et al.*, 2011; Glatz *et al.*, 1998]. Partial beak removal at a mature age may cause chronic pain. Dubbing, toe trimming and other mutilations should not be performed in layer pullets and laying hens.

Potential options for improving *animal welfare* in relation to these procedures include: ceasing the procedure, reducing or eliminating the need for the painful procedures through management strategies, using genetics that do not require the painful procedures, or replacing the current procedures with less painful or invasive alternatives.

Outcome-based measurables include: beak condition, body condition, feeding and drinking behaviour, foraging behaviour, injurious feather pecking and cannibalism, locomotory and comfort behaviours, mortality, culling and morbidity rates, performance, plumage condition and vocalisations.

Article 7.Z.22.

Animal health management, preventive medicine and veterinary treatment

Animal handlers responsible for the care of layer pullets and laying hens should have knowledge of normal layer pullet and laying hen behaviour, and be able to detect signs of ill-health or distress, such as a change in *feed* or water intake, reduced production, changes in behaviour and abnormalities in plumage condition, faeces or other physical features.

Annex 9 (contd)

If *animal handlers* are unable to identify the cause of disease, ill-health or distress, or are unable to correct these, or if they suspect the presence of a *notifiable disease*, they should seek advice from a *veterinarian* or other qualified advisers. Veterinary treatments should be prescribed by a *veterinarian*.

There should be an effective programme for the prevention of diseases that is consistent with the programmes established by *Veterinary Services* as appropriate, and which includes record-keeping.

Vaccinations and treatments should be administered by personnel skilled in the procedures and with consideration for the welfare of the layer pullets and laying hens.

Sick or injured layer pullets and laying hens should be placed in a hospital area for observation and treatment, or euthanised in accordance with Chapter 7.6. as soon as possible.

Outcome-based measurables ~~include~~: body condition, incidence of diseases, *infections*, *infestations* and metabolic disorders, injury rate and severity, mortality, culling and morbidity rates and performance.

Article 7.Z.23.

Biosecurity plans

Biosecurity plans should be designed, implemented, and reviewed regularly, commensurate with the best possible layer pullet and laying hen health status. The *biosecurity plan* should be sufficiently robust to be effective in addressing the current disease *risks* that are specific to each epidemiological group of layer pullets and laying hens and in accordance with relevant recommendations in the *Terrestrial Code*.

These programmes should address the control of the major routes for *infection* and *infestation* such as:

- aerosols,
- direct transmission from other *poultry*, domestic *animals* and *wildlife* and humans,
- *feed*,
- fomites, such as equipment, facilities and *vehicles*,
- *vectors* (e.g., arthropods and rodents),
- water supply.

Partially restocking (back filling), in a response to catastrophe or incomplete *flock* placement, should only be practised with due consideration to *biosecurity* and in a manner that prevents co-mingling of *flocks*.

Outcome-based measurables ~~include~~: mortality, culling and morbidity rates, incidence of diseases, *infections*, *infestations* and metabolic disorders and performance.

Article 7.Z.24.

Euthanasia of individual layer pullets or laying hens

Individual layer pullets or laying hens may be euthanised. Techniques used should be performed, in accordance with Chapter 7.6.

Reasons for euthanasia include:

- bone fractures or other injuries,
- diagnostic purposes,
- disaster management,
- emaciation,
- rapid deterioration of a medical condition for which treatment has been unsuccessful,

Annex 9 (contd)

- severe pain that cannot be alleviated.

The decision to euthanise a layer pullet or a laying hen and the procedure itself should be undertaken by a competent person. The *establishment* should have documented procedures and appropriate equipment.

Outcome-based measurables **include**: injury rate and severity.

Article 7.Z.25.

Depopulation of layer pullet and laying hen facilities

This article refers to the removal of *flocks* of layer pullets and laying hens from facilities for whatever reason and should be read in conjunction with Article 7.Z.24.

The period of *feed* withdrawal prior to depopulation of layer pullets and laying hens should be minimised.

Water should be available up to the time of depopulation.

Layer pullets and laying hens that are not fit for *loading* or transport should be euthanised. Laying hens with poor plumage condition are at risk of thermal stress and injury during transport [Broom, 1990; Fleming *et al.*, 2006; Gregory and Wilkins 1989; Newberry *et al.*, 1999; Webster, 2004; Whitehead and Fleming, 2000]. On-farm *killing* should be performed in accordance with Chapter 7.6.

Catching should be carried out by competent *animal handlers* in accordance with Article 7.Z.28. and every attempt should be made to minimise stress, fear reactions and injuries. If a layer pullet or laying hen is injured during catching, it should be euthanised.

Layer pullets and laying hens should be handled and placed into the transport *container* in accordance with Chapter 7.3.

Catching should preferably be carried out under dim or blue light to calm the layer pullets and laying hens.

Catching should be scheduled to minimise the transport time as well as climatic stress during catching, transport and holding.

The stocking density in transport *containers* should be in accordance with Chapters 7.2., 7.3. and 7.4.

Outcome-based measurables **include**: fear behaviour, injury rate and severity, mortality, culling and morbidity rates, spatial distribution, and vocalisation.

Article 7.Z.26.

Contingency plans

Layer pullet and laying hen producers should have contingency plans to minimise and mitigate the consequences of natural disasters, disease *outbreaks* and the failure of mechanical equipment. Planning should include a fire safety plan, **evacuation procedures** and, where relevant, include **evacuation procedures and** the provision, maintenance and testing of backup generators and fail-safe alarm devices to detect malfunctions, access to maintenance providers, alternative heating or cooling arrangements, ability to store water on farm, access to water cartage services, adequate on-farm storage of *feed*, alternative *feed* supply and a plan for managing ventilation emergencies.

The contingency plans should be consistent with national programmes established or recommended by *Veterinary Services*. Emergency *killing* procedures should be a part of the plan and be in accordance with the methods recommended in Chapter 7.6.

Outcome-based measurables **include**: mortality, culling and morbidity rates.

Annex 9 (contd)

Article 7.Z.27.

Competencies of personnel

Animal handlers should have the ability, knowledge and competencies necessary to maintain the welfare and health of the layer pullets and laying hens.

All people responsible for layer pullets and laying hens should have received appropriate training and be able to demonstrate that they are competent to carry out their responsibilities, which should include the assessment of layer pullet and laying hen behaviour, handling techniques, *euthanasia* and *killing* procedures, implementation of *biosecurity*, and the detection of general signs of diseases and indicators of poor *animal welfare* and procedures for their alleviation.

Outcome-based measurables include: body condition, fear behaviour, incidence of diseases, *infections*, *infestations* and metabolic disorders, locomotory and comfort behaviours, performance, mortality, culling and morbidity rates, spatial distribution and vocalisation.

Article 7.Z.28.

Inspection and handling

Layer pullets and laying hens, and the facilities and equipment within their poultry house or in outdoor facilities should be inspected at least daily. Inspection should have the following objectives:

- to collect and remove dead layer pullets and laying hens and dispose of them in accordance with Chapter 4.13.;
- to identify sick or injured layer pullets and laying hens and treat or euthanise them in accordance with Article 7.Z.24.;
- to detect and correct any *animal welfare* or health problems in the *flock*; and
- to detect and correct malfunctioning equipment and other-problems with the facility.

Inspections should be done in such a way that layer pullets and laying hens are not unnecessarily disturbed, for example *animal handlers* should move quietly and slowly through the *flock*.

When layer pullets and laying hens are handled, particularly when placed into or removed from the poultry house or outdoor facilities, they should not be injured, and should be held in a manner that minimises fear and stress [Gregory & Wilkins, 1989; Gross & Siegel, 2007; Kannan & Mench, 1996]. The distance over which layer pullets and laying hens are carried should be minimised. Laying hens are prone to bone fractures when not handled properly.

Outcome-based measurables include: fear behaviour, injury rate and severity, mortality, culling and morbidity rates, performance, spatial distribution and vocalisation.

Article 7.Z.29.

Protection from predators

Layer pullets and laying hens should be protected from predators in indoor and outdoor areas. All production systems should be designed and maintained to prevent access by predators and *wild* birds.

Outcome-based measurables include: fear behaviour, injury rate and severity, locomotory and comfort behaviours, mortality, culling and morbidity rates, performance, spatial distribution and vocalisation.

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CHAPTER 8.Y.

INFECTION WITH ANIMAL TRYPANOSOMES OF AFRICAN ORIGIN

Article 8.Y.1.

General provisions

- 1) Animal trypanosomes of African origin is a disease complex caused by several protozoan parasites of the genus *Trypanosoma*, transmitted mainly cyclically by the genus *Glossina* (tsetse flies), but also mechanically by several biting flies (e.g. tabanids, *Stomoxys* spp). The disease can be caused by many different trypanosomes and can affect various mammals such as horses, donkeys, camels, goats, sheep, pigs, dogs, cats and non-human primates. ~~From the socio-economic point of view The disease is has a particularly significant socio-economic impact deleterious in on cattle production. Some trypanosomes of African origin (i.e. *T. brucei gambiense*, and *T. brucei rhodesiense*) can~~ also affect humans and are responsible for a disease known as sleeping sickness or human African trypanosomosis, which is almost always fatal if untreated (sleeping sickness also known as human African trypanosomosis).
- 2) Infection with several trypanosome species in the same animal could exist although they this may not always be detected be evidenced using routine testing methods.
- 3) For the purposes of this chapter, 'susceptible animals' means domestic and *wild animals* from the following families: bovidae, suidae, equidae, camelidae, canidae, felidae and non-human primates.
- 4) For the purposes of the *Terrestrial Code*, *infection* with animal trypanosomes of African origin is defined as an *infection* of susceptible animals with one or more Salivarian trypanosomes of the subgenus *Duttonella* (only *T. vivax*), *Nannomonas* (only *T. congolense* and *T. simiae*) and *Trypanozoon* (*T. brucei* *sspp* excluding *T. evansi* and *T. equiperdum*), hereafter referred to as 'pathogenic agent'.
- 5) Infections of susceptible animals with *T. evansi* ~~or and~~ *T. equiperdum* ~~is are~~ covered by Chapter 8.X. and Chapter 12.3., respectively.
- 6) Other trypanosomes including *T. uniforme*, *T. godfreyi* and *T. suis*, which are rarely reported, and of limited distribution and impact, do not play a significant role in the epidemiology of the disease; however, they should be considered in the *surveillance* system due to their interference (hidden *infection*) with the diagnosis of *infection with* animal trypanosomes of African origin.
- 7) The following defines the occurrence of *infection* with animal trypanosomes of African origin:
 - a) the pathogenic agent has been observed in a sample from a susceptible animal; or
 - b) ~~presence of genetic material specific to the pathogenic agent has been detected in a sample from a susceptible animal showing clinical signs consistent with *infection* with animal trypanosomes of African origin or which has an epidemiological link to a confirmed case; or~~
 - c) antibodies have been detected in a sample from a susceptible animal showing clinical signs consistent with *infection* with animal trypanosomes of African origin or which has an epidemiological link to a confirmed case ~~in any susceptible animal species.~~
- 8) For the purposes of the *Terrestrial Code*, the *incubation period* of *infection* with animal trypanosomes of African origin ~~in susceptible animals~~ shall be 90 days.
- 9) Standards for diagnostic tests are described in the *Terrestrial Manual*.

Annex 10 (contd)

Article 8.Y.2.

Safe commodities

When authorising the import or transit of the following *commodities* from susceptible animals, *Veterinary Authorities* should not require conditions related to animal trypanosomes of African origin regardless of the status of the *exporting country or zone*:

- 1) pasteurised *milk* and pasteurised *milk products*;
- 2) hair, wool and fibre;
- 3) gelatine and collagen;
- 4) horns, hooves and claws;
- 5) *meat from animals that have been slaughtered in a slaughterhouse/abattoir and have been subjected to ante- and post-mortem inspections with favourable results*;
- 5) *meat products*;
- 6) hides and skins (except raw);
- 8) *semen collected and processed in accordance with Chapter 4.6.*;
- 9) *embryos*.

Article 8.Y.3.

Country or zone free from infection with animal trypanosomes of African origin

A *country or zone* may be considered free from *infection* with animal trypanosomes of African origin when:

- 1) the *infection* is notifiable in the entire country;
- 2) measures to prevent the introduction of the *infection* have been in place: in particular, the importations or movements of susceptible animals and other commodities into the country or *zone* have been carried out in accordance with this chapter and other relevant chapters of the *Terrestrial Code*;
- 3) and either:
 - a) the relevant provisions in point 2 of Article 1.4.6. have been complied with; or
 - b) for at least the past two years:
 - i) *surveillance* in accordance with Articles 8.Y.13. to 8.Y.16. has been in place in the entire country;
 - ii) there has been no case of *infection* with animal trypanosomes of African origin in the country; or zone or compartment; or
 - c) the absence of competent vectors has been demonstrated by a surveillance programme in accordance with Chapter 1.5. and Article 8.Y.9.

A country or *zone* free from *infection* with animal trypanosomes of African origin neighbouring adjacent to an infected country or *zone* should include a *zone* in which *surveillance* is conducted in accordance with Articles 8.Y.13. to 8.Y.16.

Article 8.Y.4.

Compartment free from infection with animal trypanosomes of African origin

The establishment and bilateral recognition of a *compartment* free from *infection* with animal trypanosomes of African origin should follow the provisions laid down in this chapter and in Chapters 4.4. and 4.5.

Susceptible animals in the free *compartment* should be protected against the *vectors* by the application of an effective *biosecurity* management system.

Article 8.Y.5.

Recovery of free status

Should a *case of infection* with animal trypanosomes of African origin occur in a previously free country or *zone*, its status may be recovered after the following:

- 1) infected *animals* have been isolated and then immediately treated, slaughtered, or killed and appropriately disposed of;
- 2) *animals* in contact with infected *animals* have been put immediately under ~~vector~~ protection from vector attacks and tested;

AND

- 3) ~~and~~ for six consecutive months, either:
 - a) after the last *case* was slaughtered or killed, the *animals* in contact have undergone monthly repeated serological and agent detection tests with negative results in both tests; or
 - b) when treatment is applied to the infected *animals*, both treated and in contact *animals* have undergone monthly repeated serological and agent detection tests with negative results in both tests;

AND

- 4) *surveillance* in accordance with Articles 8.Y.13. to 8.Y.16. has been carried out with negative results;
- 5) appropriate *biosecurity* is in place, ~~that may include~~ including *vector* control or *vector* protection in the affected area.

Otherwise, Article 8.Y.3. applies.

Article 8.Y.6.

Recommendations for importation of susceptible animals from countries, zones or compartments free from infection with animal trypanosomes of African originFor susceptible animals

Veterinary Authorities should require the presentation of an *international veterinary certificate* attesting that the *animals*:

- 1) showed no clinical signs of *infection* with animal trypanosomes of African origin on the day of shipment;
- 2) were kept since birth in a free country, *zone* or *compartment* or were imported from a free country, *zone* or *compartment*;

Annex 10 (contd)

- 3) did not transit through an *infected zone* during transportation to the *place of shipment* or were protected from *vectors* or any source of animal trypanosomes of African origin *by the application of effective biosecurity* during transportation to the *place of shipment*.

Article 8.Y.7.

~~Recommendations for importation from countries, zones or compartments free from infection with animal trypanosomes of African origin~~~~For semen~~

~~Veterinary Authorities should require the presentation of an *international veterinary certificate* attesting that:~~

- 1) the donor males:
 - a) were kept since birth in a free country, zone or compartment or were imported from a free country, zone or compartment;
 - b) showed no clinical signs of *infection* with animal trypanosomes of African origin on the day of collection;
- 2) the semen was collected, processed and stored in accordance with Chapters 4.6. and 4.7.

Article 8.Y.8.

~~Recommendations for importation from countries or zones infected with animal trypanosomes of African origin~~~~For semen~~

~~Veterinary Authorities should require the presentation of an *international veterinary certificate* attesting that:~~

- 1) the donor males:
 - a) were kept in isolation in a *vector-protected artificial insemination centre* for at least 90 days prior to semen collection;
 - b) were subjected, with negative results, to an agent identification test and an ELISA test for antibody detection adapted to the epidemiological situation on samples collected at entrance of the *vector-protected artificial insemination centre* and at least 90 days after the first test;
 - c) showed no clinical signs of *infection* with animal trypanosomes of African origin during the isolation period and on the day of collection;
- 2) the semen was collected, processed and stored in accordance with Chapters 4.6. and 4.7.

Article 8.Y.9.

~~Recommendations for importation from countries, zones or compartments free from infection with animal trypanosomes of African origin~~~~For *in vivo* derived embryos and for *in vitro* produced embryos~~

~~Veterinary Authorities should require the presentation of an *international veterinary certificate* attesting that:~~

- 1) the donor females:
 - a) were kept since birth in a free country, zone or compartment or were imported from a free country, zone or compartment;
 - b) showed no clinical signs of *infection* with animal trypanosomes of African origin on the day of collection;

Annex 10 (contd)

- 2) the semen used for the production of embryos complied with the provisions of Article 8.Y.7. or Article 8.Y.8.;
- 3) the embryos were collected, processed and stored in accordance with Chapters 4.8., 4.9. and 4.10., as relevant.

Article 8.Y.10.

Recommendations for importation from countries or zones infected with animal trypanosomes of African originFor in vivo derived embryos and for in vitro produced embryos

Veterinary Authorities should require the presentation of an *international veterinary certificate* attesting that:

- 1) the donor females:
 - a) were kept in isolation in a *vector-protected collection centre* for at least 90 days prior to the collection;
 - b) were subjected, with negative results, to an agent identification test and an ELISA test for antibody detection adapted to the epidemiological situation on samples collected at entrance to the *vector-protected collection centre* and at least 90 days after the first test;
 - e) showed no clinical signs of *infection* with animal trypanosomes of African origin on the day of collection;
- 2) the semen used for the production of embryos complied with the provisions of Article 8.Y.7. or Article 8.Y.8.;
- 3) the embryos were collected, processed and stored in accordance with Chapters 4.8., 4.9. and 4.10., as relevant.

Article 8.Y.11.

Recommendations for importation from countries, zones or compartments free from infection with animal trypanosomes of African originFor meat

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

- 1) were kept since birth in a free country, zone or compartment or were imported from a free country, zone or compartment;
- 2) have been slaughtered in a *slaughterhouse/abattoir* and have been subjected to ante- and post-mortem inspections with favourable results.

Article 8.Y.12.

Recommendations for importation from countries or zones infected with animal trypanosomes of African originFor meat

Veterinary Authorities should require the presentation of an *international veterinary certificate* attesting that the entire consignment of *meat*:

- 1) comes from *animals* which have been slaughtered in a *slaughterhouse/abattoir* and have been subjected to ante- and post-mortem inspections with favourable results; and
- 2) either:
 - a) has been kept at a temperature lower than + 4°C for a minimum period of five days; or

Annex 10 (contd)

- b) ~~has been subjected to any procedure of equivalent efficacy recognised by the Veterinary Authority.~~

Article 8.Y.137.

Introduction to surveillance

Articles 8.Y.137. to 8.Y.1610. define the principles and provide guidance on *surveillance* for *infection* with animal trypanosomes of African origin, complementary to Chapter 1.4. and to Chapter 1.5.

The purposes of *surveillance* could be the demonstration of the absence of *infection*, the early detection of *cases*, or the measurement and monitoring of the *prevalence* and distribution of the *infection* in a country, *zone* or *compartment*.

Vectors are an essential component of the epidemiology of animal trypanosomes of African origin. Therefore, the *surveillance* system should include a *vector surveillance* component to detect the presence and ~~the~~ estimate the abundance of tsetse flies. When appropriate, it should also allow the estimation of the *vector infection* rate with animal trypanosomes of African origin. *Vector surveillance* may also ~~aim~~ assist with the estimation of the abundance of mechanical vectors abundance.

The impact and epidemiology of animal trypanosomes of African origin widely differs between different regions of the world and therefore, it is not appropriate to provide specific recommendations for all situations. Member Countries should provide scientific data explaining the epidemiology of the disease in the concerned country or *zone* and adapt the *surveillance* strategies for defining their status to the local conditions. There is considerable latitude available to Member Countries to justify their status at an acceptable level of confidence.

Although surveillance in wildlife presents challenges that may differ significantly from those in domestic animals, Wildlife should be considered in the surveillance system because they can serve as reservoirs of infection and as indicators of risk to humans and domestic animals. Surveillance in wildlife presents challenges that may differ significantly from those in domestic animals.

Article 8.Y.148.

General conditions and methods for surveillance

- 1) A *surveillance* system in accordance with Chapter 1.4. should be under the responsibility of the *Veterinary Authority*. In particular, it should include:
 - a) a formal and ongoing system for detecting and investigating *outbreaks* of disease;
 - b) a procedure for the rapid diagnosis in the field or for the collection and transport of samples from suspected *cases* to a *laboratory* for diagnosis;
 - c) a system for recording, managing, reporting and analysing diagnostic and *surveillance* data.
- 2) The *surveillance* programme for animal trypanosomes of African origin should, at least:
 - a) in a free country ~~or, zone or compartment~~, have an *early warning system* which obliges farmers animal owners and keepers and workers, who have regular contact with susceptible animals, as well as veterinarians or veterinary paraprofessionals diagnosticians, to report promptly any suspicion of animal trypanosomes of African origin to the *Veterinary Authority*.

An effective *surveillance* system will periodically identify suspected *cases* that require follow-up and investigation to confirm or exclude whether the cause of the condition is animal trypanosomes of African origin. The rate at which such suspected *cases* are likely to occur will differ between epidemiological situations and cannot therefore be reliably predicted reliably. All suspected *cases* should be investigated immediately, and samples should be taken and submitted to a *laboratory*;

- b) include the conduct of random or targeted serological or parasitological surveys surveillance appropriate to the status of the country or *zone*.

Article 8.Y.159.

Surveillance strategies

The target population should include domestic and *wild* susceptible animals of epidemiological significance within the country or *zone*. Active and passive *surveillance* for animal trypanosomes of African origin should be ongoing as epidemiologically appropriate. *Surveillance* should be composed of random or targeted approaches using parasitological, serological, clinical and entomological methods appropriate for the status of the country or *zone*.

In a free country or *zone*, it is appropriate to focus *surveillance* in an area ~~neighbouring adjacent to a border of~~ an infected country or *zone*, considering relevant ecological or geographical features likely to interrupt the transmission of animal trypanosomes of African origin.

A Member Country should justify the *surveillance* strategy chosen as being adequate to detect the presence of *infection* with animal trypanosomes of African origin in accordance with Chapter 1.4. and Chapter 1.5., and with the prevailing epidemiological situation.

If a Member Country wishes to declare freedom from *infection* with animal trypanosomes of African origin in a specific *zone*, the design of the *surveillance* strategy should be targeted to the susceptible population within the *zone*.

For random surveys, the sample size selected for testing should be large enough to detect evidence of *infection* if it was to occur at a predetermined minimum ~~rate expected prevalence~~. The sample size and expected *prevalence* determine the level of confidence in the results of the survey. The Member Country should justify the choice of the minimum expected *prevalence* and confidence level based on the objectives of *surveillance* and the epidemiological situation, in accordance with Chapter 1.4. 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 *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 should be an effective procedure for following up positive reactions 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* are technically well defined. The design of *surveillance* programmes to prove the absence of *infection* of animal trypanosomes of African origin should be carefully followed to avoid producing results that are either insufficiently reliable to be accepted by international trading partners, or excessively costly and logistically complicated.

The results of random or targeted surveys are important in providing reliable evidence that no *infection* with animal trypanosomes of African origin is present in a country or *zone*. It is, therefore, essential that the survey is thoroughly documented. It is critical to interpret the results considering the movement history of the *animals* being sampled.

An active programme of *surveillance* of susceptible populations to detect evidence of *infection* with animal trypanosomes of African origin is essential to establish the *animal health status* of a country or *zone*.

1. Clinical surveillance

Clinical *surveillance* aims to detect clinical signs of *infection* with animal trypanosomes of African origin in susceptible animals, particularly during a newly introduced *infection*. However, neither clinical nor post-mortem signs of *infection* with animal trypanosomes of African origin are pathognomonic. Therefore, ~~suspected cases of infection with animal trypanosomes of African origin detected by clinical surveillance should always be confirmed by~~ diagnosis must rely on direct or indirect laboratory tests that confirm the presence of trypanosomes.

Annex 10 (contd)2. Parasitological surveillance

Suspected cases of animal trypanosomes of African origin detected by clinical surveillance should always be confirmed by laboratory testing.

Parasitological surveillance can be conducted to:

- a) confirm clinically suspected cases;
- b) identify parasite at the subgenus level;
- c) confirm active infection after positive serological results.

3. Molecular techniques

Molecular techniques increase the sensitivity of the detection of active infections. They can also be applied to identify the parasite and to better characterise the genotype of circulating parasites in a country or zone.

Molecular techniques can be used to:

- a) detect an active infection;
- b) characterise the parasite at the species, subspecies, group and population level.

4. Serological surveillance

- a) Serological testing of susceptible animals is one of the most effective methods for detecting the exposure to animal trypanosomes of African origin. The host species tested should reflect the epidemiology of the disease. Management variables that may influence likelihood of infection, such as the use of insecticides or animal treatment, should be considered.
- b) Due to cross reactions with *T. evansi*, *T. equiperdum*, *T. cruzi* and *Leishmania* spp, the presence of these pathogenic agents should be considered when interpreting the results of the serological surveillance system.
- c) Serological surveillance can be used to:
 - i) demonstrate individual or population freedom;
 - ii) evidence subclinical or latent infection by animal trypanosomes of African origin;
 - iii) determine by seroprevalence the magnitude of infection by animal trypanosomes of African origin in the host population.
- d) Positive test results can have four different possible causes:
 - i) active infection;
 - ii) antibodies from previous infection (after effective treatment or self-cure);
 - iii) maternal antibodies;
 - iv) cross reactions with *T. evansi*, *T. equiperdum*, *T. cruzi* and *Leishmania* spp.

5. Sentinel animals

Sentinel surveillance may provide evidence of freedom from infection or provide data on prevalence and incidence as well as the distribution of disease or infection. Sentinel surveillance may consist of:

Annex 10 (contd)

- a) the identification and regular testing of one or more of sentinel animal units of known health or immune status in a specified geographical location to detect the occurrence of *infection* with animal trypanosomes of African origin;
- b) the investigation of clinical suspect cases targeting highly susceptible animals such as dogs, donkeys or horses.

6. Vector surveillance

This point should be read in conjunction with Chapter 1.5.

For the purposes of this chapter, *vector surveillance* aims at determining different levels of *risk* by identifying the ~~various vector species~~ presence and abundance of various vector species in an area or by demonstrating the absence of *vectors*.

Demonstration of absence of competent vectors ~~tsetse flies~~ may support the claim of freedom from *infection* with animal trypanosomes of African origin ~~that are cyclically transmitted~~.

The most effective way of gathering *vector surveillance* data should consider the biology and behavioural characteristics of the local *vector* species and include traps, fly rounds, sticky targets or other collection tools. ~~Vector surveillance should be based on scientific sampling techniques.~~ The choice of the number and type of collecting tools to be used and the frequency of their use should consider the size and ecological characteristics of the area to be surveyed.

When sentinel *animals* are used, *vector surveillance* should be conducted at the same locations.

Article 8.Y.1610.

Additional surveillance procedures for recovery of free status

In addition to the general conditions described in this chapter, a Member Country seeking recovery of country or *zone* free status, including a *containment zone* established in accordance with Article 4.4.7., should show evidence of an active *surveillance* programme to demonstrate absence of *infection* with animal trypanosomes of African origin.

Populations under this *surveillance* programme should include:

- 1) *establishments* in the proximity of the *outbreak*;
- 2) *establishments* epidemiologically linked to the *outbreak*;
- 3) *animals* moved from or used to re-populate affected *establishments*.

CHAPTER 9.4.

INFESTATION WITH *AETHINA TUMIDA* (SMALL HIVE BEETLE)

[...]

Article 9.4.5.

Recommendations for the importation of individual consignments containing a single live queen bee, accompanied by a small number of associated attendants (a maximum of 20 attendants per queen)

Veterinary Authorities of importing countries should require the presentation of an *international veterinary certificate* attesting that:

1) the bees come from *apiaries* situated in a country or zone free from *A. tumida*;

OR

2) the bees come from hives or colonies which were inspected ~~immediately prior to dispatch~~ on the day of immediately prior to packing, and show with no evidence of ~~the presence of~~ *A. tumida* based on a visual inspection and ~~the use of~~ one of the methods described in the relevant chapter of the *Terrestrial Manual*; and

3) the bees come from an area of at least ~~400~~ 50 km radius where no *apiary* has been subject to any restrictions associated with the occurrence of *A. tumida* for the previous six months; and

4) the bees and accompanying packaging presented for export have been thoroughly and individually inspected and do not contain *A. tumida*; and

5) the packaging material, containers, accompanying products and food are new; and

6) all precautions have been taken to prevent *infestation* or contamination with *A. tumida*, in particular, measures that prevent *infestation* of queen cages such as no long term storage of queens prior to shipment and covering the cages or the whole consignment of bees immediately after the packing with fine mesh through which a live beetle cannot enter.

[...]

CHAPTER 10.4.

INFECTION WITH HIGH PATHOGENICITY AVIAN INFLUENZA VIRUSES

Article 10.4.1.

General provisions

- 1) This chapter deals with the *listed disease*, *infection* with high pathogenicity avian influenza viruses.
- 2) For the purposes of the *Terrestrial Code*:
 - a) High pathogenicity avian influenza means an *infection of poultry* by any influenza A virus that has been determined as high pathogenicity in accordance with the *Terrestrial Manual*.
 - b) An occurrence of *infection* with a high pathogenicity avian influenza virus is defined by the isolation and identification of the virus or the detection of specific viral ribonucleic acid, in one or more samples from *poultry*.
 - c) The *incubation period* at the *flock-level* for high pathogenicity avian influenza is 14 days.
- 3) Although the objective of this chapter is to mitigate animal and public health risks posed by *infection* with high pathogenicity avian influenza viruses, other influenza A viruses of avian host origin (i.e. low pathogenicity avian influenza viruses) may have the potential to exert a negative impact on animal and public health. A sudden and unexpected increase in virulence of low pathogenicity avian influenza viruses in *poultry* is notifiable as an *emerging disease* in accordance with Article 1.1.4. *Infection* of domestic and *captive wild* birds with low pathogenicity avian influenza viruses having proven natural transmission to humans associated with severe consequences, and *infection* of birds other than *poultry*, including *wild* birds, with influenza A viruses of high pathogenicity, are notifiable in accordance with Article 1.3.6.
- 4) A *notification* of *infection* of birds other than *poultry*, including *wild* birds, with influenza A viruses of high pathogenicity, or of *infection* of *poultry domestic* or *captive wild* birds with low pathogenicity avian influenza viruses does not affect the high pathogenicity avian influenza status of the country or *zone*. A Member Country should not impose bans on the trade of *poultry commodities* in response to such *notifications*, or to other information on the presence of any *non-notifiable* influenza A virus in birds.
- 5) This chapter includes *monitoring* considerations for low pathogenicity avian influenza viruses because some, especially H5 and H7 subtypes, have the potential to mutate into high pathogenicity avian influenza viruses.
- 6) The use of *vaccination* against avian influenza may be recommended under specific conditions. Any vaccine used should comply with the standards described in the *Terrestrial Manual*. *Vaccination* will not affect the high pathogenicity avian influenza status of a free country or *zone* if *surveillance* supports the absence of *infection*, in accordance with Article 10.4.22., in particular point 2. *Vaccination* can be used as an effective complementary control tool when a *stamping-out policy* alone is not sufficient. Whether to vaccinate or not should be decided by the *Veterinary Authority* on the basis of the avian influenza situation as well as the ability of the *Veterinary Services* to implement the *vaccination* strategy, as described in Chapter 4.18.
- 7) Standards for diagnostic tests and vaccines, including pathogenicity testing, are described in the *Terrestrial Manual*.

Article 10.4.1bis.

Safe commodities

When authorising importation or transit of the following *commodities*, *Veterinary Authorities* should not require any conditions related to high pathogenicity avian influenza, regardless of the high pathogenicity avian influenza status of the *exporting country* or *zone*:

Annex 12 (contd)

- 1) heat-treated *poultry meat products* in a hermetically sealed container with an F_0 value of 3 or above;
- 2) extruded dry pet food and coated ingredients after extrusion;
- 3) rendered *meat-and-bone-meal*, blood meal, feather meal, and *poultry oil*;
- 4) washed and steam-dried feathers and down from *poultry* and other birds.

Other *commodities* of *poultry* and other birds can be traded safely if in accordance with the relevant articles of this chapter.

Article 10.4.2.

Country or zone free from high pathogenicity avian influenza

A country or *zone* may be considered free from high pathogenicity avian influenza when:

- *infection* with high pathogenicity avian influenza viruses is a *notifiable disease* in the entire country;
- an ongoing awareness programme is in place to encourage reporting of suspicions of high pathogenicity avian influenza;
- absence of *infection* with high pathogenicity avian influenza viruses, based on *surveillance*, in accordance with Chapter 1.4. and Articles 10.4.20. to 10.4.22ter., has been demonstrated in the country or *zone* for the past 12 months;
- an awareness programme is in place related to avian influenza viruses risks and the specific biosecurity and management measures to address them of avian influenza viruses;
- *commodities* are imported in accordance with Articles 10.4.3. to 10.4.17bis.

Surveillance should be adapted to parts of the country or existing *zones* depending on historical or geographical factors, industry structure, population data and proximity to recent *outbreaks* or the use of *vaccination*.

Article 10.4.2bis.

Compartment free from high pathogenicity avian influenza

The establishment of a *compartment* free from high pathogenicity avian influenza should be in accordance with relevant requirements of this chapter and the principles described in Chapters 4.4. and 4.5.

Article 10.4.2ter.

Establishment of a containment zone within a country or zone free from high pathogenicity avian influenza

In the event of *outbreaks* of high pathogenicity avian influenza within a previously free country or *zone*, a *containment zone*, which includes all epidemiologically linked *outbreaks*, may be established for the purpose of minimising the impact on the rest of the country or *zone*.

In addition to the requirements for the establishment of a *containment zone* outlined in Article 4.4.7., the *surveillance* programme should take into account the density of *poultry* production, types of *poultry*, local management practices (including inter-premises movement patterns of *poultry*, people and equipment), relevant *biosecurity*, the presence and potential role of birds other than *poultry*, including *wild* birds, and the proximity of *poultry establishments* to permanent and seasonal water bodies.

The free status of the areas outside the *containment zone* is suspended while the *containment zone* is being established. It may be reinstated, irrespective of the provisions of Article 10.4.2quater., once the *containment zone* is clearly established. It should be demonstrated that *commodities* for *international trade* have originated from outside the *containment zone* or comply with the relevant articles of this chapter.

Article 10.4.2quater.

Recovery of free status

If *infection* with high pathogenicity avian influenza virus has occurred in *poultry* in a previously free country or *zone*, the free status may be regained after a minimum period of 28 days (i.e. two *flock-level incubation periods*) after a *stamping-out policy* has been completed (i.e. after the *disinfection* of the last affected *establishment*), provided that *surveillance* in accordance with Articles 10.4.20. to 10.4.22ter., in particular point 3 of Article 10.4.22., has been carried out during that period and has demonstrated the absence of *infection*.

If a *stamping-out policy* is not implemented, Article 10.4.2. applies.

Article 10.4.3.

Recommendations for importation from a country, zone or compartment free from high pathogenicity avian influenza

For live poultry (other than day-old poultry)

Veterinary Authorities should require the presentation of an *international veterinary certificate* attesting that:

- 1) the *poultry* showed no clinical signs of avian influenza on the day of shipment;
- 2) the *poultry* originated from a country, *zone* or *compartment* free from high pathogenicity avian influenza;
- 3) the *poultry* originated from a *flock* that was monitored for avian influenza viruses and was found to be negative;
- 4) the *poultry* are transported in new or appropriately sanitised *containers*.

If the *poultry* have been vaccinated against avian influenza viruses, the nature of the vaccine used and the date of *vaccination* should be stated in the *international veterinary certificate*.

Article 10.4.4.

Recommendations for the importation of live birds other than poultry

Regardless of the high pathogenicity avian influenza status of the country of origin, *Veterinary Authorities* should require the presentation of an *international veterinary certificate* attesting that:

- 1) on the day of shipment, the birds showed no clinical signs of avian influenza;
- 2) the birds had been kept in isolation facilities approved by the *Veterinary Services* since they were hatched or for at least 28 days (i.e. two *flock-level incubation periods*) prior to shipment and showed no clinical signs of avian influenza during the isolation period;
- 3) a statistically appropriate sample of the birds was subjected, with negative results, to a diagnostic test for avian influenza within 14 days prior to shipment;
- 4) the birds are transported in new or appropriately sanitised *containers*.

If the birds have been vaccinated against avian influenza, the nature of the vaccine used and the date of *vaccination* should be stated in the *international veterinary certificate*.

Annex 12 (contd)

Article 10.4.5.

Recommendations for importation from a country, zone or compartment free from high pathogenicity avian influenzaFor day-old live poultry

Veterinary Authorities should require the presentation of an *international veterinary certificate* attesting that:

- 1) the day-old live *poultry* had been kept in a country, *zone* or *compartment* free from high pathogenicity avian influenza since they were hatched;
- and
- a) the day-old live *poultry* were derived from parent *flocks* that were monitored for avian influenza viruses and were found to be negative at the time of collection of the eggs from which the day-old *poultry* hatched; or
 - b) the day-old live *poultry* that hatched from eggs that had had their surfaces sanitised in accordance with point 4d) of Article 6.5.5.;

AND

- 2) the day-old live *poultry* were transported in new or appropriately sanitised *containers*.

If the day-old live *poultry* or the parent *flocks* have been vaccinated against avian influenza, the nature of the vaccine used and the date of *vaccination* should be stated in the *international veterinary certificate*.

Article 10.4.6.

Recommendations for the importation of day-old live birds other than poultry

Regardless of the high pathogenicity avian influenza status of the country of origin, *Veterinary Authorities* should require the presentation of an *international veterinary certificate* attesting that:

- 1) on the day of shipment, the birds showed no clinical signs of avian influenza;
- 2) the birds were hatched and kept in isolation facilities approved by the *Veterinary Services*;
- 3) a statistically appropriate sample of the parent *flock* birds were subjected, with negative results, to a diagnostic test for avian influenza at the time of collection of the eggs;
- 4) the birds were transported in new or appropriately sanitised *containers*.

If the birds or parent *flocks* have been vaccinated against avian influenza, the nature of the vaccine used and the date of *vaccination* should be stated in the *international veterinary certificate*.

Article 10.4.7.

Recommendations for importation from a country, zone or compartment free from high pathogenicity avian influenzaFor hatching eggs of poultry

Veterinary Authorities should require the presentation of an *international veterinary certificate* attesting that:

- 1) the hatching eggs came from a country, *zone* or *compartment* free from high pathogenicity avian influenza;

Annex 12 (contd)

- 2) a) the hatching eggs were derived from parent *flocks* that were monitored for avian influenza viruses and were found to be negative at the time of collection of the hatching eggs; or
 - b) the hatching eggs have had their surfaces sanitised in accordance with point 4d) of Article 6.5.5.;
- 3) the hatching eggs are transported in new or appropriately sanitised packaging materials and *containers*.

If the parent *flocks* have been vaccinated against avian influenza, the nature of the vaccine used and the date of *vaccination* should be stated in the *international veterinary certificate*.

Article 10.4.8.

Recommendations for the importation of hatching eggs from birds other than poultry

Regardless of the high pathogenicity avian influenza status of the country of origin, *Veterinary Authorities* should require the presentation of an *international veterinary certificate* attesting that:

- 1) a statistically appropriate sample of the parent *flock* birds was subjected, with negative results, to a diagnostic test for avian influenza 14 days prior to and at the time of collection of the hatching eggs;
- 2) the hatching eggs have had their surfaces sanitised in accordance with point 4d) of Article 6.5.5.;
- 3) the hatching eggs are transported in new or appropriately sanitised packaging materials and *containers*.

If the parent *flocks* have been vaccinated against avian influenza, the nature of the vaccine used and the date of *vaccination* should be stated in the *international veterinary certificate*.

Article 10.4.9.

Recommendations for importation from a country, zone or compartment free from high pathogenicity avian influenzaFor poultry semen

Veterinary Authorities should require the presentation of an *international veterinary certificate* attesting that the donor *poultry*:

- 1) showed no clinical signs of avian influenza on the day of semen collection;
- 2) were kept in a country, *zone* or *compartment* free from high pathogenicity avian influenza.

Article 10.4.10.

Recommendations for the importation of semen from birds other than poultry

Regardless of the high pathogenicity avian influenza status of the country of origin, *Veterinary Authorities* should require the presentation of an *international veterinary certificate* attesting that the donor birds:

- 1) were kept in isolation facilities approved by the *Veterinary Services* for at least 28 days (i.e. two *flock-level incubation periods*) prior to semen collection;
- 2) showed no clinical signs of avian influenza during the isolation period;
- 3) were subjected, with negative results, to a diagnostic test for avian influenza within 14 days prior to semen collection.

Annex 12 (contd)

Article 10.4.11.

Recommendations for importation from a country, zone or compartment free from high pathogenicity avian influenzaFor eggs for human consumption

Veterinary Authorities should require the presentation of an *international veterinary certificate* attesting that:

- 1) the eggs for human consumption were produced and packed in a country, *zone* or *compartment* free from high pathogenicity avian influenza;
- 2) the eggs for human consumption were transported in new or appropriately sanitised packaging materials and *containers*.

Article 10.4.12.

Recommendations for the importation of egg products from poultry

Regardless of the high pathogenicity avian influenza status of the country of origin, *Veterinary Authorities* should require the presentation of an *international veterinary certificate* attesting that:

- 1) the egg products are derived from eggs which meet the requirements of Article 10.4.11.; or
- 2) the egg products have been processed to ensure the inactivation of high pathogenicity avian influenza viruses, in accordance with Article 10.4.18.;

AND

- 3) the necessary precautions were taken to avoid contact of the egg products with any source of high pathogenicity avian influenza viruses.

Article 10.4.13.

Recommendations for importation from a country, zone or compartment free from high pathogenicity avian influenzaFor fresh meat of poultry

Veterinary Authorities should require the presentation of an *international veterinary certificate* attesting that the entire consignment of *fresh meat* comes from *poultry*:

- 1) which originated from a country, *zone* or *compartment* free from high pathogenicity avian influenza;
- 2) which were slaughtered in an approved *slaughterhouse/abattoir* in a country, *zone* or *compartment* free from high pathogenicity avian influenza and were subjected to ante- and post-mortem inspections in accordance with Chapter 6.3., with favourable results.

Article 10.4.14.

Recommendations for the importation of meat products from poultry

Regardless of the high pathogenicity avian influenza status of the country of origin, *Veterinary Authorities* should require the presentation of an *international veterinary certificate* attesting that:

- 1) the *meat products* from *poultry* are derived from *fresh meat* which meets the requirements of Article 10.4.13.; or
- 2) the *meat products* from *poultry* have been processed to ensure the inactivation of high pathogenicity avian influenza viruses in accordance with Article 10.4.19.;

Annex 12 (contd)

AND

- 3) the necessary precautions were taken to avoid contact of the *meat products* from *poultry* with any source of high pathogenicity avian influenza viruses.

Article 10.4.15.

Recommendations for the importation of poultry products not listed in Article 10.4.1bis. and intended for use in animal feeding, or for agricultural or industrial use

Regardless of the high pathogenicity avian influenza status of the country of origin, *Veterinary Authorities* should require the presentation of an *international veterinary certificate* attesting that:

- 1) these *commodities* were obtained from *poultry* which originated in a country, *zone* or *compartment* free from high pathogenicity avian influenza and that the necessary precautions were taken to avoid contamination during processing with any source of high pathogenicity avian influenza viruses;

OR

- 2) these *commodities* have been processed to ensure the inactivation of high pathogenicity avian influenza viruses using:
 - a) moist heat treatment for 30 minutes at 56°C; or
 - b) heat treatment where the internal temperature throughout the product reached at least 74°C; or
 - c) any equivalent treatment that has been demonstrated to inactivate avian influenza viruses;

AND

- 3) the necessary precautions were taken to avoid contact of the *commodity* with any source of high pathogenicity avian influenza viruses.

Article 10.4.16.

Recommendations for the importation of feathers and down from poultry not listed in Article 10.4.1bis.

Veterinary Authorities should require the presentation of an *international veterinary certificate* attesting that:

- 1) these *commodities* originated from *poultry* as described in Article 10.4.13. and were processed in a country, *zone* or *compartment* free from high pathogenicity avian influenza; or
- 2) these *commodities* have been processed to ensure the inactivation of high pathogenicity avian influenza viruses using one of the following:
 - a) fumigation with formalin (10% formaldehyde) for 8 hours;
 - b) irradiation with a dose of 20 kGy;
 - c) any equivalent treatment which has been demonstrated to inactivate avian influenza viruses;

AND

- 3) the necessary precautions were taken to avoid contact of the *commodity* with any source of high pathogenicity avian influenza viruses.

Annex 12 (contd)

Article 10.4.17.

Recommendations for the importation of feathers and down of birds other than poultry not listed in Article 10.4.1bis.

Regardless of the high pathogenicity avian influenza status of the country of origin, *Veterinary Authorities* should require the presentation of an *international veterinary certificate* attesting that:

- 1) these *commodities* have been processed to ensure the inactivation of high pathogenicity avian influenza viruses using one of the following:
 - a) fumigation with formalin (10% formaldehyde) for 8 hours;
 - b) irradiation with a dose of 20 kGy;
 - c) any equivalent treatment which has been demonstrated to inactivate avian influenza viruses;
- 2) the necessary precautions were taken to avoid contact of the *commodity* with any source of high pathogenicity avian influenza viruses.

Article 10.4.17bis.

Recommendations for the importation of collection specimens, skins and trophies of birds other than poultry

Regardless of the high pathogenicity avian influenza status of the country of origin, *Veterinary Authorities* should require the presentation of an *international veterinary certificate* attesting that:

- 1) these *commodities* have been processed to ensure the inactivation of high pathogenicity avian influenza viruses in accordance with Article 10.4.19bis.;

AND

- 2) the necessary precautions were taken to avoid contact of the *commodity* with any source of high pathogenicity avian influenza viruses.

Article 10.4.18.

Procedures for the inactivation of high pathogenicity avian influenza viruses in egg products from poultry

The following time/temperature combinations are suitable for the inactivation of high pathogenicity avian influenza viruses present in egg products:

| | Core temperature (°C) | Time |
|------------------------|-----------------------|-------------|
| Whole egg | 60 | 188 seconds |
| Whole egg blends | 60 | 188 seconds |
| Whole egg blends | 61.1 | 94 seconds |
| Liquid egg white | 55.6 | 870 seconds |
| Liquid egg white | 56.7 | 232 seconds |
| Plain or pure egg yolk | 60 | 288 seconds |
| 10% salted yolk | 62.2 | 138 seconds |
| Dried egg white | 67 | 20 hours |
| Dried egg white | 54.4 | 50.4 hours |
| Dried egg white | 51.7 | 73.2 hours |

These time/temperature combinations are indicative of a range that achieves a 7-log₁₀ reduction of avian influenza virus infectivity. These are examples for a variety of egg products but, when supported by scientific evidence, variations of these time/temperature combinations may be used, and they may be used for other egg products, if they achieve equivalent inactivation of the virus.

Article 10.4.19.

Procedures for the inactivation of high pathogenicity avian influenza viruses in meat products from poultry

The following time/temperature combinations are suitable for the inactivation of high pathogenicity avian influenza viruses in *meat products*.

| | Core temperature (°C) | Time |
|----------------------------|-----------------------|-------------|
| Meat products from poultry | 60.0 | 507 seconds |
| | 65.0 | 42 seconds |
| | 70.0 | 3.5 seconds |
| | 73.9 | 0.51 second |

These time/temperature combinations are indicative of a range that achieves a 7-log₁₀ reduction of avian influenza virus infectivity. When supported by scientific evidence, variations of these time/temperature combinations may be used if they achieve equivalent inactivation of the virus.

Article 10.4.19bis.

Procedures for the inactivation of high pathogenicity avian influenza viruses in collection specimens and in skins and trophies

For the inactivation of high pathogenicity avian influenza viruses in collection specimens and in skins and trophies, one of the following procedures should be used:

- 1) boiling in water for an appropriate time to ensure that any material other than bone, claws or beaks is removed; or
- 2) soaking, with agitation, in a 4% (w/v) solution of washing soda (sodium carbonate-Na₂CO₃) maintained at pH 11.5 or above for at least 48 hours; or
- 3) soaking, with agitation, in a formic acid solution (100 kg salt [NaCl] and 12 kg formic acid per 1,000 litres water) maintained below pH 3.0 for at least 48 hours; wetting and dressing agents may be added; or
- 4) in the case of raw hides, treatment for at least 28 days with salt (NaCl) containing 2% washing soda (sodium carbonate-Na₂CO₃); or
- 5) treatment with 1% formalin for a minimum of six days; or
- 6) any equivalent treatment which has been demonstrated to inactivate the virus.

Article 10.4.20.

Principles of surveillance for avian influenza

The following are complementary to Chapter 1.4. and should be applied by Member Countries seeking to determine their high pathogenicity avian influenza status.

These principles are also necessary to support *vaccination* programmes, to monitor low pathogenicity avian influenza viruses, especially H5 and H7, in *poultry* and to detect high pathogenicity avian influenza in *wild* birds.

The impact and epidemiology of avian influenza differ widely among different regions of the world and therefore it is impossible to provide detailed recommendations for all situations. Variables such as the frequency of contacts between *poultry* and *wild* birds, different *biosecurity* levels and production systems, and the commingling of different susceptible species including domestic waterfowl, may require different *surveillance* strategies to address each situation. Furthermore, domestic waterfowl typically do not show clinical signs and have longer infective periods than gallinaceous *poultry*. It is therefore incumbent upon the Member Country to provide scientific data that explain the epidemiology of avian influenza in the region of concern and also to demonstrate how all the risk factors have been taken into account. Member Countries have flexibility to provide a science-based approach to demonstrate absence of *infection* with high pathogenicity avian influenza viruses at an appropriate level of confidence, as described in Chapter 1.4.

Annex 12 (contd)

There is an increased recognition of the value of the application of sequencing technologies and phylogenetic analyses to determine routes of introduction, transmission pathways and epidemiological patterns of *infection*. When avian influenza viruses are detected, Member Countries should apply these technologies, when possible, to enhance the evidence used to develop specific *surveillance* strategies and control activities.

A *monitoring* system for low pathogenicity avian influenza viruses in *poultry* should be in place for the following reasons:

- 1) Some H5 and H7 low pathogenicity avian influenza viruses have the potential to mutate into high pathogenicity avian influenza viruses, but and currently it is not possible to predict whether and which viruses will mutate or when ~~this~~ these mutations will occur.
- 2) The detection of sudden and unexpected increases in virulence of low pathogenicity avian influenza viruses in *poultry*, in order to fulfil notification obligations of an *emerging disease* in accordance with Article 1.1.4.
- 3) The detection, in domestic and or *captive wild* birds, of low pathogenicity avian influenza viruses that have been proven to be transmitted naturally to humans with severe consequences is notifiable in accordance with Article 1.1.3.

Article 10.4.21.

Surveillance for early warning of high pathogenicity avian influenza

- 1) An ongoing *surveillance* programme for avian influenza should be in place and be designed to detect the presence of *infection* with high pathogenicity avian influenza viruses in the country or *zone* in a timely manner.
- 2) The high pathogenicity avian influenza *surveillance* programme should include the following.
 - a) An *early warning system* for reporting suspected cases, in accordance with Article 1.4.5. throughout the production, marketing and processing chain. Farmers and workers who have day-to-day contact with *poultry*, as well as diagnosticians, should report promptly any suspicion of avian influenza to the *Veterinary Authority*. All suspected cases of high pathogenicity avian influenza should be investigated immediately and samples should be taken and submitted to a *laboratory* for appropriate tests.
 - b) Implementation, as relevant, of regular and frequent clinical inspection, or serological and virological testing, of high-risk groups of *animals*, such as those adjacent to a country or *zone* infected with high pathogenicity avian influenza, places where birds and *poultry* of different origins are mixed, such as live bird markets, and *poultry* in close proximity to waterfowl or other potential sources of influenza A viruses. This activity is particularly applicable to domestic waterfowl, where detection of high pathogenicity avian influenza via clinical suspicion can be of low sensitivity.
 - c) Immediate investigation of the presence of antibodies against influenza A viruses that have been detected in *poultry* and are not a consequence of *vaccination*. In the case of single or isolated serological positive results, *infection* with high pathogenicity avian influenza viruses may be ruled out on the basis of a thorough epidemiological and *laboratory* investigation that does not demonstrate further evidence of such an *infection*.

Article 10.4.22.

Surveillance for demonstrating freedom from infection with high pathogenicity avian influenza

1. A Member Country declaring freedom of the entire country, a *zone* or a *compartment* from high pathogenicity avian influenza in *poultry* should provide evidence of an effective *surveillance* programme.

Transparency in the application of different methodologies is essential to ensure consistency in decision-making, ease of understanding, fairness and rationality. The assumptions made, the uncertainties, and the effect of these on the interpretation of the results, should be documented.

Annex 12 (contd)

The design of the *surveillance* programme will depend on the epidemiological circumstances and it should be planned and implemented in accordance with this chapter and Article 1.4.6. This requires the availability of demographic data on the *poultry* population and the support of a *laboratory* able to undertake identification of *infection* with avian influenza viruses through virus detection and antibody tests.

The *surveillance* programme should demonstrate absence of *infection* with high pathogenicity avian influenza viruses during the preceding 12 months in susceptible *poultry* populations (vaccinated and non-vaccinated).

The design of the sampling strategy should include an epidemiologically appropriate design prevalence. The design prevalence and desired level of confidence in the results will determine the sample size. The Member Country should justify the choice of design prevalence and confidence level used on the basis of the stated objectives of the *surveillance* and the epidemiological situation.

The sampling strategy may be risk-based if scientific evidence is available, and provided, for the quantification of risk factors. Specific risks could include those 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, the presence of more than one species at the *establishment* and poor *biosecurity* in place.

Data from different *surveillance* activities can be included to increase the sensitivity of the *surveillance* system. If this is to be done, data from structured (e.g. surveys and active *surveillance*) and non-structured (e.g. passive *surveillance*) sources should be combined and the sensitivity of each activity should be quantified in order to be able to quantify the sensitivity of the overall *surveillance* system.

The *surveillance* programme should include *surveillance* for high pathogenicity avian influenza viruses in birds other than *poultry*, including *wild* birds, and *monitoring* of low pathogenicity avian influenza viruses in *poultry*, in order to ensure that *biosecurity* and control measures are fit for purpose.

Documentation of freedom from *infection* with high pathogenicity avian influenza should provide details of the *poultry* population, the occurrence of suspected *cases* and how they were investigated and dealt with. This should include the results of *laboratory* testing and the *biosecurity* and control measures to which the animals concerned were subjected during the investigation.

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

Vaccination to prevent the transmission of high pathogenicity avian influenza virus may be part of a disease control programme. The level of *flock* immunity required to prevent transmission depends on the *flock* size, composition (e.g. species) and density of the susceptible *poultry* population. Based on the epidemiology of avian influenza in the country, *zone* or *compartment*, a decision may be reached to vaccinate only certain species or other *poultry subpopulations*.

In all vaccinated *flocks* tests should be performed to ensure the absence of virus circulation. The tests should be repeated at a frequency that is proportionate to the *risk* in the country, *zone* or *compartment*. The use of sentinel *poultry* may provide further confidence in the absence of virus circulation.

Member Countries seeking the demonstration of freedom from high pathogenicity avian influenza in vaccinated population should refer to the chapter on avian influenza (*infection* with avian influenza viruses) in the *Terrestrial Manual*.

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

3. Additional requirements for recovery of free status

In addition to the conditions described in the point above, a Member Country declaring that it has regained country, *zone* or *compartment* freedom after an *outbreak* of high pathogenicity avian influenza in *poultry* 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. The Member Country should report the results of an active *surveillance* programme in which the susceptible *poultry* population undergoes regular clinical examination and active *surveillance* planned and implemented according to the general conditions and methods described in these recommendations. The *surveillance* samples should be representative of *poultry populations* at risk. The use of sentinel birds may facilitate the interpretation of *surveillance* results.

Annex 12 (contd)

Populations under this *surveillance* programme should include:

- a) *establishments* in the proximity of the *outbreaks*;
- b) *establishments* epidemiologically linked to the *outbreaks*;
- c) *poultry* used to re-populate affected *establishments*;
- d) any *establishments* where preventive depopulation has been carried out.

Article 10.4.22bis.

Surveillance of wild bird populations

Passive *surveillance*, i.e. sampling of birds found dead, is an appropriate method of *surveillance* in *wild* birds because *infection* with high pathogenicity avian influenza can be associated with mortality in some species. Mortality events, or clusters of birds found dead should be reported to the local *Veterinary Authorities* and investigated, including through the collection and submission of samples to a *laboratory* for appropriate tests.

Active *surveillance*, i.e. sampling of live *wild* birds, may be necessary for detection of some strains of high pathogenicity avian influenza viruses that produce *infection* without mortality in *wild* birds. Furthermore, it increases knowledge of the ecology and evolution of avian influenza viruses.

Surveillance in *wild* birds should be targeted towards times of year, species and locations in which *infection* is more likely.

Surveillance in *wild* birds should be enhanced by raising awareness, and by active searching and *monitoring* for dead or moribund *wild* birds when high pathogenicity avian influenza has been detected in the region. The movements of migratory water birds, in particular ducks, geese and swans, should be taken into account as a potential pathway for introduction of virus to uninfected areas.

Article 10.4.22ter.

Monitoring of low pathogenicity avian influenza in poultry populations

Outbreaks of low pathogenicity avian influenza viruses can be managed at the *establishment* level; however, spread to other *poultry establishments* increases the risk of virus mutation, particularly if it is not detected and managed. Therefore, a *monitoring* system should be in place.

Monitoring the presence and types of low pathogenicity avian influenza viruses can be achieved through a combination of clinical investigation when *infection* is suspected because of changes in production parameters, such as reductions in egg production or *feed* and water intake, and active serological and virological *surveillance*, which can be supported by the information obtained by the *surveillance* system for high pathogenicity avian influenza.

Serological and virological *monitoring* should aim at detecting clusters of infected *flocks* to identify spread between *establishments*. Epidemiological follow-up (tracing forward and back) of serologically positive *flocks* should be carried out to determine whether there is clustering of infected *flocks* regardless of whether the seropositive birds are still present at the *establishment* or whether active virus *infection* has been detected. Hence, *monitoring* of low pathogenicity avian influenza will also enhance early detection of high pathogenicity avian influenza.

CHAPTER 10.5.

INFECTION WITH AVIAN MYCOPLASMOSIS
(MYCOPLASMA GALLISEPTICUM) (AVIAN
MYCOPLASMOSIS)

Article 10.5.1.

General provisions

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

Article 10.5.2.

Establishment free from avian mycoplasmosis

To qualify as free from avian mycoplasmosis, an *establishment* should satisfy the following requirements:

- 1) it is under *official veterinary control*;
- 2) it contains no bird which has been vaccinated against avian mycoplasmosis;
- 3) 5% of the birds, with a maximum of 100 birds of different age groups present in the *establishment*, are subjected to ~~the serum agglutination test with negative results at the age of 10, 18 and 26 weeks, and thereafter at 4-week intervals (the results of at least the last two tests carried out on adult birds should be negative);~~
 - a) an agent identification test with negative results at the age of 10, 18 and 26 weeks with negative results, and thereafter at 4-week intervals with negative results on at least the last two tests, or
 - b) a serological test with negative results at the age of 10, 18 and 26 weeks with negative results, and thereafter at 4-week intervals with negative results on at least the last two tests.
- 4) all birds introduced into the *flocks* come from an *establishment* free from avian mycoplasmosis.

Article 10.5.3.

Recommendations for the importation of chickens and turkeys

Veterinary Authorities of importing countries should require the presentation of an *international veterinary certificate* attesting that the birds:

- 1) showed no clinical sign of avian mycoplasmosis on the day of shipment; and
- 2) come from an *establishment* free from avian mycoplasmosis; ~~and/or~~
- 3) were kept in a *quarantine station* for the 28 days prior to shipment and were subjected to ~~a diagnostic~~ a serological test and an agent identification test for avian mycoplasmosis with negative results, on two occasions, respectively at the beginning and at the end of the 28-day period.

Article 10.5.4.

Recommendations for the importation of day-old birds

Veterinary Authorities of importing countries should require the presentation of an *international veterinary certificate* attesting that the *day-old birds*:

Annex 13 (contd)

- 1) come from *establishments* free from avian mycoplasmosis and from hatcheries which comply with the standards referred to in Chapter 6.5.;
- 2) were shipped in clean and unused packages.

Article 10.5.5.

Recommendations for the importation of hatching eggs of chickens and turkeys

Veterinary Authorities of importing countries should require the presentation of an *international veterinary certificate* attesting that the *hatching eggs*:

- 1) have been disinfected in accordance with the standards referred to in Chapter 6.5.;
 - 2) come from *establishments* free from avian mycoplasmosis and from hatcheries which comply with the standards referred to in Chapter 6.5.;
 - 3) were shipped in clean and unused packages.
-

CHAPTER 12.6.

INFECTION WITH EQUINE INFLUENZA VIRUS

[...]

Article 12.6.6.

Recommendations for the importation of domestic equids for unrestricted movement

Veterinary Authorities should require the presentation of an *international veterinary certificate* attesting that the domestic equids:

- 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 domestic equid, 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 EI,~~ 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 ~~immunised~~ vaccinated in accordance with the recommendations of the manufacturer with a vaccine complying with the standards described in the *Terrestrial Manual* and considered effective against the epidemiologically relevant virus strains, between 21 and 90 days before shipment either with a primary course or a booster; information on their ~~vaccination~~ vaccination status should be included in the ~~veterinary certificate or the passport in accordance with Chapter 5.12. in accordance with one of the following procedures:~~
 - a) between 14 and 90 days before shipment either with a primary course or a booster; or
 - b) between 14 and 180 days before shipment, if they are older than four years of age, previously having received up to the date of this pre-shipment vaccination, at least four doses of the same vaccine at intervals not greater than 180 days.

Information on the vaccination status should be included in the international veterinary certificate or the passport in accordance with Chapter 5.12. as relevant.

~~For additional security, e~~Countries that are free of from EI or undertaking an eradication programme may also request that the domestic equids were ~~tested negative for EIV by~~ subjected to an agent identification test for EI described in the *Terrestrial Manual* with negative results, conducted on samples collected on two occasions, ~~at 7 to 14 days~~ four to six days after commencement of pre-export isolation and ~~less than 5~~ prior to ~~within four days before~~ of prior to shipment.

[...]