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December 2004

REPORT OF THE THIRD MEETING OF THE OIE WORKING GROUP ON ANIMAL WELFARE

Paris, 7-9 December 2004

(Extract from the report of the January 2005 meeting of the
OIE Terrestrial Animal Health Standards Commission)

The OIE Working Group on Animal Welfare held its third meeting at the OIE Headquarters on 7-9 December 2004.

The members of the Working Group and other participants are listed in [Appendix A](#). The Agenda adopted is given in [Appendix B](#). Dr D. Bayvel chaired the meeting.

Dr B. Vallat, Director General of the OIE, welcomed the members of the Working Group and thanked them for agreeing to continue their work on this important mandate of the OIE. He also welcomed Mr R. Cotta (from the International Federation of Agricultural Producers [IFAP]) as an observer to the Working Group.

1. Priorities

Dr Vallat noted that Member Countries were awaiting the new standards to be proposed for adoption in May but he acknowledged the difficulty of addressing the needs of all Member Countries. He discussed with the Working Group the likely priorities for the upcoming year to balance the demands of Member Countries and OIE resources. He considered that the housing of animals needed to be addressed but that the Working Group needed to decide on an approach (either generic or specific) which would allow progress to be made. The welfare of laboratory animals already had a rich literature which could be drawn upon and the subject is important to the work of the c.160 OIE Reference Laboratories. He noted also that *ad hoc* groups on the welfare of aquatic animals would be meeting in 2005.

The Working Group discussed priorities for new standards, including on zoo animals, wildlife, poultry, companion animals (including urban animal control especially in developing countries) and laboratory animals. The Working Group recalled that it had made animal housing a priority for standards development, and discussed whether work should commence with generic guidelines or species specific guidelines. It was noted that the generic approach had been successful to date and was considered the preferred approach as a starting point to gaining broad agreement among Member Countries.

It also acknowledged that there may be an expectation from Member Countries that the four priority issues already commenced be further developed.

2. Proposed standards on prioritised issues

The Working Group then examined the guidelines proposed by each of the four *ad hoc* groups which had met to date. For information, the reports of the four *ad hoc* groups are at:

- Slaughter for human consumption ([Appendix D](#))
- Land transport of animals ([Appendix E](#))
- Transport of animals by sea ([Appendix F](#))
- Humane killing of animals for disease control purposes ([Appendix G](#)).

Appendix XXVI (contd)

The Working Group proposed some modifications to the recommendations of the four *ad hoc* groups, the significant ones of which were made in consultation with the members of the *ad hoc* groups. The Working Group congratulated the experts on their work to date and was of the strong view that the recommendations (as modified by the Working Group) be put to the OIE International Committee for adoption at the 73rd General Session.

A list of proposed definitions (both generic and chapter specific) is at Appendix C, and the modified recommendations are at Appendix I for consideration by the Terrestrial Animal Health Standards Commission at its meeting in January 2005.

2.1. Slaughter for human consumption

The Working Group noted that the text below taken from the report of the first meeting of the *ad hoc* group provided the context in which that *ad hoc* group addressed the religious aspects of its guidelines, and proposed that it be included in the guidelines:

“The ad hoc group approached its work by assessing the animal welfare concerns associated with every procedure during the pre-slaughter and slaughter processes, reviewing them on the basis of the available scientific data, independent of any religious or cultural context. Once those animal welfare concerns were qualified, the ad hoc group considered the specific issues associated with slaughter without stunning, such as the necessary restraint, the pain likely to be associated with the cut (for which it noted that there were no definitive data) and distress prior to unconsciousness (using available data to estimate the length of this period).”

The ad hoc group acknowledged the significance of religious requirements, cultural and ethnic factors associated with some forms of slaughter. The ad hoc group felt it important that these should not be treated as exempt from these guidelines, which are intended to provide a framework within which variations to certain steps in the process may be practised to improve animal welfare.

The ad hoc group believed that methods of lairaging, and the moving and restraining of animals prior to and during religious slaughter are separate issues from religious slaughter requirements; with regard to restraint, there is a wide variation in methods, ranging from those with acceptable animal welfare to some which are totally unacceptable under any slaughter method. The ad hoc group also contended that some distressful and painful methods applied to conscious animals such as shackling and hoisting by the hind leg(s) or dragging by the leg(s) are not part of any religious requirements, are unacceptable in all circumstances, and should be phased out.”

The Working Group made several recommendations to the *ad hoc* group regarding definitions and illustrations and requested that the unloading of non-ambulatory animals be addressed in the future.

2.2. Land transport of animals

To reduce the risks to animal health and welfare through the movement of animals, the Working Group considered that it was desirable to minimise both the frequency and length of animal journeys. Ideally, animals should always be transported for as short a distance as possible and, if to be killed, be humanely killed as close as possible to the point of production, consistent with the *Terrestrial* and *Aquatic Codes* guidelines for the slaughter of animals for human consumption or the guidelines for the humane killing of animals for disease control purposes. In this regard, the Working Group proposed some additional text for the guidelines for land and sea transport.

The Working Group noted the benefits of identifying a person with overall responsibility for the welfare of the animals. The Working Group also noted that the *ad hoc* Group would be addressing species-specific issues in future.

2.3. Transport of animals by sea

The Working Group made several recommendations to the *ad hoc* Group regarding the accreditation of those responsible for the welfare of the animals.

2.4. Humane killing of animals for disease control purposes

The Working Group made several recommendations to the *ad hoc* Group regarding definitions, illustrations and several of the procedures described.

The Working Group noted that killing for disease control purposes could also apply to depopulation of animals for other purposes.

3. Other business

3.1. International Declaration on Animal Welfare

Dr D. Wilkins provided background information on the initiative of the World Society for the Protection of Animals (WSPA) for an International Declaration on Animal Welfare. He indicated the widespread support the initiative had received from animal welfare NGOs and that WSPA was planning a second Ministerial Conference in 2005 to carry on the work of the 2003 Manila Conference.

The Working Group considered favourably a WSPA request that the OIE support the principles underpinning the Declaration and encourage OIE Member Countries to be involved in the development of United Nations Convention. The Working Group considered that the OIE Director-General and the Terrestrial Animal Health Standards Commission were in the best position to determine a preferred approach for the OIE to take on this issue.

3.2. International Food and Agriculture Trade Policy Council

Dr Wilkins reported on his presentation and the subsequent discussion at the recent International Food and Agriculture Trade Policy Council (IPC) meeting in Brazil.

3.3. Animal welfare in the veterinary curriculum

Dr Wilkins reported on the work of WSPA with universities in many countries on introducing animal welfare into the veterinary curriculum through a 'concepts in animal welfare' syllabus. He noted the difficulty in making progress in some regions (e.g. in Africa) due to their other priorities. Dr Rahman reported on relevant activities in India including those of the Commonwealth Veterinary Association; he indicated that the OIE's work was central to these activities. Professor Fraser advocated the provision of scholarships for post-graduate studies for veterinarians from developing countries.

Members agreed on the importance of the veterinary profession in promoting this work. Dr Wilkins advised that WSPA was keen to work with the OIE on this initiative, for example through the International Association of Veterinary Schools and at the OIE General Session.

The Working Group agreed that the issue should remain on the work programme and that it should be strongly promoted by the OIE.

On a related issue, Dr Gavinelli reported that the OIE's work on animal welfare was now being referenced in various trade agreements being negotiated by the European Communities.

3.4. OIE Global Animal Welfare Conference

The Working Group discussed the distribution of the Conference CD-ROM.

Appendix XXVI (contd)**3.5. OIE Animal Welfare Website**

The Working Group discussed the new OIE animal welfare Website and noted the need to reference aquatic animals.

3.6. Working Group Membership

The OIE Director General discussed with the Working Group the need to include expertise from the private sector. He welcomed the observer from the IFAP and noted the pending discussions on including expertise from the processing sector on the Working Group.

The Working Group agreed that it needed to have a balanced membership to bring an international perspective to its meetings, to help determine priorities and enhance communications. It believed that the *ad hoc* group system provided the ideal mechanism for utilising specific technical expertise and for ensuring the scientific basis of OIE standards.

3.7. Communications and consultation

The Working Group noted the presentations on animal welfare made by members of the Working Group and officers of the OIE Central Bureau at various conferences and seminars.

3.8. International relationships

The Director General advised the Working Group of the planned OIE collaboration with the International Air Transport Association (IATA), Animal Transport Association (AATA), World Association of Zoos and Aquaria (WAZA) and other organisations, in an effort to harmonise animal transport standards.

Dr Bayvel reported that the International Egg Commission (IEC) had discussed with him its standards which it believed should be taken into account by the OIE.

Dr Wilson reported on discussions with the International Dairy Federation (IDF) on its involvement in the OIE's work.

Dr Bayvel reported on his discussions with the American Association for Laboratory Animal Science (AALAS) on laboratory animal welfare.

Professor Fraser reported on his work at the FAO in developing a paper on animal welfare assurance programmes in food production, and options for developing and developed countries.

The Working Group noted the desirability of the OIE and FAO coordinating their animal welfare work.

4. Strategic Planning

The Working Group discussed priorities for 2005/2006. The outcomes for 2004 and the agreed work programme are at Appendix H.

The Working Group agreed that its annual meetings would be enhanced by opportunistic meetings of members and by the outcomes of teleconferences between the Chair and Central Bureau staff being circulated to all members.

It was also agreed to formally review the performance of the working group using a standard evaluation instrument.

5. Next meeting

The Working Group agreed that its next meeting would be planned for December 2005, to allow it to review the work of animal welfare *ad hoc* groups meeting during the year and to draft the workplan for 2006.

.../Appendices

THIRD MEETING OF THE OIE WORKING GROUP ON ANIMAL WELFARE

Paris, 7-9 December 2004

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Appendix XXVI (contd)

Appendix A (contd)

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THIRD MEETING OF THE OIE WORKING GROUP ON ANIMAL WELFARE**Paris, 7-9 December 2004**

Adopted agenda

1. Introduction/Formalities
 2. Reports from OIE Animal Welfare *ad hoc* Groups
 3. Strategic Planning
 4. Other Business
 - 4.1. International Declaration for Animal Welfare
 - 4.2. Animal welfare in the veterinary curriculum
 - 4.3. CDROM OIE Global Conference on Animal Welfare
 - 4.4. OIE Web site on Animal Welfare
 - 4.5. Communication and consultation
 - 4.6. Membership of Animal Welfare Working Group: Clarification of rationale
 - 4.7. Link with FAO animal welfare activities
 - 4.8. International relationships
 - 4.8.1. International Air Transport Association (IATA)/Animal Transport Association (ATA)/World Association of Zoos and Aquaria (WAZA)
 - 4.8.2. International Egg Commission (IEC)
 - 4.8.3. International Food and Agriculture Trade Policy Council (IPC). Task Force
 - 4.8.4. Laboratory animal science
 - 4.9. 2004 Work Plan Review
 - 4.10. 2005 Work Plan Preparation: *ad hoc* Groups
 - 4.11. Other
 - 4.11.1. Animal welfare assurance programmes
 - 4.11.2. New OIE policy on document circulation
 5. Next meeting
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CHAPTER 1.1.1. GENERAL DEFINITIONS

Animal handler

A person with a knowledge of the behaviour and needs of animals which, with appropriate experience and a professional and positive response to an animal's needs, results in effective management and good welfare. Their competence should be demonstrated through independent assessment and certification.

Container

A non-self-propelled receptacle or other rigid structure for holding animals during a *journey* by one or several means of transport.

Death

Irreversible loss of brain activity demonstrable by loss of brain stem reflexes.

Journey

An animal transport journey commences when the first animal is loaded onto a *vehicle/vessel* or into a *container* and ends when the last animal is unloaded, and includes any stationary resting / holding periods of less than 48 hours. The same animals do not commence a new journey until after a period of over 48 hours for rest and recuperation, with adequate feed and water.

Killing

Any procedure which causes the death of an animal.

Lairage

Pens, yards and other holding areas used for accommodating animals in order to give them necessary attention (including water, feed, rest) before they are moved on or used for specific purposes including slaughter.

Loading/Unloading

Loading: the procedure of moving animals onto a *vehicle/vessel* or into a *container* for transport purposes; **unloading:** the procedure of moving animals off a *vehicle/vessel* or out of a *container*.

Post-journey period

The period between *unloading* and either recovery from the effects of the *journey* or slaughter (if this occurs before recovery).

Pre-journey period

The period during which animals are identified, and often assembled for the purpose of loading them.

Resting point

A place where the *journey* is interrupted to rest, feed or water the animals; the animals may remain in the *vehicle/vessel* or *container*, or be unloaded.

Restraint

The application to an animal of any procedure designed to restrict its movements.

Appendix XXVI (contd)Appendix C (contd)***Slaughter***

Any procedure which causes the death of an animal by bleeding.

Space allowance

The measure of the floor area and height on a *vehicle/vessel* or *container* allocated per individual or body weight of animals transported.

Stocking density

The number or body weight of animals per unit area on a *vehicle/vessel* or *container*.

Stunning

Any mechanical, electrical, chemical or other procedure which causes immediate loss of consciousness; when used before slaughter, the loss of consciousness lasts until death from the slaughter process; in the absence of slaughter, the procedure would allow the animal to recover consciousness.

Transport

The procedures associated with the carrying of animals for commercial purposes from one location to another by land (road and rail), sea or air.

Transporter

The person licensed by the *Competent Authority* to transport animals.

Travel

The movement of a *vehicle/vessel* or *container* carrying animals from one location to another.

Vehicle/vessel

Any train, truck, or ship that is used for carrying animal(s).

Slaughterhouse (to be harmonised by the Code Commission with the existing definition for *approved abattoir*)

Premises, including facilities for moving or lairaging animals, used for the slaughter of *animals* for human consumption or animal feeding, and approved by the *Veterinary Services* or other *Competent Authority*.

CHAPTER SPECIFIC DEFINITIONS

1. Definitions specific to slaughter for human consumption

Halal slaughter

Slaughter of a religiously acceptable species, by a Muslim slaughterman, with or without prior stunning, by cutting the neck in order to sever the jugular veins and carotid arteries, oesophagus and trachea, without severing the spinal cord.

Kosher slaughter

Slaughter of a religiously acceptable species, by a trained and accredited Jewish slaughterman, by cutting the neck, using a specifically approved blade, in order to sever the oesophagus, trachea, jugular veins and carotid arteries without severing the spinal column.

Jhatka slaughter

Slaughter of an acceptable species by decapitation, according to the Sikh religion.

2. Definitions specific to land transport of animals

Animal

For the purposes of this chapter, 'animal' refers to the following live domesticated animals: cattle, buffalo, camels, sheep, goats, pigs, poultry and equines. These guidelines will also be largely applicable to some other animals e.g. deer, other camelids and ratites. Wild, feral and partly domesticated animals may need different conditions.

3. Definition specific to transport of animals by sea

Animal

For the purposes of this chapter, 'animal' refers to the following live domesticated animals: cattle, buffalo, deer, camelids, sheep, goats, pigs and equines. These guidelines may also be applicable to other domesticated animals.

4. Definitions specific to humane killing of animals for disease control purposes

RMS

Root mean square – a means of calibrating the amount of alternating current to a direct current unit.



Original: English
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REPORT OF THE SECOND MEETING OF THE OIE *AD HOC* GROUP ON THE SLAUGHTER OF ANIMALS FOR HUMAN CONSUMPTION

Paris 20–22 July 2004

The OIE *ad hoc* Group on the Slaughter of Animals for Human Consumption held its second meeting at the OIE Headquarters from 20–22 July 2004.

The members of the OIE *ad hoc* Group and other participants are listed at Appendix I. The Agenda adopted is given at Appendix II.

On behalf of the Director General of the OIE, Dr A. Thiermann welcomed the members and thanked them for continuing their work on this very important topic within the OIE's programme on animal welfare.

The *ad hoc* Group took into account comments from New Zealand, the USA, Canada and the International Coalition for Farm Animal Welfare (ICFAW) in revising the draft guidelines on the slaughter of animals for human consumption developed at the first meeting. Some definitions were also revised.

The revised guidelines are at Appendix IV.

.../Appendices

Appendix XXVI (contd)

Appendix D (contd)

Appendix I

**SECOND MEETING OF THE OIE AD HOC GROUP ON THE
SLAUGHTER OF ANIMALS FOR HUMAN CONSUMPTION**

Paris, 20-22 July 2004

List of participants

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Appendix XXVI (contd)

Appendix D (contd)

Appendix II

**SECOND MEETING OF THE OIE *AD HOC* GROUP ON
THE SLAUGHTER OF ANIMALS FOR HUMAN CONSUMPTION**

Paris, 20-22 July 2004

Agenda adopted

1. Introduction

- 1.1. Discussion on the report of the recent meeting of the OIE Working Group on Animal Welfare
- 1.2. Discussion on the outcomes of the OIE Global Conference on Animal Welfare
- 1.3. Discussion on the OIE 72nd General Session (Animal Welfare)
- 1.4. Comments from Member Countries (Canada, USA, New Zealand)
- 1.5. Comments from ICFAW

2. Development of specific guiding principles and standards

3. Work programme

4. Conclusions

INTRODUCTION TO OIE GUIDELINES FOR THE WELFARE OF ANIMALS

Article 4

Definitions

For the purposes of this *Terrestrial Code*, the following definitions apply:

Slaughterhouse: premises, including facilities for moving or lairaging animals, used for the slaughter of *animals* for human consumption or animal feeding, and approved by the *Veterinary Services* or other competent authority.

Lairage: pens, yards and other holding areas used for accommodating animals in order to give them necessary attention (including water, fodder, rest) before they are moved on or used for specific purposes including slaughter.

Restraint: the application to an animal of any procedure designed to restrict its movements in order to facilitate effective management.

Stunning: any mechanical, electrical, chemical or other procedure which causes immediate loss of consciousness which lasts until death.

Killing: any procedure which causes the death of an animal.

Slaughter: any procedure which causes the death of an animal by bleeding.

Death: irreversible loss of brain activity as demonstrated by loss of brain stem reflexes.

Halal slaughter: slaughter of a religiously acceptable species, by a Muslim slaughterman, with or without prior stunning, by cutting the neck in order to sever the jugular veins and carotid arteries, oesophagus and trachea, without severing the spinal cord.

Kosher slaughter: slaughter, of a religiously acceptable species, by a trained and accredited Jewish slaughterman, by cutting the neck, using a specifically approved blade, in order to sever the oesophagus, trachea, jugular veins and carotid arteries without severing the spinal column.

Jhatka slaughter: slaughter of an acceptable species by decapitation according to the Sikh religion.

Appendix XXVI (contd)

Appendix D (contd)

Appendix III (contd)

GUIDELINES FOR THE SLAUGHTER OF ANIMALS FOR HUMAN CONSUMPTION

Article 1

General principles for slaughter

These guidelines address the need to ensure the welfare of food animals during pre-slaughter and slaughter processes, until they are dead.

These guidelines apply to those domestic animals commonly slaughtered in slaughterhouses, that is: cattle, buffalo, sheep, goats, deer, horses, pigs, ratites and poultry. Other animals, wherever they have been reared, should be managed to ensure that their transport, lairaging, restraint and slaughter is carried out without causing undue stress to the animals; the principles underpinning these guidelines apply also to these animals.

Personnel

Persons engaged in the unloading, moving, lairaging, care, restraining, stunning, slaughter and bleeding of animals play an important role in the welfare of those animals. For this reason, there should be a sufficient number of personnel, who should be patient, considerate, competent and familiar with the guidelines in this document and their application within the national context.

The management of the slaughterhouse and the *Veterinary Services* should ensure that slaughterhouse staff carry out their tasks in accordance with the principles of animal welfare.

Animal behaviour

Animal handlers should be experienced and competent in handling and moving farm livestock, and understand the behaviour patterns of animals and the underlying principles necessary to carry out their tasks.

The behaviour of individual animals or groups of animals will vary, depending on their breed, sex, temperament and age and the way in which they have been reared and handled. Despite these differences, the following behaviour patterns which are always present to some degree in domestic animals, should be taken into consideration in handling and moving the animals.

Most domestic livestock are kept in herds and follow a leader by instinct.

Animals which are likely to be hostile to each other in a group situation should not be mixed at slaughterhouses.

The desire of some animals to control their personal space should be taken into account in designing facilities.

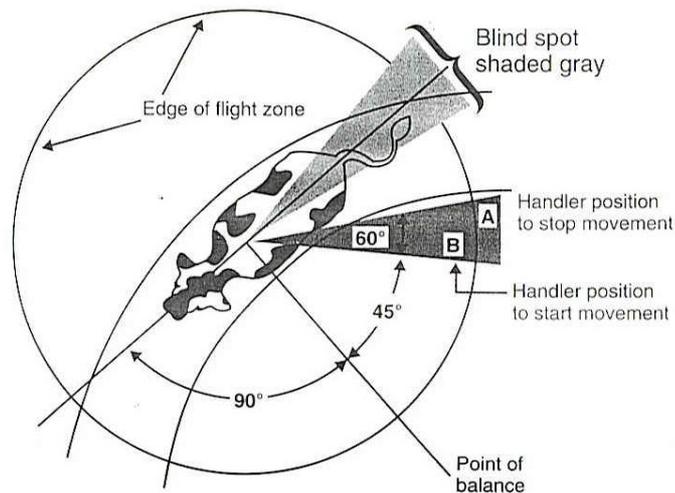
Domestic animals will try to escape if an animal handler approaches closer than a certain distance. This critical distance, which defines the flight zone, varies among species and individuals of the same species, and depends upon previous contact with humans. Animals reared in close proximity to humans i.e. tame have no flight zone, whereas those kept in free range or extensive systems may have flight zones which may vary from one metre to many metres. Animal handlers should avoid sudden penetration of the flight zone which may cause a panic reaction which could lead to aggression or attempted escape.

Appendix XXVI (contd)

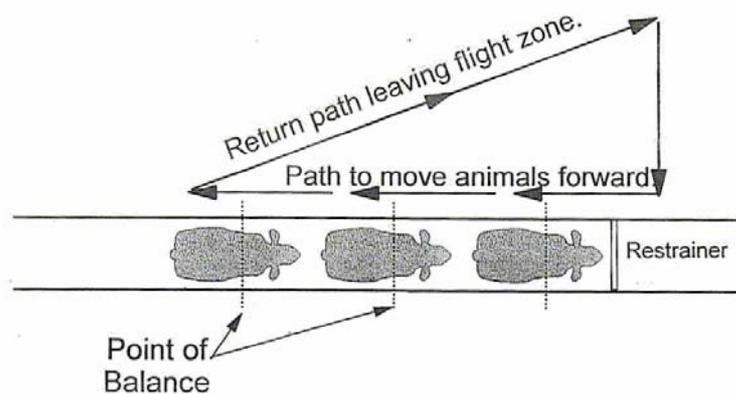
Appendix D (contd)

Appendix III (contd)

An example of a flight zone (cattle)



Handler movement pattern to move cattle forward



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

Domestic animals have wide-angle vision but only have limited forward binocular vision and poor perception of depth. This means that they can detect objects and movements beside and behind them, but can only judge distances directly ahead.

Appendix XXVI (contd)Appendix D (contd)Appendix III (contd)

Although all domestic animals have a highly sensitive sense of smell, they react in different ways to the smells of slaughterhouses. Smells which cause fear or other negative responses should be taken into consideration when managing animals.

Domestic animals can hear over a greater range of frequencies than humans and are more sensitive to higher frequencies. They tend to be alarmed by constant loud noise and by sudden noises, which may cause them to panic.

Distractions and their removal

Distractions that may cause approaching animals to stop, baulk or turn back should be designed out from new facilities or removed from existing ones. Below are examples of common distractions and methods for eliminating them:

- Reflections on shiny metal or wet floors - move a lamp or change lighting.
- Dark entrances to chutes, races, stun boxes or conveyor restrainers - illuminate with indirect lighting which does not shine directly into the eyes of approaching animals.
- Animals seeing moving people or equipment up ahead - install solid sides on chutes and races or install shields.
- Chains or other loose objects hanging in chutes or on fences - remove them.
- Uneven floors or a sudden drop in floor levels at the entrance to conveyor restrainers – avoid uneven floor surfaces or install a solid false floor under the restrainer to provide an illusion of a solid and continuous walking surface.
- Sounds of air hissing from pneumatic equipment - install silencers or use hydraulic equipment.
- Clanging and banging of metal objects - install rubber stops on gates and other devices to reduce metal to metal contact.
- Air currents from fans or air curtains blowing into the face of animals - redirect or reposition equipment.

Article 2**Moving and handling animals**

The following principles should apply to unloading animals, moving them into lairage pens, out of the lairage pens and up to the slaughter point:

- The conditions of the animals should be assessed upon their arrival for any animal welfare problems.
- Injured or sick animals, requiring immediate slaughter, should be killed humanely at the site where they are found.
- The use of force on animals that have little or no room to move should not occur.

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- The use of instruments which administer electric shocks (e.g. goads and prods) and their power output should be restricted to that necessary to assist movement of the animals. If such use is necessary, it should be limited to the hindquarters of pigs and large ruminants, and never on sensitive areas such as the eyes, mouth, ears, anogenital region or belly. Such instruments should not be used on horses, sheep and goats of any age, or on calves or piglets.
- Performance standards should be established in which numerical scoring is used to evaluate the use of such instruments and to measure the percentage of animals moved with an electric instrument. In properly designed and constructed facilities with competent animal handlers, it should be possible to move 75% or more of the animals without the use of electric instruments.
- Useful and permitted aids for moving animals include panels, flags, plastic paddles, flappers (a length of cane with a short strap of leather or canvas attached), plastic bags and metallic rattles; they should be used in a manner sufficient to encourage and direct movement of the animals but without physical contact with them.
- Shouting or yelling at animals to encourage them to move should not occur as such actions may make the animals agitated, leading to crowding or falling.
- Implements which cause pain and suffering such as large sticks, sticks with sharp ends, metal piping, fencing wire or heavy leather belts should not be used to move animals.
- Animals should be grasped or lifted in a manner which avoids pain or suffering and physical damage (e.g. bruising, fractures, dislocations). In the case of quadrupeds, manual lifting by a person should only be used in young animals or small species, and in a manner appropriate to the species; grasping or lifting such animals only by their wool, hair, feet, neck, ears or tails causing pain or suffering should not be permitted, except in an emergency where animal welfare or human safety may otherwise be compromised.
- Conscious animals should not be thrown or dragged.
- Animals should not be forced to move at a speed greater than their normal walking pace, in order to minimise injury through falling or slipping. Performance standards should be established where numerical scoring of the prevalence of animals slipping or falling is used to evaluate whether animal moving practices and/or facilities should be improved. In properly designed and constructed facilities with competent animal handlers, it should be possible to move 99% of animals without their falling.
- Animal handlers should not force an animal to walk over the top of other animals.
- Under no circumstances should animal handlers resort to violent acts to move animals, such as crushing or breaking animals' tails, grasping animals' eyes or pulling them by their ears. Animal handlers should never apply an injurious object or irritant substance to sensitive areas such as eyes, mouth, ears, anogenital region or belly.

Requirements for animals delivered in containers

- Containers in which animals are transported should be handled with care, and should not be thrown, dropped or knocked over. Where possible, they should be loaded and unloaded horizontally and mechanically.

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- Animals delivered in containers with perforated or flexible bottoms should be unloaded with particular care in order to avoid injury. Where appropriate, animals should be unloaded from the containers individually.
- Animals which have been transported in containers should be slaughtered as soon as possible; mammals and ratites which are not taken directly upon arrival to the place of slaughter should have drinking water available to them from appropriate facilities at all times. Delivery of poultry for slaughter should be scheduled such that they are not deprived of water at the premises for longer than 12 hours. Animals which have not been slaughtered within 12 hours of their arrival should be fed, and should subsequently be given moderate amounts of food at appropriate intervals.

Provision relevant to restraining and containing animals

Provisions relevant to restraining animals for stunning or slaughter without stunning, to help maintain animal welfare include:

- Provision of a non-slip floor
- Avoidance of excessive pressure applied by restraining equipment that causes struggling or vocalisation in animals
- Equipment engineered to reduce noise of air hissing and clanging metal
- Absence of sharp edges in restraining equipment that would harm animals
- Avoidance of jerking or sudden movement of restraining device.

Methods of restraint causing avoidable suffering, such as the following, should not be used in conscious animals because they cause severe pain and stress:

- suspending or hoisting animals (other than poultry) by the feet or legs
- indiscriminate and inappropriate use of stunning equipment
- mechanical clamping of an animal's legs or feet (other than shackles used in poultry and ostriches) as the sole method of restraint
- cutting leg tendons or blinding animals in order to immobilise them
- using puntilla to immobilise animals
- using electric currents to immobilise animals, except for proper stunning.

Article 3**Lairage design and construction**

The lairage should be designed and constructed to hold an appropriate number of animals in relation to the throughput rate of the slaughterhouse without compromising the welfare of the animals.

In order to permit operations to be conducted as smoothly and efficiently as possible without injury or undue stress to the animals, the lairage areas should be designed and constructed so as to allow the animals to move freely in the required direction, using their behavioural characteristics and without undue penetration of their flight zone.

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The following guidelines may help to achieve this.

Design

- The lairage should be designed to allow a one-way flow of animals from unloading to the point of slaughter, with a minimum of abrupt corners to negotiate.
- In red meat slaughterhouses, pens, passageways and races should be arranged in such a way as to permit inspection of animals at any time, and to permit the removal of sick or injured animals when considered to be appropriate, for which separate appropriate accommodation should be provided.
- Each animal should have room to stand up and lie down and, when confined in a pen, to turn around. The lairage should have sufficient accommodation for the number of animals intended to be held. Drinking water should always be available to the animals, and the method of delivery should be appropriate to the type of animal held. Troughs should be designed and installed in such a way as to minimise the risk of fouling by faeces, without introducing risk of bruising and injury in animals, and should not hinder the movement of animals.
- Holding pens should be rectangular rather than square, to allow as many animals as possible to stand or lie down against a wall. Where feed troughs are provided, they should be sufficient in number and feeding space to allow adequate access of all animals to feed. The feed trough should not hinder the movement of animals.
- Where tethers, ties or individual stalls are used, these should be designed so as not to cause injury or distress especially when the animals are lying down, standing up, drinking and feeding.
- Passageways and races should be either straight or slightly curved, as appropriate to the animal species. Passageways and races should have solid sides, but when there is a double race the shared partition should allow adjacent animals to see each other. For pigs and sheep, passageways should be wide enough to enable two or more animals to walk side by side for as long as possible. At the point where passageways are reduced in width, this should be done by a means which prevents excessive bunching of the animals.
- Animal handlers should be positioned alongside races and passageways on the inside radius of any curve, to take advantage of the natural tendency of animals to circle an intruder. Where one-way gates are used, they should be of a design which avoids bruising. Races should be horizontal but where there is a slope, they should be constructed to allow the free movement of animals without injury.
- There should be a waiting pen, with a level floor and solid sides, between the holding pens and the race leading to the point of stunning or slaughter, to ensure a steady supply of animals for stunning or slaughter and to avoid having animal handlers trying to rush animals from the holding pens. The waiting pen should preferably be circular, but in any case, so designed that animals cannot be trapped or trampled.
- Ramps or lifts should be used for loading and unloading of animals where there is a difference in height or a gap between the floor of the vehicle and the unloading area. The ramp should be well drained, non-slippery and adjustable to facilitate easy movement of animals without causing distress or injury.

Appendix XXVI (contd)Appendix D (contd)Appendix III (contd)**Construction**

- Lairages should be constructed and maintained so as to provide protection from unfavourable climatic conditions, using strong and resistant materials such as concrete and metal which has been treated to prevent corrosion. Surfaces should be easy to clean. There should be no sharp edges or protuberances which may injure the animals.
- Floors should be well drained and not slippery; they should not cause injury to the animals' feet. Where necessary floors should be insulated or provided with appropriate bedding. Drainage grids should be placed at the sides of pens and passageways and not where animals would have to cross them. Discontinuities or changes in floor patterns or texture which could cause baulking in the movement of animals should be avoided.
- Lairages should be provided with adequate lighting, but care should be taken to avoid harsh lights and shadows, which frighten the animals or affect their movement. The fact that animals will move more readily from a darker area into a well-lit area might be exploited by providing for lighting that can be regulated accordingly.
- Lairages should be well ventilated, and the air flow should be arranged so that odours and draughts do not adversely affect the health and welfare of the animals.
- Care should be taken to protect the animals from excessively or potentially disturbing noises, for example by avoiding the use of noisy hydraulic or pneumatic equipment, and muffling noisy metal equipment by the use of suitable padding, or by minimising the transmission of such noise to the areas where animals are held and slaughtered.
- Where animals are kept in outdoor lairages without natural shelter or shade, they should be protected from the effects of adverse weather conditions.

Article 4**Care in lairages**

Animals in lairages should be cared for in accordance with the following guidelines:

- As far as possible established groups of animals should be kept together. Each animal should have enough space to stand up, lie down and turn around. Animals hostile to each other should be separated.
- Where tethers, ties or individual stalls are used they should allow animals to stand up and lie down without causing injury or distress.
- Where bedding is provided, it should be maintained in a condition that minimises risks to the health and safety of the animals, and sufficient should be used so that animals do not become soiled with manure.
- Animals should be kept securely in the lairage and care should be taken to prevent them from escaping and from predators.
- Suitable drinking water should be available to the animals on their arrival and at all times to animals in lairages unless they are to be slaughtered without delay.
- If animals are not to be slaughtered as soon as possible, suitable feed should be available to the animals on arrival and at intervals appropriate to the species. Unweaned animals should be slaughtered as soon as possible.

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- In order to prevent heat stress, animals subjected to high temperatures, particularly pigs and poultry, should be cooled by the use of water sprays, fans or other suitable means.
- That lairage area should be well lit in order to enable the animals to see clearly without being dazzled. During the night, the lights should be dimmed.
- The condition and state of health of the animals in a lairage should be inspected at least every morning and evening by a veterinarian or, under the latter's responsibility, by another competent person. Animals which are sick, weak, injured or showing visible signs of distress should be treated or killed immediately.
- Lactating dairy animals should be slaughtered as soon as possible. Dairy animals with obvious udder distension should be milked to minimise udder discomfort.
- Pregnant animals giving birth during the journey or in the lairage should be slaughtered as soon as possible or provided with conditions which are appropriate for suckling and the welfare of the newborn.
- Horned animals, if aggressive, should be penned separately.

Recommendations for specific species are described in detail in Articles 6-9.

Article 5

Management of foetuses during slaughter of pregnant animals

The welfare of foetuses during slaughter of pregnant animals needs to be safeguarded.

Foetuses should not be removed from the uterus sooner than five minutes after the maternal neck or chest cut, to ensure absence of consciousness. A foetal heartbeat will usually still be present and foetal movements may occur at this stage, but these are only a cause for concern if the exposed foetus successfully breathes air.

- If a live mature foetus is removed from the uterus, it should be prevented from inflating its lungs and breathing air (e.g. by clamping the trachea).
- When uterine, placental or foetal tissues, including foetal blood, are not to be collected as part of the post-slaughter processing of pregnant animals, all foetuses should be left inside the unopened uterus until they are dead. When uterine, placental or foetal tissues are to be collected, where practical, foetuses should not be removed from the uterus until at least 15-20 minutes after the maternal neck or chest cut.
- If there is any doubt about consciousness, the foetus should be killed with a captive bolt or a blow to the head with a suitable blunt instrument.

The above guidelines do not refer to foetal rescue. Foetal rescue, the practice of attempting to revive foetuses found alive at evisceration of the dam, should not be attempted during normal commercial slaughter as it may lead to serious welfare complications in the newborn animal. These include impaired brain function resulting from oxygen shortage before rescue is completed, compromised breathing and body heat production because of foetal immaturity, and an increased incidence of infections due to a lack of colostrum.

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Article 6

Summary of acceptable handling and restraining methods, and the associated animal welfare issues

	Presentation of animals	Specific procedure	Specific purpose	AW concerns/implications	Key AW requirements	Applicable species
No restraint	Animals are grouped	Group container	Gas stunning	Specific procedure is suitable only for gas stunning	Competent animal handlers in lairage; facilities; stocking density	Pigs, poultry
		In the field	Free bullet	Shooting distance, calibre and ballistics	Operator competence	Deer
		Group stunning pen	Head-only electrical Captive bolt	Uncontrolled movement of animals impedes use of hand operated electrical and mechanical stunning methods	Competent animal handlers in lairage and at stunning point	Pigs, sheep, goats, calves
	Individual animal confinement	Stunning pen/box	Electrical and mechanical stunning methods	Loading of animal; accuracy of stunning method, slippery floor and animal falling down	Competent animal handlers	Cattle, buffalo, sheep, goats, horses, pigs, deer, camelids, ratites
Restraining methods	Head restraint, upright	Halter/ head collar/bridle	Captive bolt Free bullet	Suitable for halter-trained animals; stress in untrained animals	Competent animal handlers	Cattle, buffalo, horses, camelids
	Head restraint, upright	Neck yoke	Captive bolt Electrical-head-only Free bullet Slaughter without stunning	Stress of loading and neck capture; stress of prolonged restraint, horn configuration; unsuitable for fast line speeds, animals struggling and falling due to slippery floor, excessive pressure	Equipment; competent animal handlers, prompt stunning or slaughter	Cattle
	Leg restraint	Single leg tied in flexion (animal standing on 3 legs)	Captive bolt Free bullet	Ineffective control of animal movement, misdirected shots	Competent animal handler,	Breeding pigs (boars and sows)

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Appendix III (contd)

	Presentation of animals	Specific procedure	Specific purpose	AW concerns/implications	Key AW requirements	Applicable species
Restraining methods	Upright restraint	Beak holding	Captive bolt Electrical-head-only	Stress of capture	Sufficient competent animal handlers	Ostriches
		Head restraint in electrical stunning box	Electrical-head-only	Stress of capture and positioning	Competent animal handler	Ostriches
	Holding body upright- manual	Manual restraint	Captive bolt Electrical-head-only Slaughter without stunning	Stress of capture and restraint; accuracy of stunning/slaughter	Competent animal handlers	Sheep, goats, calves, ratites, small camelids, poultry
	Holding body upright mechanical	Mechanical clamp / crush / squeeze/ V-restrainer (static)	Captive bolt Electrical methods Slaughter without stunning	Loading of animal and overriding; excessive pressure	Proper design and operation of equipment	Cattle, buffalo, sheep, goats, deer, pigs, ostriches
	Lateral restraint – manual or mechanical	Restrainer/cradle /cratch	Slaughter without stunning	Stress of restraint	Competent animal handlers	Sheep, goats, calves, camelids, cattle
	Upright restraint mechanical	Mechanical straddle (static)	Slaughter without stunning Electrical methods Captive bolt	Loading of animal and overriding	Competent animal handlers	Cattle, sheep, goats, pigs
	Upright restraint – manual or mechanical	Wing shackling	Electrical	Excessive tension applied prior to stunning	Competent animal handlers	Ostriches

Appendix XXVI (contd)

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Appendix III (contd)

	Presentation of animals	Specific procedure	Specific purpose	AW concerns/implications	Key AW requirements	Applicable species
Restraining and /or conveying methods	Mechanical - upright	V-restrainer	Electrical methods Captive bolt Slaughter without stunning	Loading of animal and overriding; excessive pressure, size mismatch between restrainer and animal	Proper design and operation of equipment	Cattle, calves, sheep, goats, pigs
	Mechanical- upright	Mechanical straddle – band restrainer (moving)	Electrical methods Captive bolt Slaughter without stunning	Loading of animal and overriding, size mismatch between restrainer and animal	Competent animal handlers, proper design and layout of restraint	Cattle, calves, sheep, goats, pigs
	Mechanical - upright	Flat bed/deck Tipped out of containers on to conveyors	Presentation of birds for shackling prior to electrical stunning Gas stunning	Stress and injury due to tipping in dump-module systems height of tipping conscious poultry broken bones and dislocations	Proper design and operation of equipment	Poultry
	Suspension and/or inversion	Poultry shackle	Electrical stunning Slaughter without stunning	Inversion stress; pain from compression on leg bones	Competent animal handlers; proper design and operation of equipment	Poultry
	Suspension and/or inversion	Cone	Electrical – head-only; Captive bolt Slaughter without stunning	Inversion stress	Competent animal handlers; proper design and operation of equipment	Poultry
	Upright restraint	Mechanical leg clamping	Electrical – head-only	Stress of resisting restraint in ostriches	Competent animal handlers; proper equipment design and operation	Ostriches

Appendix XXVI (contd)

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Appendix III (contd)

	Presentation of animals	Specific procedure	Specific purpose	AW concerns/implications	Key AW requirements	Applicable species
Restraining by inversion	Rotating box	Fixed side(s) (e.g. Weinberg)	Slaughter without stunning	Inversion stress; stress of resisting restraint, prolonged restraint. Keep restraint as brief as possible	Proper design and operation of equipment	Cattle
		Compressible side(s)	Slaughter without stunning	Inversion stress, stress of resisting restraint, prolonged restraint. Preferable to rotating box with fixed sides; Keep restraint as brief as possible	Proper design and operation of equipment	Cattle
Body restraint	Casting/hobbling	Manual	Mechanical stunning methods Slaughter without stunning	Stress of resisting restraint; animal temperament; bruising. Keep restraint as short as possible	Competent animal handlers	Sheep, goats, calves, small camelids, pigs
Leg restraints		Rope casting	Mechanical stunning methods Slaughter without stunning	Stress of resisting restraint; prolonged restraint, animal temperament; bruising. Keep restraint as short as possible	Competent animal handlers	Cattle, camelids
		Tying of 3 or 4 legs	Mechanical stunning methods Slaughter without stunning	Stress of resisting restraint; prolonged restraint, animal temperament; bruising. Keep restraint as short as possible	Competent animal handlers	Sheep, goats, small camelids, pigs

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Article 7

Stunning methods

Stunning

The competence of the operators, and the appropriateness and effectiveness of the method used for stunning are the responsibility of the management of the slaughterhouse, and should be checked regularly by a competent authority.

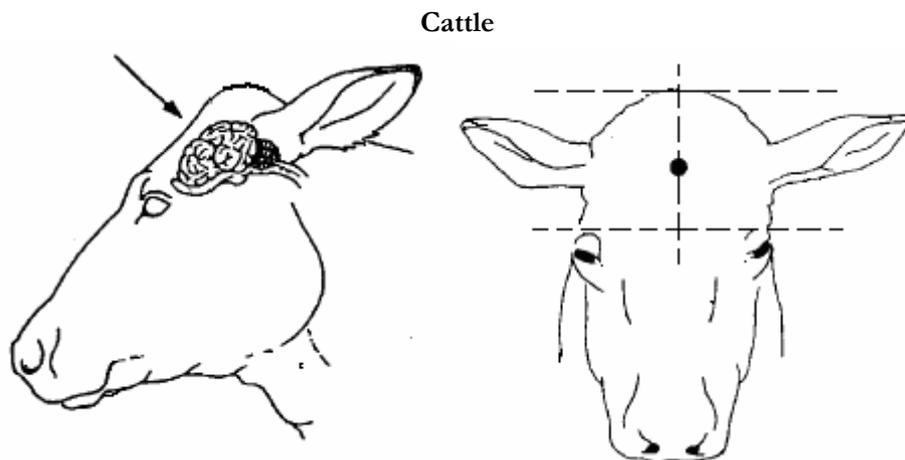
Persons carrying out stunning should be properly trained and competent, and should ensure that:

- the animal is adequately restrained,
- animals in restraint are stunned as soon as possible;
- the equipment used for stunning is maintained and operated properly in accordance with the manufacturer's recommendations, in particular with regard to the species and size of the animal;
- the instrument is applied correctly;
- stunned animals are bled out (slaughtered) as soon as possible,
- do not stun animals when slaughter is likely to be delayed.

In addition, such persons should be able to recognise when an animal is not correctly stunned and should take appropriate action.

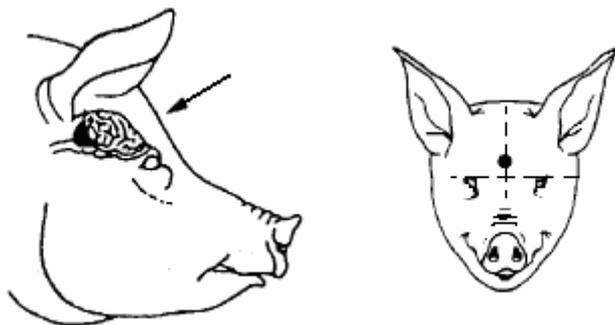
Mechanical stunning

A mechanical device should be applied usually to the front of the head and perpendicular to the bone surface. The following diagrams illustrate the proper application of the device for certain species.



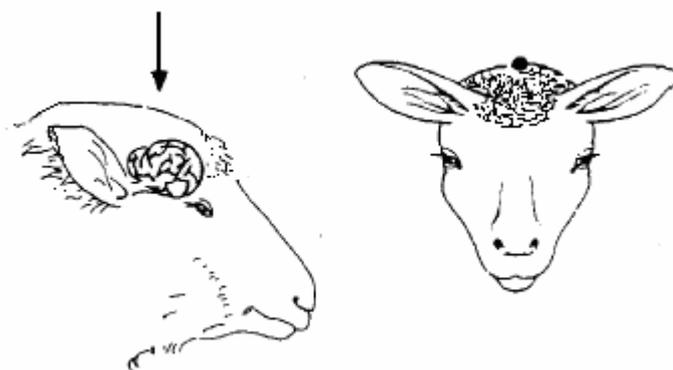
Cattle: aim at the point halfway between the top of the head and the imaginary line between the eyes and place the muzzle at right angles to the frontal surface.

Pigs



Pigs: place the muzzle about 2.5 to 5 cm above the level of the eyes, and at right angles to the frontal surface.

Sheep



In hornless sheep use the highest point of the head and aim towards the angle of the jaw.
 For horned sheep place the muzzle just behind the ridge which runs between the horns and aim towards the mouth.

Goats

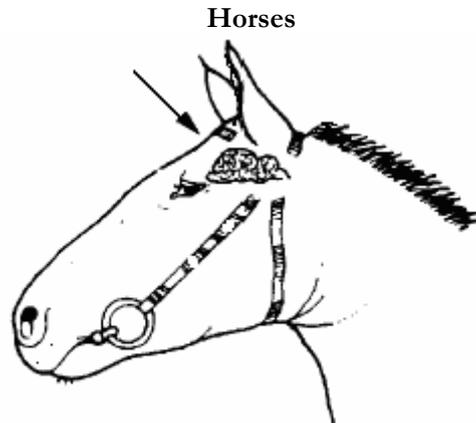


In hornless goats use the highest point of the head and aim towards the angle of the jaw. For horned goats, place the muzzle just behind the ridge which runs between the horns and aim towards the mouth.

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Place the muzzle at right angles to the frontal surface well above the point where imaginary lines from eye to ear cross.

Signs of correct stunning using a mechanical instrument:

- i) the animal collapses immediately and does not attempt to stand up;
- ii) the body and muscles of the animal become tonic (rigid) immediately after the shot;
- iii) normal rhythmic breathing stops; and
- iv) the eyelid is open with the eyeball facing straight ahead and is not rotated.

Electrical stunning

a) General

An electrical device should be applied to the animal in accordance with the following guidelines.

Electrodes should be designed, constructed, maintained and cleaned regularly to ensure that the flow of current is optimal and in accordance to manufacturing specification. They should be placed so that they span the brain. The application of electrical currents which bypass the brain are unacceptable unless the animal has been stunned. The use of a single current leg-to-leg is unacceptable as a stunning method.

If, in addition, it is intended to cause cardiac arrest, the electrodes should either span the brain and immediately thereafter the heart, on the condition that it has been ascertained that the animal is adequately stunned, or span brain and heart simultaneously.

Electrical stunning equipment should not be applied on animals as a means of guidance, movement, restraint or immobilisation, and shall not deliver any shock to the animal before the actual stunning or killing.

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Electrical stunning apparatus should be tested prior to application on animals using appropriate resistors or dummy loads to ensure the power output is adequate to stun animals.

The apparatus should incorporate a device which monitors and displays stunning current delivered to the animals

Appropriate measures, such as removing excess wool or wetting the skin only at the point of contact can be taken to minimise impedance of the skin and facilitate effective stunning.

The stunning apparatus requires for electrical stunning should be provided with adequate power to achieve continuously the minimum current level recommended for stunning as indicate in the table below:

Species	Minimum current levels
Cattle	1.5 amps
Calves	1.0 amps
Pigs	1.25 amps
Sheep & Goats	0.5 amps
Ostriches	0.4 amps

In all cases, the correct current level shall be attained within one second of the initiation of stun and maintained at least for between one and three seconds and in accordance with the manufacturer's instructions.

b) Electrical stunning of birds using a waterbath

In the case of birds suspended on a moving line, measures should be taken to ensure that the birds are not wing flapping at the entrance of the stunner. The birds should be secure in their shackle, but there should not be undue pressure on their shanks.

Waterbaths for poultry should be adequate in size and depth for the type of bird being slaughtered, and their height should be adjustable to allow for the head of each bird to be immersed. The electrode immersed in the bath should extend the full length of the waterbath. Birds should be immersed in the bath up to the base of their wings.

The waterbath should be designed and maintained in such a way that when the shackles pass over the water they are in continuous contact with the earthed rubbing bar.

The control box for the waterbath stunner should incorporate an ammeter which displays the total current flowing through the birds.

The shackle-to-leg contact should be wetted preferably before the birds are inserted in the shackles. In order to improve electrical conductivity of the water it is recommended that salt be added in the waterbath as necessary.

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Birds should receive the current for at least 4 seconds.

Using waterbaths, birds are stunned in groups and different birds will have different impedances. The voltage should be adjusted so that the total current is the required current per bird as shown in the table hereafter, multiplied by the number of birds in the waterbath at the same time.

The following values have been found to be satisfactory when employing a 50 Hertz sinusoidal alternating current.

Species	Current (milliamperes per bird)
Broilers	120
Layers (spent hens)	120
Turkeys	150
Ducks and Geese	130

While a lower current may also be satisfactory, the current shall in any case be such as to ensure that unconsciousness occurs immediately and lasts until the bird has been killed by cardiac arrest or by bleeding. When higher electrical frequencies are used, higher currents may be required.

Every effort shall be made to ensure that no conscious or live birds enter the scalding tank.

In the case of automatic systems, until fail-safe systems of stunning and bleeding have been introduced, a manual back-up system is recommended to ensure that any birds which have missed the waterbath stunner and/or the automatic neck-cutter are immediately stunned and/or humanely killed, and they are dead before entering scald tank.

To lessen the number of unstunned birds, reaching neck cutters, steps should be taken to ensure that small birds do not go on the line amongst bigger birds and that these small birds are stunned separately.

Gas stunning***a) Stunning of pigs by exposure to carbon dioxide (CO₂)***

The concentration of CO₂ for stunning should be preferably 90% by volume but in any case no less than 80% by volume. After entering the stunning chamber the animals should be conveyed to the point of maximum concentration of the gas and be kept until they are dead or brought into a state of insensibility which lasts until death occur due to bleeding. Ideally, pigs should be exposed to this concentration of CO₂ for three minutes.

In any case, the concentration of the gas should be such that it minimises as far as possible all stress of the animal prior to loss of consciousness.

The chamber in which animals are exposed to CO₂ and the equipment used for conveying them through it shall be designed, constructed and maintained in such a way as to avoid injury or unnecessary stress to the animals. The animal density within the chamber should be such to avoid stacking animals on top of each others.

The conveyor and the chamber shall be adequately lit to allow the animals to see their surroundings and if possible, each other.

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It should be possible to inspect the CO₂ chamber whilst it is in use, and to have access to the animals in emergency cases.

The chamber shall be equipped to continuously measure and display register at the point of stunning the CO₂ concentration and the time of exposure, and to give a clearly visible and audible warning if the concentration of CO₂ falls below the required level.

b) Inert gas mixtures for stunning pigs (under development)

Inhalation of high concentration of carbon dioxide is aversive and can be distressing to animals. Therefore, the use of non-aversive gas mixtures is being developed.

Gas mixtures:

- a) A maximum of 2% by volume of oxygen in argon, nitrogen or other inert gases, or
- b) to a maximum of 30% by volume of carbon dioxide and a maximum of 2% by volume of oxygen in mixtures with carbon dioxide and argon, nitrogen or other inert gases.

Exposure time to the gas mixtures should be sufficient to ensure that no pigs regain consciousness before death supervenes through bleeding or cardiac arrest is induced.

c) Gas stunning of poultry

The main objective of gas stunning is to avoid the pain and suffering associated with shackling conscious poultry under water bath stunning and killing systems. Therefore, gas stunning should be limited to birds contained in crates or on conveyors only. The gas mixture should be non-aversive to poultry.

Gas stunning of poultry in their transport containers will eliminate the need for live bird handling at the processing plant and all the problems associated with the electrical stunning.

Gas stunning poultry on a conveyor eliminates the problems associated with the electrical water bath stunning.

Live poultry shall be conveyed into the gas mixtures either in transport crates or on conveyor belts.

- i) Gas mixtures used for stunning poultry
 - Minimum of 2 min exposure to 40% carbon dioxide, 30% oxygen and 30% nitrogen, followed by a minimum of 1 min exposure to 80% carbon dioxide in air; or
 - Minimum of 2 min exposure to any mixture of argon, nitrogen or other inert gases with atmospheric air and carbon dioxide, provided that the carbon dioxide concentration does not exceed 30% by volume and the residual oxygen concentration does not exceed 2% by volume; or
 - Minimum of 2 min exposure to argon, nitrogen, other inert gases or any mixture of these gases in atmospheric air with a maximum of 2% residual oxygen by volume; or
 - Minimum of 2 minutes exposure to a minimum of 55% carbon dioxide in air.

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ii) Requirements for effective use:

- Compressed gases should be vaporised prior to administration into the chamber.
- Under no circumstances, should solid gases with freezing temperatures enter the chamber.
- Gas mixtures should be humidified.
- Appropriate gas concentrations should be monitored and displayed continuously at the level of the birds inside the chamber.

Under no circumstances should birds exposed to gas mixtures be allowed to regain consciousness. If necessary, the exposure time should be extended.

Bleeding

From the point of view of animal welfare, animals which are stunned with a reversible method should be bled without delay and in any case within the following time limits:

Stunning method	Maximum delay for bleeding to be started
Electrical methods and non penetrating bolt	20 seconds
CO₂	60 seconds (after leaving the chamber)

All animals should be bled by incising both carotid arteries, or the vessels from which they arise (e.g. chest stick). However, when the stunning method used causes cardiac arrest, the incision of all of these vessels is not necessary from the point of animal welfare.

It should be possible for staff to observe, inspect and access the animals throughout the bleeding period. Any animal showing signs of recovering consciousness should be restunned.

After incision of the blood vessels, no scalding carcass treatment or dressing procedures should be performed on the animals for at least thirty seconds, or in any case until all brain-stem reflexes have ceased.

[Appendix XXVI](#) (contd)[Appendix D](#) (contd)[Appendix III](#) (contd)**Article 8****Summary of acceptable stunning methods and the associated animal welfare issues**

Method	Specific method	AW concerns/implications	Key AW requirements applicable	Species	Comment
Mechanical	Free bullet	Inaccurate targeting and inappropriate ballistics	Accuracy; head shots only correct ballistics	Cattle, calves, buffalo, deer, horses, pigs (boars and sows)	Personnel safety
	Captive bolt - penetrating	Inaccurate targeting, velocity and diameter of bolt	Competent operation and maintenance of equipment; restraint; accuracy	Cattle, calves, buffalo, sheep, goats, deer, horses, pigs, camelids, ratites	(Unsuitable for specimen collection from TSE suspects). A back-up gun should be available in the event of an ineffective shot
	Captive bolt - non-penetrating	Inaccurate targeting, velocity of bolt, potentially higher failure rate than penetrating captive bolt	Competent operation and maintenance of equipment; restraint; accuracy	Cattle, calves, sheep, goats, deer, pigs, camelids, ratites	Presently available devices are not recommended for young bulls and animals with thick skull
	Manual percussive blow	Inaccurate targeting; insufficient power; size of instrument	Competent animal handlers; restraint; accuracy. Not recommended for general use	Young and small mammals, ostriches and poultry	Mechanical devices potentially more reliable. Where manual percussive blow is used, unconsciousness should be achieved with single sharp blow delivered to central skull bones
Electrical	Split application: 1. across head then head to chest; 2. across head then across chest	Accidental pre-stun electric shocks; electrode positioning; application of a current to the body while animal conscious; inadequate current and voltage	Competent operation and maintenance of equipment; restraint; accuracy	Cattle, calves, sheep, goats and pigs, ratites and poultry	Systems involving repeated application of head-only or head-to-leg with short current durations (<1 second) in the first application should not be used. Where cardiac arrest occurs, the carcass may not be suitable for Halal

Appendix XXVI (contd)

Appendix D (contd)

Appendix III (contd)

Article 8 (contd)

Summary of acceptable stunning methods and the associated animal welfare issues

Method	Specific method	AW concerns/implications	Key AW requirements applicable	Species	Comment
Electrical	Single application: 1. head only; 2. head to body; 3. head to leg	Accidental pre-stun electric shocks; inadequate current and voltage; wrong electrode positioning; recovery of consciousness	Competent operation and maintenance of equipment; restraint; accuracy	Cattle, calves, sheep, goats, pigs, ratites, poultry	Where cardiac arrest occurs, the carcass may not be suitable for Halal
	Waterbath	Restraint, accidental pre-stun electric shocks; inadequate current and voltage; recovery of consciousness	Competent operation and maintenance of equipment	Poultry only	Where cardiac arrest occurs, the carcass may not be suitable for Halal
Gaseous	CO ₂ air/O ₂ mixture; CO ₂ inert gas mixture	Aversiveness of high CO ₂ ; respiratory distress; inadequate exposure	Concentration; duration of exposure; design, maintenance and operation of equipment; stocking density management	Pigs, poultry	Gaseous methods may not be suitable for Halal
	Inert gases	Recovery of consciousness	Concentration; duration of exposure; design, maintenance and operation of equipment; stocking density management	Pigs, poultry	Gaseous methods may not be suitable for Halal

[Appendix XXVI](#) (contd)[Appendix D](#) (contd)[Appendix III](#) (contd)

Article 9
Summary of acceptable slaughter methods, and the associated animal welfare issues

Slaughter methods	Specific method	AW concerns / implications	Key requirements	Species	Comments
Bleeding out by severance of blood vessels in the neck without stunning	Full frontal cutting across the throat	Failure to cut both common carotid arteries; occlusion of cut arteries	A very sharp blade or knife, of sufficient length so that the point of the knife remains outside the incision during the cut; the point of the knife should not be used to make the incision. An incision which does not close over the knife during the throat cut.	Cattle, buffalo, horses, camelids, sheep, goats, poultry, ratites	This method is applicable to Halal and Kosher for relevant species
Bleeding with prior stunning	Neck stab followed by forward cut	Ineffective stunning; failure to cut both common carotid arteries; impaired blood flow; delay in cutting after reversible stunning	Prompt and accurate cutting;	Camelids, sheep, goats, poultry, ratites	
	Neck stab alone	Ineffective stunning; failure to cut both common carotid arteries; impaired blood flow; delay in cutting after reversible stunning	Prompt and accurate cutting	Camelids, sheep, goats, poultry, ratites	
	Chest stick into major arteries or hollow-tube knife into heart	Ineffective stunning; Inadequate size of stick wound inadequate length of sticking knife; delay in sticking after reversible stunning	Prompt and accurate sticking;	Cattle, sheep, goats, pigs,	

Appendix XXVI (contd)

Appendix D (contd)

Appendix III (contd)

Article 9 (contd)
Summary of acceptable slaughter methods, and the associated animal welfare issues

Slaughter methods	Specific method	AW concerns / implications	Key requirements	Species	Comments
	Neck skin cut followed by severance of vessels in the neck	Ineffective stunning; Inadequate size of stick wound; Inadequate length of sticking knife; delay in sticking after reversible stunning	Prompt and accurate cutting of vessels	Cattle	
Bleeding with prior stunning	Automated mechanical cutting	Ineffective stunning; failure to cut and misplaced cuts. Recovery of consciousness following reversible stunning systems	Design, maintenance and operation of equipment; accuracy of cut; manual back-up	Poultry only	
	Manual neck cut on one side	Ineffective stunning; recovery of consciousness following reversible stunning systems	Prior non-reversible stunning	Poultry only	N.B. slow induction of unconsciousness under slaughter without stunning
	Oral cut	Ineffective stunning; recovery of consciousness following reversible stunning systems	Prior non-reversible stunning	Poultry only	N.B. slow induction of unconsciousness in non-stun systems
Other methods without stunning	Decapitation with a sharp knife	Pain due to loss of consciousness not being immediate		Sheep, goats, poultry	This method is only applicable to Jhatka
	Manual neck dislocation and decapitation	Pain due to loss of consciousness not being immediate; difficult to achieve in large birds	Neck dislocation should be performed in one stretch to sever the spinal cord	Poultry only	Slaughter by neck dislocation should be performed in one stretch to sever the spinal cord
Cardiac arrest in a waterbath electric stunner	Bleeding by evisceration		Induction of cardiac arrest	Quail	
	Bleeding by neck cutting			Poultry	

Appendix XXVI (contd)

Appendix D (contd)

Appendix III (contd)

Article 10

Methods, procedures or practices unacceptable on animal welfare grounds

- The restraining methods through immobilisation by injury like ‘puntilla’ and ‘leg tendon cutting’, cause severe pain and stress in animals. Those methods are not acceptable in any species.
 - The use of electrical stunning method with single application leg to leg is ineffective and unacceptable in any species. The electrocution in this way is likely to be painful. The animal welfare concerns are:
 - accidental pre-stun electric shocks;
 - inadequate current and voltage;
 - wrong electrode positioning;
 - recovery of consciousness.
 - The slaughter method of brain stem severance by piercing through the eye socket or skull bone is not acceptable in any species except fish.
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September 2004

REPORT OF THE SECOND MEETING OF THE OIE AD HOC GROUP ON LAND TRANSPORT OF ANIMALS

Paris, 22-24 September 2004

The OIE *ad hoc* Group on Land Transport of Animals held its second meeting at the OIE Headquarters from 22 to 24 September 2004.

The members of the OIE *ad hoc* Group and other participants are listed in [Appendix I](#). The Agenda adopted is given in [Appendix II](#).

The Director General of the OIE, Dr B. Vallat, welcomed the members of the *ad hoc* Group and thanked them for their willingness to continue working on the new mandate of the OIE for animal welfare. He noted that many Member Countries were developing legislation on animal welfare after the OIE Conference of February 2004 and that they would be looking to the OIE for guidance. The Director General advised that the recommendations from the *ad hoc* Group would be put to the Working Group on Animal Welfare for endorsement and then circulated in the report of the OIE Terrestrial Animal Health Standards Commission for Member Country comment. He urged all Member Countries to examine carefully the recommendations with a view to adoption at the 2005 OIE General Session.

The Director General and the Chairman agreed that it was necessary for the guidelines to contain sufficient detail to be useful for Member Countries but that Member Countries should appreciate that refinement would be required as experience in their use was gained. Accordingly, the *ad hoc* Group prepared general guidelines on the principles which should be adopted in order that animal welfare during transport can be good. Further work is in progress in the preparation of detailed guidelines for the major species which are transported.

The *ad hoc* Group noted that the aim of its recommendations was to ensure that the welfare of animals during land transport was as good as possible and to provide standards which will be usable by all OIE Member Countries. This is an important and wide-ranging objective since many billions of animals are transported each year and there are many potential causes of poor welfare in these animals. The major reason for attempting to minimise any poor welfare is our obligation to and concern for the animals which we use but it is also clear that there is a close relationship between welfare and product quality when animals are travelling to slaughter, and between welfare and continuing efficient production in animals travelling to a place of further rearing. In the assessment of welfare during transport, due account has been taken of pain, fear, failure to meet the animals' needs and disease. Since disease is an important cause of poor welfare, the health of transported animals and of animals potentially affected by those which are transported has been carefully considered.

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The *ad hoc* Group worked through comments received from two Member Countries, information from several non-governmental organisations, the report of the land transport syndicate group from the animal welfare conference and the report of the recent meeting of the Working Group on Animal Welfare. It also took into account the work of the *ad hoc* Group on Sea Transport. The *ad hoc* Group drafted guidelines addressing the responsibilities of various parties at each stage, the competences and documentation required, preparation for transport, loading and unloading, and journey issues. The proposed definitions are at Appendix III and the draft guidelines at Appendix IV.

.../Appendices

Appendix XXVI (contd)

Appendix E (contd)

Appendix I

SECOND MEETING OF THE OIE AD HOC GROUP ON LAND TRANSPORT OF ANIMALS

Paris, 22-24 September 2004

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Appendix II

SECOND MEETING OF THE OIE *AD HOC* GROUP ON LAND TRANSPORT OF ANIMALS

Paris, 22 –24 September 2004

Agenda adopted

1. Introduction

- 1.1. Discussion on the report of the recent meeting of the OIE Working Group on Animal Welfare
- 1.2. Discussion on the outcomes of the OIE Global Conference on Animal Welfare
- 1.3. Discussion on the OIE 72nd General Session (Animal Welfare)
- 1.4. Comments from Member Countries
- 1.5. Comments from ICFAW

2. Development of specific guiding principles and standards

3. Work programme

4. Conclusions

Article 1

Definitions

Animal

For the purpose of this chapter 'animal' refers to the following live domesticated animals: cattle, buffalo, camels, sheep, goats, pigs, poultry and equines. These guidelines will also be largely applicable to some other animals e.g. deer, other camelids and ratites. Wild, feral and partly domesticated animals may need different conditions.

Animal handler

A person with a knowledge of the behaviour and needs of animals which, with appropriate experience and a professional and positive response to an animal's needs, results in effective management and good welfare. Their competence should be demonstrated through independent assessment and certification.

Container

A non-self-propelled receptacle or other rigid structure for holding animals during a *journey* by one or several means of transport.

Journey

An animal transport journey should be regarded as commencing when the first animal is loaded onto a *vehicle* or into a *container* and as ending when the last animal is unloaded, and includes any stationary resting / holding periods of less than 48 hours. The same animals should not be regarded as commencing a new journey until a period of over 48 hours sufficient for rest and recuperation of the animals with adequate feed and water provided, has passed since the end of the previous journey.

Loading

Is the procedure of moving animals onto a *vehicle/vessel* or into a *container* from the pre-loading site; **unloading** is the procedure of moving animals off a *vehicle/vessel* or out of a *container*.

Post-journey period

The period between *unloading* and either recovery from the effects of the *journey* or slaughter if this occurs before recovery.

Pre-journey period

The period during which animals are identified, and often assembled for the purpose of loading them.

Space allowance

Is the measure of the floor area and height on a *vehicle/vessel* or *container* allocated per individual or body weight of animals transported.

Staging point

A place where the *journey* is interrupted to rest, feed or water the animals; the animals may remain in the *vehicle* or *container*, or be unloaded.

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Appendix III (contd)

Stocking density

Is the number or body weight of animals per unit area on a *vehicle/ vessel*.

Transport

The procedures associated with the carrying of animals for commercial purposes from one location to another by land (road and rail), sea or air.

Travel

The movement of a *vehicle* or *container* carrying animals from one location to another.

Vehicle/vessel

Includes any train, truck, or ship that is used for carrying animal(s).

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GUIDELINES FOR THE LAND TRANSPORT OF ANIMALS

Article 1

Responsibilities

The welfare of animals during their *transport* is the joint responsibility of all people involved.

The roles of each of those responsible are defined below:

- Owners and managers of animals are responsible for the general health of the animals and their fitness for the *journey*, and their welfare during the *journey*, regardless of whether duties are subcontracted to other parties during *transport*. They are also responsible for ensuring compliance with any required veterinary or other certification, and for the presence during the *journey* of at least one *animal handler* competent for the species being transported, with the authority to take prompt action. They are also responsible for ensuring that equipment and veterinary assistance are provided as appropriate for the species and *journey*.
- Business agents or buying/selling agents have a joint responsibility with owners for the selection of animals that are fit to travel. They have a joint responsibility with market owners and managers of facilities at the start and at the end of the *journey* for the availability of suitable facilities for the assembly, *loading*, *transport*, *unloading* and holding of animals, and for emergencies.
- *Animal handlers* are responsible for the humane handling and care of the animals, especially during *loading* and *unloading*, and for maintaining a journey log. In the absence of a separate animal handler, the driver is the animal handler.
- Transport companies, *vehicle* owners and drivers are responsible for planning the *journey* to ensure the care of the animals:
 - transport companies and vehicle owners are responsible for choosing appropriate *vehicles* and ensuring that properly trained staff are available for *loading* and caring for animals,
 - transport companies and vehicle owners are responsible for developing and keeping up to date contingency plans to address emergencies and minimise stress during transport,
 - transport companies and vehicle owners are responsible for producing a journey plan which includes a loading plan, journey duration and location of resting places,
 - drivers are responsible for loading only those animals which are fit to travel, for their correct loading into the vehicle and their inspection during the journey, and for appropriate responses to problems arising.
- Managers of facilities at the start and at the end of the *journey*, and at *staging points* are responsible for:
 - providing suitable premises for *loading*, *unloading* and securely holding the animals in lairage, with water and feed when required, until further *transport*, sale or other use (including rearing or slaughter),
 - providing competent animal handlers to load, unload, drive and hold animals in a manner that causes minimum stress and injury,

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- minimising the opportunities for disease transmission,
- providing appropriate facilities, with water and feed when required,
- providing appropriate facilities for emergencies,
- providing facilities for washing and disinfecting vehicles after unloading,
- providing facilities and competent staff to allow the humane killing of animals when required,
- ensuring proper rest times and minimal delay during lairage. See Article XXX
- The responsibilities of the *Competent Authority* include:
 - establishing minimum standards for animal welfare, including requirements for inspection of animals before, during and after their travel, and appropriate certification and record keeping,
 - approving facilities, containers and vehicles for the transport of animals,
 - ensuring appropriate awareness and training,
 - setting standards for the competence of drivers, animal handlers and managers,
 - implementation of the standards, including through accreditation of / interaction with other organisations,
 - monitoring and evaluating the effectiveness of standards of health and other aspects of welfare,
 - monitoring and evaluating the use of veterinary medications.
- All individuals, including veterinarians, involved in transporting animals and the associated handling procedures should receive appropriate training and to be competent to meet their responsibilities.

Article 2**Training and competence**

- All people handling animals, or who are otherwise responsible for animals during *journeys*, should be competent according to their responsibilities listed in Article 1. Competence may be gained through formal training or practical experience. Competence in areas other than animal welfare would need to be addressed separately.
- This competence for *animal handlers* should be demonstrated through a current certificate from an independent body, accredited by the *Competent Authority*. The certificate should be in one of the OIE official languages if the international *transport* of animals is involved.
- The training and assessment of the competence of *animal handlers* should at a minimum address knowledge, and ability to apply that knowledge, in the following areas:

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- planning a journey, including appropriate space allowance, and feed, water and ventilation requirements,
 - responsibilities for animals during the journey, including loading and unloading,
 - sources of advice and assistance,
 - animal behaviour, general signs of disease, and indicators of poor animal welfare such as stress, pain and fatigue, and their alleviation,
 - relevant authorities and applicable transport regulations, and associated documentation requirements,
 - general disease prevention procedures, including cleaning,
 - appropriate methods of driving,
 - methods of inspecting animals, managing situations frequently encountered during transport such as adverse weather conditions, and dealing with emergencies,
 - species-specific aspects of animal handling and care, including feeding, watering and inspection,
 - maintaining a journey log and other records.
- The above are also important areas of knowledge for owners and managers.

Article 3**Planning the journey****General**

- Adequate planning is a key factor affecting the welfare of animals during a *journey*.
- Before the journey starts, plans should be made in relation to:
 - preparation of animals for the journey,
 - choice of road or rail,
 - nature and duration of the journey,
 - vehicle / container design and maintenance, including roll-on roll-off vessels,
 - required documentation,
 - space allowance,
 - rest, water and feed,
 - observation of animals en route,
 - control of disease, and
 - emergency response procedures.
- Regulations concerning drivers (for example maximum driving periods) should be harmonised with maximum transport journey intervals appropriate for the species.

Appendix XXVI (contd)Appendix E (contd)Appendix IV (contd)**Preparation of animals for the journey**

- When animals are to be provided with a novel diet or method of water provision during *transport*, an adequate period of adaptation should be planned.
- Animals should be exposed to appropriate contact with humans and handling conditions (including methods of restraint) prior to *transport* to reduce their fearfulness and improve their approachability (see Article 5).
- Behaviour-modifying compounds (such as tranquillisers) should not be used routinely during *transport*. Such compounds should only be administered when a problem exists in an individual animal, and should be administered by a veterinarian or other person who has been instructed in their use by a veterinarian.

Nature and duration of the journey

- The maximum duration of a *journey* should be determined according to:
 - the ability of the animals to cope with the stress of transport (such as very young, old or pregnant animals),
 - the animals' previous transport experience,
 - the onset of fatigue,
 - the need for special attention,
 - the need for feed and water,
 - the increased susceptibility to injury and disease,
 - space allowance, vehicle design, road conditions, driving quality,
 - weather conditions.

Vehicle and container design and maintenance

- *Vehicles* and *containers* used for the *transport* of animals should be designed, constructed and fitted as appropriate to the species, size and weight of the animals to be transported; special attention should be paid to the avoidance of injury to animals through the use of secure smooth fittings free from sharp protrusions. The avoidance of injury to drivers and *animal handlers* while carrying out their responsibilities should also be taken into account.
- *Vehicles* and *containers* should be designed with the structures necessary to provide protection from adverse weather conditions and to minimise the opportunity for animals to escape.
- In order to minimise the likelihood of the spread of pathogenic agents during transport, *vehicles* and *containers* should be designed to permit thorough cleaning and disinfection, and the containment of faeces and urine during a *journey*.
- *Vehicles* and *containers* should be maintained in good mechanical and structural condition.
- *Vehicles* should have adequate ventilation which can be adjusted to meet variations in climate and the needs of the animal species being transported.

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- *Vehicles* should be designed so that the faeces or urine from animals on upper levels do not soil animals on lower levels.
- When *vehicles* are carried on board ferries, facilities for adequately securing them should be available.
- If feeding or watering while the *vehicle* is moving may be required, adequate facilities on the *vehicle* should be available.
- Suitable bedding should be added to vehicle floors to assist absorption of urine and faeces, to minimise slipping by animals, and protect animals (especially young animals) from hard flooring surfaces and adverse weather conditions.

Special provisions for transport in vehicles (road and rail) on roll-on/roll-off vessels or for containers

- *Vehicles* and *containers* should be equipped with a sufficient number of adequately designed, positioned and maintained securing points enabling them to be securely fastened to the *vessel*.
- *Vehicles* and *containers* should be secured to the ship before the start of the sea journey to prevent them being displaced by the motion of the vessel.
- Roll-on/roll-off vessels should have adequate ventilation to meet variations in climate and the thermo-regulatory needs of the animal species being transported, especially where the animals are transported in a secondary *vehicle/container* on enclosed decks.

Documentation

- Animals should not be loaded until the required documentation is complete.
- The documentation accompanying the consignment should include:
 - journey travel plan,
 - date, time, and place of *loading* and *unloading*,
 - veterinary certification, when required,
 - driver's competencies,
 - identities of the animals transported to allow traceback of individual animals to the premises of departure, and where possible to the premises of origin,
 - details of any animals considered 'at risk' (Article 5),
 - documentation of the period of rest, and access to feed and water, prior to the *journey*,
 - *stocking density* estimate for each load in the consignment,
 - the journey log - daily record of inspection and important events, including records of morbidity and mortality, climatic conditions, rest stops, travel time and distance, feed and water offered and estimates of consumption, medication provided, and mechanical defects.

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- When veterinary certification is required to accompany consignments of animals, it should include:
 - appropriate animal identification (description, number, etc.),
 - health status including test, treatment and vaccination status,
 - factors affecting fitness to travel.

Space allowance

- The number of animals which should be transported on a *vehicle* or in a *container* and their allocation to different compartments should be determined before the *vehicle* or *container* is loaded.
- The space required on a *vehicle* or in a *container* depends upon whether or not the animals need to lie down (for example pigs, camels and poultry), or to stand (horses). Animals which will need to lie down often stand when first loaded or when the *vehicle* is driven with too much lateral movement or sudden braking.
- When animals lie down, they should all be able to adopt a comfortable, normal lying posture which allows necessary thermoregulation.
- When animals are standing, they should have sufficient space to adopt a balanced position without body contact with other animals.
- The amount of headroom necessary depends on the species of animal. Each animal should be able to assume its natural position for *transport* (including during *loading* and *unloading*) without coming into contact with the roof or upper deck of the *vehicle*.
- Calculations according to the *space allowance* permitted for each animal should be carried out, using the figures given in these guidelines (see Appendix XXX) or, in their absence, in a relevant national or international document. The size of already established groups will affect the number and size of the pens, and the distribution of animals in pens on the *vehicle*.
- Other factors which may influence *space allowance* include:
 - vehicle / container design
 - length of journey
 - quality of roads
 - expected weather conditions.

Rest, water and feed

- There should be planning for the availability of suitable water and feed during the *journey*. Feed should be of appropriate quality and composition for the species, age, condition of the animals, climatic conditions, etc.

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- Animals should be rested at *staging points* at appropriate intervals during the *journey*. The type of transport and species being transported should determine the frequency of rest stops and whether the animals are unloaded. There should be planning for water and feed availability during rest stops.

Ability to observe animals en route in relation to journey duration

- Animals should be positioned to enable each animal to be observed regularly during the *journey* to ensure their safety and good welfare.
- If the animals are in crates or on multi-tiered vehicles which do not allow free access for observation, for example where the roof of the tier is too low (i.e. less than 1.3 m), animals cannot be inspected adequately, and serious injury or disease could go undetected. In these circumstances, a shorter journey duration should be allowed, and the maximum duration will vary according to the rate at which problems arise in the species and under the conditions of transport.

Control of disease

- As animal transport is often a significant factor in the spread of infectious diseases, journey planning should take the following into account:
 - mixing of animals from different sources in a single consignment should be minimised,
 - contact at staging points between animals from different sources should be avoided,
 - the use of markets should be minimised,
 - when possible, animals should be vaccinated against diseases to which they are likely to be exposed at their destination,
 - medications used prophylactically or therapeutically should only be administered by a veterinarian or other person who has been instructed in their use by a veterinarian.

Emergency response procedures

- Appropriate contingency plans to address emergencies should be prepared in advance (see Article 6).

Other considerations

- Extreme weather conditions are hazards for certain animals undergoing *transport* and require appropriate vehicle design to minimise risks. Special precautions should be taken for animals that have not been acclimatised or which are unsuited to either hot or cold conditions. In some extreme conditions of heat or cold, animals should not be transported at all.
- In some circumstances, transportation during the night may reduce thermal stress or the adverse effects of other external stimuli.

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Article 4

Pre-journey period

General

- Pre-journey rest is necessary if the welfare of animals has become poor during the collection period because of major physical or social problems.
- Feed and water should be provided pre-journey if the journey duration is greater than the normal inter-feeding and drinking interval for the animal. Recommendations for specific species are described in detail in Article XXX.
- When animals will be provided with a novel diet or method of water provision during or after *transport*, an adequate period of pre-exposure is necessary.
- Before each *journey*, *vehicles* and *containers* should be thoroughly cleaned and, if necessary, treated for animal health and public health purposes, using methods approved by the *Competent Authority*. When cleaning is necessary during a *journey*, this should be carried out with the minimum of stress to the animals.
- Where an *animal handler* believes that there is a significant risk of disease among the animals to be loaded, the animals should be inspected by a veterinarian.

Selection of compatible groups

- Compatible groups should be selected before *transport* to avoid adverse animal welfare consequences. The following guidelines should be applied when assembling groups of animals:
 - animals reared together should be maintained as a group; animals with a strong social bond should be transported together,
 - animals of the same species should not be mixed if there is a significant likelihood of aggression; aggressive individuals should be segregated (recommendations for specific species are described in detail in Article XXX). For some species, animals from different groups should not be mixed because poor welfare occurs unless they have established a social structure,
 - young or small animals should be separated from older or larger animals, with the exception that dam and offspring should be transported together,
 - animals with horns or antlers should not be mixed with animals lacking horns or antlers,
 - animals of different species should not be mixed unless they are judged to be compatible.

Shelter in the assembly/holding area

- Assembly/holding areas should be designed to:
 - securely hold the animals,

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Appendix IV (contd)

- maintain a safe environment from hazards, including predators and disease,
- protect animals from exposure to severe weather conditions,
- allow for maintenance of social groups, and
- allow for rest, and appropriate water and feed.

Effect of travel experience, long and short term

- Consideration should be given to an animal's previous transport experience, training and conditioning as these may reduce fear and stress in animals. Animals that are carefully and regularly transported may show less adverse responses to transport.
- Exposure to familiar personnel should reduce the fearfulness of animals and improve their approachability during transport procedures.

Fitness to travel

- Each animal should be inspected by an *animal handler* to assess fitness to travel. Animals found unfit to travel should not be loaded onto a *vehicle*, except for transport to receive veterinary treatment.
- Humane and effective arrangements should be made by the owner or agent for the handling and care of any animal rejected as unfit to travel.
- Animals that are unfit to travel include:
 - those that are sick, injured, weak, disabled or fatigued,
 - those that are unable to stand unaided and bear weight on each leg,
 - those that are blind in both eyes,
 - those that cannot be moved without causing them additional suffering,
 - pregnant animals which are likely to give birth during the journey,
 - those whose body condition would result in poor welfare because of the expected climatic conditions.
- Risks during *transport* can be reduced by selecting animals best suited to the conditions of travel and those that are acclimatised to expected weather conditions.
- Animals 'at risk' which require special conditions (such as in the design of facilities and vehicles) and additional attention during *transport*, may include:
 - large or obese individuals,
 - young or old animals,
 - excitable or aggressive animals,
 - animals which have had little contact with humans,

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- animal subject to motion sickness,
- females in late pregnancy or heavy lactation; dam and offspring,
- those with a history of exposure to stressors or pathogenic agents prior to transport.

Specific species requirements

Transport procedures should be able to take account of variations in the behaviour of the species. Flight zones, social interactions and other behaviour vary significantly among species and even within species. Facilities and handling procedures that are successful with one species are often ineffective or dangerous with another.

- Recommendations for specific species are described in detail in Article XXX.

Article 5**Loading****Experienced supervision**

- Since *loading* has been shown to be the procedure most likely to be the cause of poor welfare in transported animals, the methods to be used should be carefully planned.
- *Loading* should be supervised by *animal handlers*. These *animal handlers* should ensure that animals are loaded quietly and without unnecessary noise, harassment or force, and that untrained assistants or spectators do not impede the process.
- When *containers* are loaded onto a *vehicle*, this should be carried out in such a way to avoid poor animal welfare.

Facilities

- The facilities for *loading* including the collecting area, races and loading ramps should be designed and constructed to take into account the needs and abilities of the animals with regard to dimensions, slopes, surfaces, absence of sharp projections, flooring, etc.
- Loading facilities should be properly illuminated to allow the animals to be observed by the *animal handler(s)*, and to allow the animals' ease of movement at all times. Facilities should provide uniform lighting directly over approaches to sorting pens, chutes, loading ramps, with brighter lighting inside *vehicles* / *containers*, in order to minimise baulking. Dim lighting may be advantageous for the catching of poultry and some other animals.
- Ventilation during *loading* and the *journey* should provide for fresh air, the removal of excessive heat, humidity and noxious fumes (such as ammonia and carbon monoxide), and the prevention of accumulations of ammonia and carbon dioxide. Under warm and hot conditions, ventilation should allow for the adequate convective cooling of each animal. In some instances, adequate ventilation can be achieved by increasing the *space allowance* for animals.

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Appendix IV (contd)

Goads and other aids

- The following principles should apply:
 - Animals which have little or no room to move should not be subjected to physical force or goads and other aids which compel movement.
 - Useful and permitted aids include panels, flags, plastic paddles, flappers (a length of cane with a short strap of leather or canvas attached), plastic bags and metallic rattles; they should be used in a manner sufficient to encourage and direct movement of the animals but without physical contact with them.
 - Painful procedures (including whipping, tail twisting, use of nose twitches, pressure on eyes, ears or external genitalia), or the use of unsuitable goads or other aids (including large wooden sticks, sticks with sharp ends, lengths of metal piping, fencing wire or heavy leather belts), should not be used to move animals.
 - The use of goads which administer electric shocks should be discouraged, and restricted to that necessary to assist movement of the animal. Such use should be limited to battery-powered goads on the hindquarters of adult pigs and cattle, and never on sensitive areas such as the eyes, mouth, ears, anogenital region or belly. Such instruments should not be used on other animals.
 - The use of muzzled, well trained dogs to help with the *loading* of some species may be acceptable.
 - The throwing or dropping of animals, or their lifting or dragging by their tail, head, horns, ears, limbs, wool, hair or feathers should not be permitted. The manual lifting of small animals is permissible.

Article 6

Travel

- Drivers and *animal handlers* should check the load immediately before departure to ensure that the animals have been properly loaded. Each load should be checked again early in the trip and adjustments made as appropriate. Periodic checks should be made throughout the trip.
- Drivers should utilise smooth, defensive driving techniques, without sudden turns or stops, to minimise uncontrolled movements of the animals.

Methods of restraining or containing animals

- Methods of restraining animals should be appropriate to the species involved and the training of the individual animal.
- Recommendations for specific species are described in detail in Article XXX.

Regulating the environment within vehicles or containers

- Animals should be protected against harm from hot or cold conditions during *travel*. Effective ventilation procedures for maintaining the animals' environment within *vehicles* or *containers* will vary according to whether conditions are cold, hot and dry or hot and humid, but in all conditions a build-up of noxious gases should be prevented.

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- The animals' environment in hot weather can be regulated by the flow of air produced by the movement of the *vehicle*. In warm and hot weather, the duration of journey stops should be minimised and *vehicles* should be parked under shade, with maximal ventilation.
- To minimise slipping and soiling, and maintain a healthy environment, urine and faeces should be removed from floors when necessary and disposed of in such a way as to prevent the transmission of disease and in compliance with all relevant health and environmental legislation.

Sick, injured and dead animals

- A driver or *animal handler* finding sick, injured or dead animals should act according to a predetermined emergency response plan.
- If possible, sick or injured animals should be segregated.
- Ferries (roll-on roll-off) should have procedures to treat sick or injured animals during the *journey*.
- In order to reduce the likelihood that animal transport will increase the spread of infectious disease, contact between transported animals, or the products of the transported animals, and other farm animals should be minimised.
- During the *journey*, when disposal of a dead animal becomes necessary, this should be carried out in such a way as to prevent the transmission of disease and in compliance with all relevant health and environmental legislation.
- When euthanasia is necessary, the driver or *animal handler* should ensure that it is carried out humanely, and results in immediate death. When necessary, assistance should be sought from a veterinarian or other person(s) competent in euthanasia procedures. Recommendations for specific species are described in the Chapter on humane killing of animals for disease control purposes.

Water and feed requirements

- If journey duration is such that feeding or watering is required or if the species requires feed or water throughout, access to suitable feed and water for all the animals carried in the *vehicle* should be provided. There should be adequate space for all animals to move to the feed and water sources and due account taken of likely competition for feed.
- Recommendations for specific species are described in detail in Article XXX.

Rest periods and conditions including hygiene

- Animals that are being transported should be rested at appropriate intervals during the *journey* and offered feed and water, either on the *vehicle* or, if necessary, unloaded into suitable facilities.
- Suitable facilities should be used en route, when resting requires the *unloading* of the animals. These facilities should meet the needs of the particular animal species and should allow access of all animals to feed and water.

In-transit inspections

- Animals being transported by road should be observed soon after a *journey* is commenced and subsequently at least every 5 hours, in particular whenever the driver has a rest stop. After meal breaks and refuelling stops, the animals should be observed immediately prior to departure.

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- Animals being transported by rail should be observed every 5 hours or at the scheduled stop nearest to 5 hours since the last observation. The responsible rail transporter should monitor the progress of trains carrying animals and take all appropriate action to minimise delays.
 - During stops, it should be ensured that the animals continue to be properly confined, have appropriate feed and water, and their physical condition is satisfactory.

Article 7**Unloading and post-journey handling****General**

- The required facilities and the principles of animal handling detailed in Article 5 (Loading) apply equally to *unloading*, but consideration should be given to the likelihood that the animals will be fatigued.
- *Unloading* should be supervised by *animal handlers* with knowledge and experience of the behavioural and physical characteristics of the species being unloaded. Animals should be unloaded from the *vehicle* into appropriate facilities as soon as possible after arrival at the destination but sufficient time should be allowed for unloading to proceed quietly and without unnecessary noise, harassment or force.
- Facilities should provide all animals with appropriate care and comfort, adequate space and ventilation, access to feed (if appropriate) and water, and shelter from extreme weather conditions.
- For details regarding the *unloading* of animals at a slaughterhouse, see Chapter on slaughter of animal for human consumption.

Sick and injured animals

- An animal that has become sick, injured or disabled during a *journey* should be appropriately treated or humanely killed. When necessary, veterinary advice should be sought in the care and treatment of these animals.
- At the destination, the *animal handler* during transit should ensure that responsibility for the welfare of sick, injured or disabled animals is transferred to a suitable person.
- There should be appropriate facilities and equipment for the humane unloading of animals that are non-ambulatory due to fatigue, injury or sickness. These animals should be unloaded in a manner that causes the least amount of suffering. After *unloading*, separate pens and other appropriate facilities should be available for sick or injured animals.
- Feed, if appropriate, and water should be available for each sick or injured animal.

Addressing disease risks

- The following should be taken into account in addressing the greater risk of disease due to animal transport and the possible need for segregation of transported animals at the destination:
 - increased contact among animals, including those from different sources and with different disease histories,

Appendix XXVI (contd)Appendix E (contd)Appendix IV (contd)

- increased shedding of pathogens and increased susceptibility to infection related to stress and impaired defences against disease, including immunosuppression,
- exposure of animals to pathogens which may contaminate vehicles, staging points, markets etc.

Cleaning and disinfection

- *Vehicles*, crates, *containers*, etc. used to carry the animals should be cleaned before re-use through the physical removal of manure and bedding by scraping, washing and flushing *vehicles* and *containers* with water and detergent. This should be followed by *disinfection* when there are concerns about disease transmission.
- Manure, litter and bedding should be disposed of in such a way as to prevent the transmission of disease and in compliance with all relevant health and environmental legislation.
- When disposal of a dead animal becomes necessary, this should be carried out in such a way as to prevent the transmission of disease and in compliance with all relevant health and environmental legislation.
- Establishments like livestock markets, slaughterhouses, resting sites, railway stations, etc. where animals are unloaded should be provided with appropriate areas for the cleaning and *disinfection* of *vehicles*.
- Where *disinfestation* is necessary, it should be carried out with the minimum stress to the animals.

Article 8**Actions in the event of a refusal to allow the completion of the journey**

- The welfare of the animals should be the first consideration in the event of a refusal to allow the completion of the *journey*.
- When the animals have been refused import, the *Competent Authority* of that country should make available suitable isolation facilities to allow the *unloading* of animals from a *vehicle* and their secure holding, without posing a risk to the health of national herd pending resolution of the situation. In this situation, the priorities should be:
 - the *Competent Authority* of the importing country should provide urgently in writing the reasons for the refusal,
 - in the event of a refusal for animal health reasons, the *Competent Authority* of the importing country should provide urgent access to a veterinarian, where possible an OIE veterinarian(s) appointed by the Director General, to assess the animals' health status with regard to the importing country's concerns, and the necessary facilities and approvals to expedite the required diagnostic testing,
 - the *Competent Authority* of the importing country should provide access to allow continued assessment of the health and other aspects of the welfare of the animals,
 - if the matter cannot be promptly resolved, the *Competent Authorities* of the exporting and importing countries should call on the OIE to mediate.

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- In the event that a *Competent Authority* requires the animals to remain on the *vehicle*, the priorities should be:
 - the *Competent Authority* should allow reprovision of the *vehicle* with water and feed as necessary,
 - the *Competent Authority* should provide urgently in writing the reasons for the refusal,
 - in the event of a refusal for animal health reasons, the *Competent Authority* should provide urgent access to an independent veterinarian(s) to assess the animals' health status, and the necessary facilities and approvals to expedite the required diagnostic testing
 - the *Competent Authority* should provide access to allow continued assessment of the health and other aspects of the welfare of the animals.
- The OIE should utilise its dispute settlement mechanism to identify a mutually agreed solution which will address animal health and any other welfare issues in a timely manner.

Article XXX

Species specific issues

(To be developed)



Original: English
September 2004

REPORT OF THE SECOND MEETING OF THE OIE *AD HOC* GROUP ON THE TRANSPORT OF ANIMALS BY SEA

Paris, 15-17 September 2004

The OIE *ad hoc* group on the transport of animals by sea held its second meeting at the OIE Headquarters from 15-17 September 2004.

The members of the OIE *ad hoc* group and other participants are listed in [Appendix I](#). Dr. Kassab advised that he was unable to attend the meeting.

The Agenda adopted is given in [Appendix II](#).

The Director General of the OIE, Dr Bernard Vallat, welcomed the members of the *ad hoc* group and thanked them for their willingness to continue their work within the OIE's new mandate for animal welfare. The Director-General noted the importance of the *ad hoc* Group's work. He indicated that he had discussed with various parties the problems arising from the rejection of a consignment by an importing country and requested the *ad hoc* Group to make recommendations concerning the management of the animal welfare issues arising from a rejected consignment.

The Director-General advised that the recommendations from the *ad hoc* group would be put to the Working Group on Animal Welfare for endorsement and then circulated in the report of the Code Commission for Member Country comment. He urged all Member Countries to examine carefully the recommendations with a view to adoption at the 2005 General Session.

The *ad hoc* group noted with disappointment the paucity of comments from Member Countries (with only New Zealand contributing), but comments had been received from the International Coalition for Farm Animal Welfare and the European Community Shipowners' Association. These were taken into account in its deliberations.

The *ad hoc* group worked through the relevant sections of the report of the Working Group on Animal Welfare to ensure that it addressed all points raised. These included the need for some new or revised definitions, better harmonisation of terms with other relevant *ad hoc* Groups, the importance of competence of animal handlers and the need to consider in more detail roll-on-roll-off transport. The *ad hoc* group next considered the report of the discussion on sea transport at the OIE Animal Welfare Conference, and at the 2004 General Session, and addressed the points raised.

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The *ad hoc* group decided that the meeting would be best spent finalising general guidelines for the transport of animals by sea, with some information addressing species-specific issues. Based on the feed-back from Member

Countries, species-specific guidelines addressing *inter alia* accommodation, space requirements, ventilation, and feeding and watering would be the task of future meetings.

With regard to the adopted Guiding Principles, the *ad hoc* group recommended the removal of the word 'entertainment' from the list of uses of animals making a major contribution to the wellbeing of people.

The proposed definitions are at Appendix III and the guidelines at Appendix IV.

.../Appendices

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**SECOND MEETING OF THE OIE AD HOC GROUP
ON THE TRANSPORT OF ANIMALS BY SEA**

Paris, 15-17 September 2004

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Appendix II

**SECOND MEETING OF THE OIE AD HOC GROUP
ON THE TRANSPORT OF ANIMALS BY SEA**

Paris, 15-17 September 2004

Agenda adopted

1. Introduction

- Discussion on the report of the recent meeting of the OIE Working Group on Animal Welfare
- Discussion on outcomes of OIE Global Conference on Animal Welfare
- Discussion on OIE 72nd General Session (Animal Welfare)
- Comments from Member Countries
- Comments from ICFAW

2. Development of specific guidelines

3. Work programme

4. Conclusions

INTRODUCTION TO OIE GUIDELINES FOR THE WELFARE OF ANIMALS

Article 1

Definitions

- **Animal.** For the purposes of this chapter, ‘animal’ refers to the following live domesticated animals: cattle, deer, camelids, buffalo, sheep, goats, pigs and equines. These guidelines may also be applicable to other domesticated animals.
- **Animal handler.** A person with a knowledge of the behaviour and needs of animals which, with appropriate experience and a professional and positive response to an animal’s welfare requirements, results in effective management and good welfare. Their competence should be demonstrated through independent assessment and certification.
- **Container.** A non-self-propelled receptacle or other rigid structure for holding animals during a *journey* by one or several means of transport.
- **Exporter.** A person licensed by the *Competent Authority* to export animals by sea. For the purposes of this chapter, the term applies equally to the transport of animals by water within a country
- **Journey.** An animal transport journey commences when the first animal is loaded onto a *vehicle/vessel* or into a *container* and ends when the last animal is unloaded, and includes any stationary resting / holding periods of less than 48 hours. The same animals do not commence a new journey until after a period of over 48 hours for rest and recuperation, with adequate feed and water.
- **Loading / unloading.** **Loading** is the procedure of moving animals onto a *vehicle/vessel* or into a *container* from the pre-loading site; **unloading** is the procedure of moving animals off a *vehicle/vessel* or *container*.
- **Pre-journey period.** The period during which animals are identified, and often assembled for the purpose of loading them.
- **Post-journey period.** The period between *unloading* and recovery from the effects of the *journey*.
- **Space allowance** is the measure of the floor area and height on a *vehicle/vessel*, allocated per individual or body weight of animal transported.
- **Stocking density** is the number or body weight of animals per unit area on a *vehicle/vessel*.
- **Staging point.** A place where the journey is interrupted to rest, feed or water the animals; the animals may remain in the *vessel* or be unloaded.
- **Transport.** The procedures associated with the carrying of animals for commercial purposes from one location to another by land, sea or air.
- **Transporter.** The person licensed by the *Competent Authority* to transport animals.
- **Travel.** The movement of a *vehicle/vessel* or *container* carrying animals from one location to another.
- **Vehicle/vessel** includes any train, truck, or ship that is used for carrying an animal(s).

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Appendix F (contd)

Appendix IV

GUIDELINES FOR THE TRANSPORT OF ANIMALS BY SEA

Article 1

Responsibilities

Once the decision to transport animals by sea has been made, the welfare of animals during their transport is paramount and is the joint responsibility of all people involved. These guidelines may also be applied to the transport of animals by water within a country.

The management of animals at post-discharge facilities is outside the scope of this document.

The roles of each of those responsible are defined below:

- *Exporters*, owners of animals and managers of facilities are jointly responsible for the general health of the animals and their fitness for the *journey*.
- The *exporter* has overall responsibility for the organisation, carrying out and completion of the *journey*, regardless of whether duties are subcontracted to other parties during transport. The *exporter* is also responsible for ensuring that equipment and medication are provided as appropriate for the species and *journey*, and for the presence during the *journey* of at least one *animal handler* competent for the species being transported. The *exporter* is also responsible for ensuring compliance of the animals with any required veterinary certification and, in the case of animals for export, any other requirements of the importing and exporting countries.
- Business or buying/selling agents have a joint responsibility with owners for the selection of animals that are fit to travel. They have a joint responsibility with masters of vessels and managers of facilities at the start and at the end of the *journey* for the availability of suitable facilities for the assembly, *loading*, transport, *unloading* and holding of animals, and for emergencies.
- *Animal handlers* are responsible for the humane handling and care of animals, especially during *loading* and *unloading*. To carry out these responsibilities, they should have the authority to take prompt action.
- The *exporter*, the shipping company and the master of the vessel are jointly responsible for planning the *journey* to ensure the care of the animals, including:
 - choosing appropriate *vessels* and ensuring that competent *animal handlers* are available for *loading* and caring for animals throughout the *journey*,
 - developing and keeping up to date contingency plans to address emergencies (including adverse weather conditions) and minimise stress during transport,
 - correct *loading* of the ship, regular inspections during the *journey* and for appropriate responses to problems arising
 - disposal of carcasses according to international law.
- To carry out these responsibilities, the people involved should be competent regarding transport regulations, equipment usage, humane handling and the care of animals.

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- Managers of facilities during *loading* of the animals are responsible for:
 - providing suitable premises for *loading* the animals,
 - providing competent *animal handlers* to load the animals in a manner that causes minimum stress and injury,
 - providing appropriate facilities for emergencies,
 - providing facilities and veterinarians or competent *animal handlers* capable of performing euthanasia or urgent slaughter when required.

- Managers of facilities at the end of the *journey* are responsible for:
 - providing suitable facilities for *unloading* the animals onto transport vehicles for immediate movement or securely holding the animals in lairage, with shelter, water and feed, when required, for transit,
 - providing competent *animal handlers* to unload the animals with minimum stress and injury,
 - minimising the opportunities for disease transmission while the animals are in the facilities,
 - providing appropriate facilities for emergencies,
 - providing facilities and veterinarians or competent *animal handlers* capable of performing euthanasia or urgent slaughter when required.

- The responsibilities of the *Competent Authority* of the exporting country include:
 - establishing minimum standards for animal welfare, including requirements for inspection of animals before and during their travel, and for certification and record keeping,
 - approving facilities, *containers, vehicles/vessels* for the holding and transport of animals,
 - setting competence standards for *animal handlers* and managers,
 - ensuring that the *vessel* transporting animals meets the required standards, including those of the importing country,
 - implementation of the standards, including through accreditation of / interaction with other organisations and competent authorities,
 - monitoring and evaluating health and welfare performance, including the use of any veterinary medications.

- The responsibilities of the *Competent Authority* of the importing country include:
 - establishing minimum standards for animal welfare, including requirements for inspection of animals after their travel, and for certification and record keeping,
 - approving facilities, *containers* and vehicles for the *unloading*, holding and transport of animals,
 - setting competence standards for *animal handlers* and managers,

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- implementation of the standards, including through accreditation of / interaction with other organisations and competent authorities,
- ensuring that the exporting country is aware of the required standards for the *vessel* transporting the animals,
- monitoring and evaluating health and welfare performance, including the use of any veterinary medications.
- Veterinarians are responsible for the humane handling and treatment of animals during the *journey*. To carry out these responsibilities, they should have the authority to act and report independently.
 - The veterinarian should meet with the Master, Chief Officer and the senior *animal handler* on a daily basis.

Article 2**Competence**

- All people handling animals or who are otherwise responsible for animals during *journeys*, should be competent according to their responsibilities listed in Article 1. Competence in areas other than animal welfare would need to be addressed separately. Competence may be gained through formal training and/or practical experience.
- This competence should be demonstrated through a current certificate in one of the OIE official languages from an independent body.
- Assessment of competence for *animal handlers* should at a minimum address knowledge, and ability to apply that knowledge, in the following areas:
 - responsibilities for animals during the *journey*,
 - sources of advice and assistance,
 - animal behaviour, general signs of disease, and indicators of poor animal welfare such as stress, pain and fatigue, and their alleviation,
 - relevant authorities and applicable transport regulations, and associated documentation requirements,
 - general disease prevention procedures, including cleaning,
 - appropriate methods of animal handling during transport and associated activities such as assembling, *loading*, and *unloading*,
 - methods of inspecting animals, managing situations frequently encountered during transport such as adverse weather conditions, and dealing with emergencies,
 - species-specific aspects of animal handling and care, including feeding, watering and inspection,
 - appropriate record keeping and journey log.

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- Assessment of competence for *exporters* should at a minimum address knowledge, and ability to apply that knowledge, in the following areas:
 - planning a *journey*, including appropriate *space allowances*, and feed, water and ventilation requirements,
 - relevant authorities and applicable transport regulations, and associated documentation requirements,
 - appropriate methods of animal handling during transport and associated activities such as cleaning and disinfection, assembling, *loading*, and *unloading*,
 - species-specific aspects of animal handling and care, including appropriate equipment and medication,
 - sources of advice and assistance,
 - appropriate record keeping and journey log.
 - managing situations frequently encountered during transport such as adverse weather conditions, and dealing with emergencies

Article 3**Documentation**

- Animals should not be loaded until the documentation required to that point is complete.
- The documentation accompanying the consignment should include:
 - journey travel plan,
 - time, date and place of *loading*,
 - the journey log – a daily record of inspection and important events which includes records of morbidity and mortality, climatic conditions, food and water consumed, medication provided, mechanical defects,
 - time, date and place of arrival and *unloading*,
 - veterinary certification, when required,
 - animal identification to allow traceback of individual animals to the premises of departure, and where possible to the premises of origin,
 - details of animals at risk,
 - number of *animal handlers* on board, and their competencies,
 - stocking density estimate for each load in the consignment.
- Veterinary certification should accompany consignments of animals and address:
 - cleaning and disinfection of the *vessel*,
 - fitness of the animals to travel,
 - animal identification (description, number, etc.),
 - health status including tests, treatment and vaccinations carried out, if required.

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Appendix IV (contd)

Article 4

Planning the journey

General

- Adequate planning is a key factor affecting the welfare of animals during a *journey*.
- Before the journey starts, plans should be made in relation to:
 - type of transport *vessel* required,
 - route, taking into account distance, expected weather and sea conditions,
 - nature and duration of *journey*,
 - daily care and management of the animals,
 - avoiding the mixing of animals from different sources in a single pen group.
 - provision of appropriate equipment and medication for the numbers and species carried
 - emergency response procedures
- Preconditioning may be required, e.g. for dry food, and unfamiliar methods of supply of feed and water.
- Potential for spread of infectious disease
 - when requested by the *Veterinary Authority* of the importing country, animals should be vaccinated against diseases to which they are likely to be exposed at their destination.
- There should be planning for water and feed availability during the *journey*. Feed should be of appropriate quality and composition for the species, age, condition of the animals, etc.
- Extreme weather conditions are hazards for animals undergoing transport and require appropriate vessel design to minimise risks. Special precautions should be taken for animals that have not been acclimatised or which are unsuited to either hot or cold conditions. In some extreme conditions of heat or cold, animals should not be transported at all.
- Behaviour-modifying or other medication should not be used routinely during transport. Such medicines should only be administered when a problem exists in an individual animal, and should be administered by a veterinarian or other person who has been instructed in their use by a veterinarian. Treated animals should be placed in a dedicated area.
- There should be an emergency management plan that identifies the important adverse events that may be encountered during the *journey*, the procedures for managing each event and the action to be taken in an emergency. For each important event, the plan should document the actions to be undertaken and the responsibilities of all parties involved, including communications and record keeping.

Appendix XXVI (contd)Appendix F (contd)Appendix IV (contd)**Vessel and container design and maintenance**

- *Vessels* used for the sea transport of animals should be designed, constructed and fitted as appropriate to the species, size and weight of the animals to be transported; special attention should be paid to the avoidance of injury to animals through the use of secure smooth fittings free from sharp protrusions and the provision of non-slip flooring. The avoidance of injury to animal handlers while carrying out their responsibilities should also be taken into account.
- *Vessels* should be designed to permit thorough cleaning and disinfection, and the management of faeces and urine.
- *Vessels* should be maintained in good mechanical and structural condition.
- *Vessels* should have adequate ventilation to meet variations in climate and the thermo-regulatory needs of the animal species being transported; the ventilation system should be capable of operating when the *vessel* is stationary and the air flow should be adjustable.
- The feeding and watering system should be designed to permit adequate access to feed and water appropriate to the species, size and weight of the animals, and to minimise soiling of pens.
- *Vessels* should be designed so that the faeces or urine from animals on upper levels do not soil animals on lower levels, or their feed or water.
- Stowage of feed and bedding should be carried out in such a way to ensure protection from the elements and sea water
- Where appropriate, suitable bedding, such as straw or sawdust, should be added to vessel floors to assist absorption of urine and faeces, provide better footing for animals and protect animals (especially young animals) from hard or rough flooring surfaces and adverse weather conditions.
- The above principles apply also to *containers* used for the transport of animals.

Special provisions for transport in road vehicles on roll-on/roll-off vessels or for containers

- Road vehicles and *containers* should be equipped with a sufficient number of adequately designed, positioned and maintained securing points enabling them to be securely fastened to the *vessel*.
- Road vehicles and *containers* should be secured to the ship before the start of the sea journey to prevent them being displaced by the motion of the *vessel*.
- *Vessels* should have adequate ventilation to meet variations in climate and the thermo-regulatory needs of the animal species being transported, especially where the animals are transported in a secondary *vehicle/container* on enclosed decks.

Space allowance

- The number of animals which should be transported on a *vessel* and their allocation to different pens on the *vessel* should be determined before *loading*.

Appendix XXVI (contd)Appendix F (contd)Appendix IV (contd)

- The amount of space required, including headroom, depends on the species of animal and should allow the necessary thermoregulation. Each animal should be able to assume its natural position for transport (including during *loading* and *unloading*) without coming into contact with the roof or upper deck of the *vessel*. When animals lie down, there should be enough space for every animal to adopt a comfortable, normal lying posture.
- Calculations for the space allowance for each animal should be carried out, using the figures given in these guidelines or, in their absence, in a relevant national or international document. The size of pens will affect the number of animals in each.
- The same principles apply when animals are transported in *containers*.

Ability to observe animals en route

- Animals should be positioned to enable them to be observed regularly during the *journey* to ensure their safety and good welfare.
- To allow an adequate inspection of animals en route, it should be possible for each animal to be clearly observed by the *animal handler* or other responsible person.

Emergency response procedures

- Appropriate contingency plans to address emergencies should be prepared in advance.

Article 5**Pre-journey period****General**

- Before each *journey*, *vessels* should be thoroughly cleaned and treated for animal and public health purposes, using chemicals approved by the *Competent Authority*. When cleaning is necessary during a *journey*, this should be carried out with the minimum of stress to the animals.
- In some circumstances, animals may require pre-journey assembly. In these circumstances, the following points should be considered:
 - For animals such as pigs which are susceptible to motion sickness, and in order to reduce urine and faeces production during the *journey*, a short period of feed deprivation prior to *loading* is desirable.
 - When animals will be provided with a novel diet or method of water provision during or after transport, an adequate period of pre-exposure is necessary. Preconditioning to the feed to be used on the *vessel* may be necessary in such cases.
- Pre-journey holding areas should be designed to:
 - securely contain the animals,
 - maintain an environment safe from hazards, including predators and disease,

Appendix XXVI (contd)Appendix F (contd)Appendix IV (contd)

- protect animals from exposure to adverse weather conditions, and
- allow for rest, watering and feeding.

Selection of compatible groups

- Compatible groups should be selected before transport to avoid adverse animal welfare consequences. The following guidelines should be applied when assembling groups of animals:
 - animals of different species should not be mixed unless they are judged to be compatible,
 - animals of the same species can be mixed unless there is a significant likelihood of aggression; aggressive individuals should be segregated,
 - young or small animals may need to be separated from older or larger animals, with the exception of nursing mothers with young at foot,
 - animals with horns or antlers should not be mixed with animals lacking horns or antlers,
 - animals reared together should be maintained as a group; animals with a strong social bond, such as a dam and offspring, should be transported together.

Fitness to travel

- Animals should be inspected before travel and those found unfit to travel by farm staff, *animal handlers* or veterinarians should not be loaded onto a *vessel*.
- Humane and effective arrangements should be made by the owner or agent for the handling and care of any animal rejected as unfit to travel.
- Animals that are unfit to travel include:
 - those that are sick, injured, weak, disabled or fatigued,
 - those that are unable to stand unaided and bear weight on each leg,
 - those that are blind in both eyes,
 - those that cannot be moved without causing them additional suffering,
 - newborn with an unhealed navel,
 - females travelling without young which have given birth within the previous 48 hours,
 - pregnant animals which would be in the final 10% of their gestation period at the planned time of unloading.
- Risks during transport can be reduced by selecting animals best suited to the conditions of travel and those that are acclimatised to expected weather conditions.

Appendix XXVI (contd)

Appendix F (contd)

Appendix IV (contd)

- Animals at risk, and requiring better conditions and additional attention during transport include:
 - very large or obese individuals,
 - very young or old animals,
 - excitable or aggressive animals,
 - animals which have had little contact with humans,
 - females in the last third of pregnancy or in heavy lactation.
- Hair or wool length needs consideration in relation to the weather conditions expected.

Article 6

Loading

Experienced supervision

- *Loading* should be carefully planned as it has the potential to be the cause of poor welfare in transported animals.
- *Loading* should be supervised by the *Competent Authority* and managed by an *animal handler(s)*. *Animal handlers* should ensure that animals are loaded quietly and without unnecessary noise, harassment or force, and that untrained assistants or spectators do not impede the process.
- Ventilation during *loading* and the *journey* should provide for fresh air, and the removal of excessive heat, humidity and noxious fumes (such as ammonia and carbon monoxide). Under warm and hot conditions, ventilation should allow for the adequate convective cooling of each animal. In some instances, adequate ventilation can be achieved by increasing the *space allowance* for animals.

Facilities

- The facilities for *loading* including the collecting area at the wharf, races and loading ramps should be designed and constructed to take into account of the needs and abilities of the animals with regard to dimensions, slopes, surfaces, absence of sharp projections, flooring, sides etc.
- All loading facilities should be properly illuminated to allow the animals to be easily inspected by the *animal handler(s)*, and to allow the animals' ease of movement at all times.

Goads and other aids

- The following principles should apply:
 - Goads (aids for encouraging animals to move) should not be used on animals that have little or no room to move.
 - Useful and permitted goads include panels, flags, plastic paddles, flappers (a length of cane with a short strap of leather or canvas attached), plastic bags and metallic rattles; they should be used in a manner sufficient to encourage and direct movement of the animals but without physical contact with them.
 - Unsuitable goads such as large wooden sticks, sticks with sharp ends, lengths of metal piping, fencing wire or heavy leather belts should not be used to strike animals.

Appendix XXVI (contd)Appendix F (contd)Appendix IV (contd)

- The use of goads which administer electric shocks should be discouraged, and restricted to that necessary to assist movement of the animal. If such use is necessary, it should be limited to the hindquarters of pigs and large ruminants, and never on sensitive areas such as the eyes, mouth, ears, anogenital region or belly. Such instruments should not be used on horses, sheep and goats of any age, or on calves or piglets.
- The use of well trained dogs to help with the *loading* of some species may be acceptable.
- Manual lifting is permissible for young animals that may have difficulty negotiating ramps, but the lifting of animals by their tail, head, horns, ears, limbs, wool or hair should not be permitted.

Article 7**Travel****Inspections**

- Competent *animal handler(s)* should check the consignment immediately before departure to ensure that the animals have been loaded according to the load plan. Each consignment should be checked again within 24 hours.
- Adjustments should be made to the stocking density within 48 hours of departure and as appropriate during the *journey*.
- Each pen of animals should be observed on a daily basis for normal behaviour, health and welfare, and the correct operation of ventilation, watering and feeding systems. There should also be a night patrol. Any necessary corrective action should be undertaken promptly.
- Adequate access to suitable feed and water should be ensured for all animals in each pen.

Sick and injured animals

- Sick or injured animals should be segregated/isolated.
- Sick or injured animals should be treated promptly and appropriately, and veterinary advice should be sought if necessary. All drugs and products should be used in accordance with the manufacturer's recommendations.
- A record of treatments carried out and their outcomes should be kept.
- When euthanasia is necessary, the person responsible for the animals must ensure that it is carried out humanely, and results in immediate death. When necessary, assistance should be sought from a veterinarian or other person(s) competent in euthanasia procedures. Recommendations for specific species are described in the Chapter on humane killing of animals for disease control purposes.

Cleaning and disinfection

- *Vessels* and *containers*, used to carry the animals should be cleaned before re-use through the physical removal of manure and bedding by scraping, washing and flushing *vessels* and *containers* with water. This should be followed by *disinfection* when there are concerns about disease transmission.

Appendix XXVI (contd)

Appendix F (contd)

Appendix IV (contd)

- Manure, litter and bedding should be disposed of in such a way as to prevent the transmission of disease and in compliance with all relevant health and environmental legislation.
- Where cleaning or *disinfestation* is necessary during travel, it should be carried out with the minimum stress to the animals.

Article 8

Unloading and post-journey handling

General

- The required facilities and the principles of animal handling detailed in Article 6 (Loading) apply equally to *unloading*, but consideration should be given to the likelihood that the animals will be fatigued.
- *Unloading* should be carefully planned as it has the potential to be the cause of poor welfare in transported animals.
- A livestock *vessel* should have priority attention when arriving in port and have priority access to a berth with suitable unloading facilities. As soon as possible after the ship's arrival at the port and acceptance of the consignment by the *Competent Authority*, animals should be unloaded into appropriate facilities.
- The accompanying *veterinary certificate* and other documents should meet the requirements of the importing country. Veterinary inspections should be completed as quickly as possible.
- *Unloading* should be supervised by the *Competent Authority* and managed by a competent *animal handler(s)*. The *animal handlers* should ensure that animals are unloaded quietly and without unnecessary noise, harassment or force, and that untrained assistants or spectators do not impede the process.

Facilities

- The facilities for *unloading* including the collecting area at the wharf, races and unloading ramps should be designed and constructed to take into account of the needs and abilities of the animals with regard to dimensions, slopes, surfaces, absence of sharp projections, flooring, sides etc.
- All unloading facilities should be properly illuminated to allow the animals to be easily inspected by the *animal handler(s)*, and to allow the animals' ease of movement at all times.
- In case of emergencies, port facilities should provide animals with appropriate care and comfort, adequate space, access to quality feed and clean drinking water, and shelter from extreme weather conditions.

Sick and injured animals

- In some cases, where animals are non-ambulatory due to fatigue, injury or sickness, it may be in the best welfare interests of the animal to be treated or euthanased aboard the *vessel*.
- If *unloading* is in the best welfare interests of animals that are fatigued, injured or sick, there should be appropriate facilities and equipment for the humane unloading of such animals. These animals should be unloaded in a manner that causes the least amount of suffering. After *unloading*, appropriate facilities and treatments should be provided for sick or injured animals.

Appendix XXVI (contd)

Appendix F (contd)

Appendix IV (contd)

Article 9

Actions in the event of a refusal to allow the import of a shipment

- The welfare of the animals should be the first consideration in the event of a refusal to import.
- When a shipment has been refused import, the *Competent Authority* of that country should make available suitable isolation facilities to allow the *unloading* of animals from a *vessel* and their secure holding, without posing a risk to the health of the national herd, pending resolution of the situation. In this situation, the priorities should be:
 - the *Competent Authority* of the importing country should provide urgently in writing the reasons for the refusal,
 - in the event of a refusal for animal health reasons, the *Competent Authority* of the importing country should provide urgent access to an OIE-appointed veterinarian(s) to assess the animals' health status with regard to the importing country's concerns, and the necessary facilities and approvals to expedite the required diagnostic testing
 - the *Competent Authority* of the importing country should provide access to allow continued assessment of the ongoing health and welfare situation,
 - if the matter cannot be promptly resolved, the *Competent Authority* of the exporting and importing countries should call on the OIE to mediate.
- In the event that the animals are required to remain on the *vessel*, the priorities should be:
 - the *Competent Authority* of the importing country should allow reprovision of the *vessel* with water and feed as necessary,
 - the *Competent Authority* of the importing country should provide urgently in writing the reasons for the refusal,
 - in the event of a refusal for animal health reasons, the *Competent Authority* of the importing country should provide urgent access to an OIE-appointed veterinarian(s) to assess the animals' health status with regard to the importing country's concerns, and the necessary facilities and approvals to expedite the required diagnostic testing,
 - the *Competent Authority* of the importing country should provide access to allow continued assessment of the ongoing health and welfare situation,
 - if the matter cannot be urgently resolved, the *Competent Authorities* of the exporting and importing countries should call on the OIE to mediate.
- The OIE should utilise its dispute settlement mechanism to identify a mutually agreed solution which will address the animal health and welfare issues in a timely manner.

Appendix XXVI (contd)

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Appendix IV (contd)

Article 10

Species specific issues

Cattle are sociable animals and may become agitated if they are singled out. Social order is usually established at about two years of age. When groups are mixed, social order has to be re-established and aggression may occur until a new order is established. Crowding of cattle may also increase aggression as the animals try to maintain personal space. Social behaviour varies with age, breed and sex; *Bos indicus* and *Bos indicus*-cross animals are usually more temperamental than European breeds. Young bulls, when moved in groups, show a degree of playfulness (pushing and shoving) but become more aggressive and territorial with age. Adult bulls have a minimum personal space of six square metres. Cows with young calves can be very protective, and handling calves in the presence of their mothers can be dangerous.

Goats should be handled calmly and are more easily led or driven than if they are excited. When goats are moved, their gregarious tendencies should be exploited. Activities which frighten, injure or cause agitation to animals should be avoided. Bullying is particularly serious in goats. Housing strange goats together could result in fatalities, either through physical violence, or subordinate goats being refused access to food and water.

Sheep are sociable animals with good eyesight and tend to “flock together”, especially when they are agitated. They should be handled calmly and their tendency to follow each other should be exploited when they are being moved. Sheep may become agitated if they are singled out for attention and will strive to rejoin the group. Activities which frighten, injure or cause agitation to sheep should be avoided. They can negotiate steep ramps.

Pigs have poor eyesight, and may move reluctantly in strange surroundings. They benefit from well lit loading bays. Since they negotiate ramps with difficulty, these should be as level as possible. Ideally a hydraulic lift should be used for greater heights. Pigs also negotiate steps with difficulty. A good ‘rule-of-thumb’ is that no step should be higher than the pig’s front knee.

Horses in this context include all solipeds, donkeys, mules, hinnies and zebra. They have good eyesight and a very wide angle of vision. They may have a history of loading resulting in good or bad experiences. Good training should result in easier loading, but some horses can prove difficult, especially if they are inexperienced or have associated loading with poor transport conditions. In these circumstances two experienced handlers can load an animal by linking arms or using a strop below its rump. Blindfolding may even be considered. Ramps should be as shallow as possible. Steps are not usually a problem when horses mount a ramp, but they tend to jump a step when descending, so steps should be as low as possible. Horses benefit from being individually stalled, but may be transported in compatible groups. When horses are to travel in groups, their shoes should be removed.

Camelids in this context comprise llamas, alpacas, guanaco and vicuna. They have good eyesight and, like sheep, can negotiate steep slopes, though ramps should be as shallow as possible. They load most easily in a bunch as a single animal will strive to rejoin the others. Whilst they are usually docile, they have an unnerving habit of spitting in self-defence. During transport they usually lie down. They frequently extend their front legs forward when lying, so gaps below partitions should be high enough so that their legs are



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REPORT OF THE SECOND MEETING OF THE OIE *AD HOC* GROUP ON THE HUMANE KILLING OF ANIMALS FOR DISEASE CONTROL PURPOSES

Paris, 2-4 November 2004

The OIE *ad hoc* Group on the Humane Killing of Animals for Disease Control Purposes held its second meeting at the OIE Headquarters from 2 to 4 November 2004.

The members of the OIE *ad hoc* Group and other participants are listed in [Appendix I](#). The Agenda adopted is given in [Appendix II](#). Dr J. Galvin was absent due to a sudden illness.

On behalf of Dr B. Vallat, Director General of the OIE, Dr D. Wilson, Head of the International Trade Department, welcomed the members of the *ad hoc* Group and thanked them for their willingness to continue working on the new mandate of the OIE for animal welfare.

The *ad hoc* Group discussed current international issues in animal welfare as a background to their work. In revising the recommendations from their first meeting, the *ad hoc* Group took into account the outcomes of the OIE Global Animal Welfare Conference and the meeting of the Working Group on Animal Welfare. It also took into account the recommendations of the OIE *ad hoc* Group on the slaughter of animals for human consumption and harmonised its approach to the extent possible. Dr H. Blokhuis noted that the discussion at the Conference would have been improved had the reports of the *ad hoc* Group meetings been circulated more widely and Dr Wilson advised that this was now the OIE policy.

The *ad hoc* Group addressed comments received from Member Countries on the report of its first meeting. It noted the comment on priorities but was of the view that animal welfare standards for the killing of wild and feral animals should be done by a separate *ad hoc* Group, subject to the work being given priority by the Working Group. With regard to a proposal that killing by intrathoracic haemorrhage be included in its recommendations, the *ad hoc* Group considered that further work was required on this technique, especially regarding time periods before death.

While noting that the animal welfare aspects of disease control procedures needed to be addressed within broader constraints, including those posed by human safety and biosecurity considerations, the *ad hoc* Group advised that its recommendations regarding the advantages and disadvantages of various methods did not take in to account the cost of equipment nor relative human health and safety issues. The *ad hoc* Group confined its considerations to the procedures that needed to occur from the time that the decision is taken to kill animals for diseases control purposes, until the animals are dead, and to the killing of cattle, sheep, goats, pigs and poultry.

Appendix XXVI (contd)Appendix G (contd)

The *ad hoc* Group addressed the general principles of humane killing, organisational structure, the responsibilities and competencies of personnel working on affected premises, planning the humane killing of animals, and recommended various killing methods. The recommendations do not contain detailed, specific operating procedures as these are available elsewhere in emergency disease control plans and equipment manufacturer recommendations. The draft guidelines are at Appendix III.

The *ad hoc* Group also recognised that the draft guidelines may also be applicable for the killing of animals following natural disasters and in emergency slaughter situations.

.../Appendices

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**SECOND MEETING OF THE OIE AD HOC GROUP ON
HUMANE KILLING OF ANIMALS FOR DISEASE CONTROL PURPOSES**

Paris, 2-4 November 2004

List of participants

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Appendix II

**SECOND MEETING OF THE OIE *AD HOC* GROUP ON
HUMANE KILLING OF ANIMALS FOR DISEASE CONTROL PURPOSES**

Paris, 2-4 November 2004

Agenda adopted

1. Introduction

- 1.1. Discussion on the report of the recent meeting of the OIE Working Group on Animal Welfare
- 1.2. Discussion on the outcomes of the OIE Global Conference on Animal Welfare
- 1.3. Discussion on the OIE 72nd General Session (Animal Welfare)
- 1.4. Comments from Member countries

2. Development of specific guiding principles and standards

3. Work programme

4. Conclusions

Appendix XXVI (contd)

Appendix G (contd)

Appendix III

DEFINITIONS

Stockmanship

good stockmanship means a professional and positive response to an animal's welfare requirements.

Animal handler

a person with a knowledge of the behaviour and needs of animals which, with appropriate experience and a professional and positive response to an animal's welfare requirements, results in effective management and good welfare. Their competence should be demonstrated through independent assessment and certification.

Stunning

any mechanical, electrical, chemical or other procedure which causes immediate loss of consciousness which lasts until death;

Death

means irreversible loss of brain activity as demonstrated by loss of brain stem reflexes.

RMS

root mean square – a means of calibrating alternating current to a direct current signal

Neonate

a young animal, from birth to four weeks

Appendix XXVI (contd)

Appendix G (contd)

Appendix III (contd)

GUIDELINES FOR THE HUMANE KILLING OF ANIMALS FOR DISEASE CONTROL PURPOSES

Article 1

General principles of humane killing

- 1) Disease control contingency plans should be in place at a national level and should contain details of management structure, disease control strategies and operational procedures; animal welfare considerations should be addressed within these disease control contingency plans.
- 2) Disease control strategies should also address the animal welfare issues that may result from animal movement controls.
- 3) The following principles apply after a decision to kill the animals has been made.
- 4) All personnel involved in the humane killing of animals should have the relevant skills and competencies.
- 5) As necessary, operational procedures should be adapted to the specific circumstances operating on the premises and should address, apart from animal welfare, operator safety and biosecurity.
- 6) Following the decision to kill the animals, killing should be carried out as quickly as possible and normal husbandry should be maintained until the animals are killed.
- 7) The handling and movement of animals should be minimised and when done, it should be done in accordance with the guidelines described below.
- 8) Animal restraint should be sufficient to facilitate effective killing, and in accordance with animal welfare and operator safety requirements; when restraint is required, killing should follow with minimal delay.
- 9) When animals are killed for disease control purposes, methods used should result in immediate death or immediate loss of consciousness lasting until death; when loss of consciousness is not immediate, induction of unconsciousness should be non-aversive and should not cause anxiety, pain, distress or suffering in the animals.
- 10) For animal welfare considerations, young animals should be killed before older animals; for biosecurity considerations, infected animals should be killed first, followed by in-contact animals, and then the remaining animals.
- 11) There should be continuous monitoring of the procedures to ensure they are consistently effective with regard to animal welfare, operator safety and biosecurity.
- 12) When the operational procedures are concluded, there should be a written report describing the practices adopted and their effect on animal welfare, operator safety and biosecurity.
- 13) To the extent possible to minimise public distress, killing of animals and carcase disposal should be carried out away from public view.
- 14) These general principles should also apply when animals need to be killed for other purposes such as after natural disasters.

Appendix XXVI (contd)

Appendix G (contd)

Appendix III (contd)

Article 2

Organisational structure

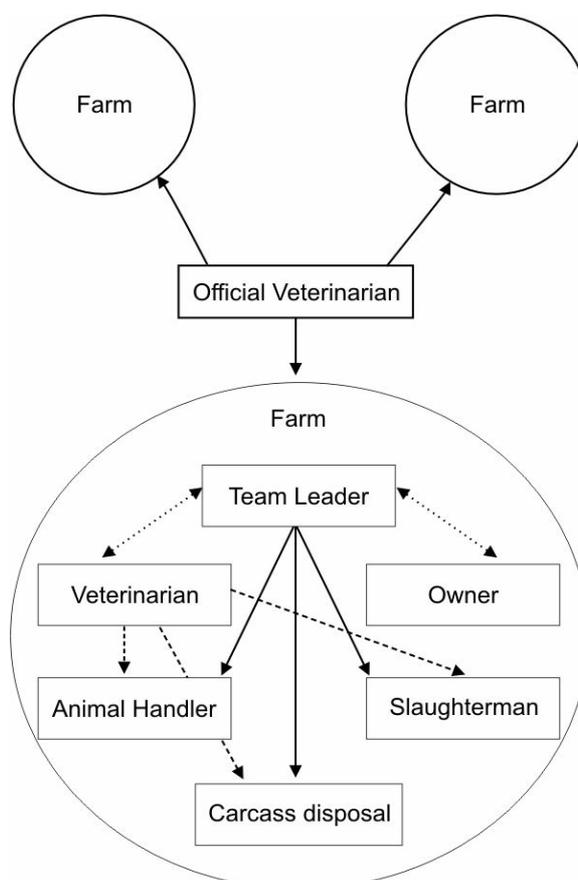
The operational activities should be led by an *official veterinarian* who has the authority to appoint the personnel in the specialist teams and ensure that they adhere to the required animal welfare and biosecurity standards. When appointing the personnel, he/she should ensure that the personnel involved has the required competencies.

The *official veterinarian* should be responsible for all activities across one or more affected premises and should be supported by coordinators for planning (including communications), operations and logistics to facilitate efficient operations.

The *official veterinarian* should provide overall guidance to personnel and logistic support for operations on all affected premises to ensure consistency in adherence to the OIE animal welfare and biosecurity guidelines.

A specialist team, led by a team leader answerable to the *official veterinarian*, should be deployed to work on each affected premises. The team should consist of personnel with the competencies to conduct all required operations; in some situations, personnel may be required to fulfil more than one function. Each team should contain a veterinarian.

In considering the animal welfare issues associated with killing animals, the key personnel, their responsibilities and competencies required are described in Article 3.



Appendix XXVI (contd)

Appendix G (contd)

Appendix III (contd)

Article 3

Responsibilities and competencies of the specialist team

Team leader

- Responsibilities
 - plan overall operations on an affected premises
 - determine and address requirements for animal welfare, operator safety and biosecurity
 - organise, brief and manage team of people to facilitate humane killing of the relevant animals on the premises in accordance with national regulations and these guidelines
 - determine logistics required
 - monitor operations to ensure animal welfare, operator safety and biosecurity requirements are met
 - report upwards on progress and problems
 - provide a written report at the conclusion of the killing, describing the practices adopted and their effect on animal welfare
- Competencies
 - appreciation of animal welfare and the underpinning behavioural, anatomical and physiological processes involved in the killing process
 - skills to manage all activities on premises and deliver outcomes on time
 - awareness of psychological effects on farmer, team members and general public
 - effective communication skills

Veterinarian

- Responsibilities
 - determine and implement the most appropriate killing method to ensure that animals are killed without avoidable pain and distress
 - determine and implement the additional requirements for animal welfare, including the order of killing
 - minimise the risk of disease spread within and from the premises through the supervision of biosecurity procedures
 - continuously monitor animal welfare and biosecurity procedures
 - in cooperation with the leader, prepare a written report at the conclusion of the killing, describing the practices adopted and their effect on animal welfare
- Competencies
 - ability to assess animal welfare, especially the effectiveness of stunning and killing and to correct any deficiencies
 - ability to assess biosecurity risks

Appendix XXVI (contd)

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Appendix III (contd)

Animal handlers

- Responsibilities
 - review on-site facilities in terms of their appropriateness
 - design and construct temporary animal handling facilities, when required
 - move and restrain animals
- Competencies
 - good stockmanship
 - awareness of animal behaviour
 - experience of animal handling in emergency situations and in close confinement

Slaughterers

- Responsibilities
 - ensure humane killing of animals through effective stunning and killing
- Competencies
 - when required by regulations, licensed to use necessary equipment or licensed to be slaughterers
 - competent to use and maintain relevant equipment
 - competent to use techniques for the species involved
 - competent to assess effective stunning and killing

Carcase disposal personnel

- Responsibilities
 - ensure efficient carcass disposal to ensure killing operations are not hindered
- Competencies
 - competent to use and maintain available equipment and apply techniques for the species involved

Farmer / owner / manager

- Responsibilities
 - assist when requested
- Competencies
 - specific knowledge of his/her animals and their environment

Appendix XXVI (contd)

Appendix G (contd)

Appendix III (contd)

Article 4

Operational guidelines

Planning the humane killing of animals

Many activities will need to be conducted on affected premises, including the humane killing of animals. The team leader should develop a plan for humanely killing animals on the premises which should include consideration of:

- Minimising handling and movement of animals
- Killing the animals on the affected premises; however, there may be circumstances where the animals may need to be moved to another location for killing; when the killing is conducted at an abattoir, the guidelines in Chapter on slaughter of animals for human consumption should be followed.
- The species, number, age and size of animals to be killed, and the order of killing them
- Methods of killing the animals, and their cost
- Housing and location of the animals
- The availability and effectiveness of equipment needed for killing of the animals
- The facilities available on the premises that will assist with the killing
- Biosecurity issues
- The health and safety of personnel conducting the killing
- Any legal issues that may be involved, for example where restricted veterinary drugs or poisons may be used, or where the process may impact on the environment, and
- The presence of other nearby premises holding animals.

In designing a killing plan, it is essential that the method chosen be consistently reliable to ensure that all animals are humanely and quickly killed.

Appendix XXVI (contd)

Appendix G (contd)

Appendix III (contd)

Article 5

Table summarising killing methods*

Species	Age range	Procedure	Restraint necessary	Animal welfare concerns with inappropriate application	Article reference
Cattle	all	free bullet	no	non-lethal wounding	
	all except neonates	captive bolt - penetrating, followed by pithing or bleeding	yes	ineffective stunning	
	adults only	captive bolt - non-penetrating, followed by bleeding	yes	ineffective stunning, regaining of consciousness before killing	
	calves only	electrical, two stage application	yes	pain associated with cardiac arrest after ineffective stunning	
	calves only	electrical, single application (method 1)	yes	ineffective stunning	
	all	injection with barbiturates and others	yes	non-lethal dose, pain associated with injection site	
Sheep and goats	all	free bullet	no	non-lethal wounding	
	all except neonates	captive bolt - penetrating, followed by pithing or bleeding	yes	ineffective stunning, regaining of consciousness before killing	
	all except neonates	captive bolt - non-penetrating, followed by bleeding	yes	ineffective stunning, regaining of consciousness before killing	
	neonates	captive bolt - non-penetrating	yes	non-lethal wounding	
	all	electrical, two stage application	yes	pain associated with cardiac arrest after ineffective stunning	
	all	electrical, single application (Method 1)	yes	ineffective stunning	
	neonates only	CO ₂ air mixture	yes	slow induction of unconsciousness, aversiveness of induction	
	neonates only	nitrogen/inert gas mixed with CO ₂	yes	slow induction of unconsciousness, aversiveness of induction	
	neonates only	Nitrogen/inert gases	yes	slow induction of unconsciousness,	
	all	injection of barbiturates and others	yes	non-lethal dose, pain associated with injection site	

Appendix XXVI (contd)

Appendix G (contd)

Appendix III (contd)

Table summarising killing methods* (contd)

Species	Age range	Procedure	Restraint necessary	Animal welfare concerns with inappropriate application	Article reference
Pigs	all	free bullet	no	non-lethal wounding	
	all except neonates	captive bolt - penetrating, followed by pithing or bleeding	yes	ineffective stunning,	
	neonates only	captive bolt - non-penetrating	yes	non-lethal wounding	
	All §	electrical, two stage application	yes	pain associated with cardiac arrest after ineffective stunning	
	all	electrical, single application (Method 1)	yes	ineffective stunning	
	neonates only	CO ₂ air mixture	yes	slow induction of unconsciousness, aversiveness of induction	
	neonates only	nitrogen/inert gas mixed with CO ₂	yes	slow induction of unconsciousness, aversiveness of induction	
	neonates only	Nitrogen/inert gases	yes	slow induction of unconsciousness,	
	all	injection with barbiturates and others	yes	non-lethal dose, pain associated with injection site	
Poultry	adults only	captive bolt - non-penetrating	yes	ineffective stunning	
	neonates and eggs only	Maceration	no	non-lethal wounding, non-immediacy;	
	adults only	electrical single application (Method 2)	yes	ineffective stunning	
	adults only	electrical single application, followed by killing (Method 3)	yes	ineffective stunning; regaining of consciousness before killing	
	all	CO ₂ air mixture Method 1 Method 2	yes no	slow induction of unconsciousness, aversiveness of induction	
	all	nitrogen/inert gas mixed with CO ₂	yes	slow induction of unconsciousness, aversiveness of induction	
	all	Nitrogen/inert gases	yes	slow induction of unconsciousness	

Appendix XXVI (contd)

Appendix G (contd)

Appendix III (contd)

Table summarising killing methods* (contd)

Species	Age range	Procedure	Restraint necessary	Animal welfare concerns with inappropriate application	Article reference
Poultry	all	injection of barbiturates and others	yes	non-lethal dose, pain associated with injection site	
	adults only	addition of anaesthetics to feed or water, followed by an appropriate killing method	no	ineffective or slow induction of unconsciousness	

* the methods are described in the order of mechanical, electrical and gaseous, not in an order of desirability from an animal welfare viewpoint

§ the only preclusion against the use of this method for neonates is the design of the stunning tongs that may not facilitate their application across such a small-sized head/body.

Article 6

Free bullet

Introduction

A free bullet is a projectile fired from a shotgun, rifle, handgun or purpose-made humane killer.

The most commonly used firearms for close range use are:

- humane killers (specially manufactured/adapted single-shot weapons)
- shotguns (12, 16, 20, 28 bore and .410)
- rifles (.22 rimfire)
- handguns (various calibres from .32 to .45)

The most commonly used firearms for long range use are:

- rifles (.22, .243, .270 and .308)

A free bullet used from long range should be aimed to penetrate the skull or soft tissue at the top of the neck of the animal, to cause irreversible concussion and death and should only be used by properly trained and licensed marksmen.

Requirements for effective use

- The marksman should take account of human safety in the area in which he/she is operating
- The marksman should ensure that the animal is not moving and in the correct position to enable accurate targeting and the range should be as short as possible (5 –50 cm for a shotgun) but the barrel should not be in contact with the animal's head

Appendix XXVI (contd)

Appendix G (contd)

Appendix III (contd)

Figure 1. The optimum shooting position for cattle is at the intersection of two imaginary lines drawn from the rear of the eyes to the opposite horn buds.



Figure 2. The optimum shooting position for hornless sheep and goats is on the midline, just above the eyes and directing the shot down the line of the spinal chord.



Figure 3. The optimum shooting position for heavily horned sheep and horned goats is behind the poll.



Appendix XXVI (contd)

Appendix G (contd)

Appendix III (contd)

Figure 4. The optimum shooting position for pigs is just above the eyes and directing the shot down the line of the spinal chord.



- The correct cartridge, calibre and type of bullet for the different species age and size should be used. Ideally the ammunition should expand upon impact and dissipate its energy within the cranium
- Shot animals should be checked to ensure the absence of brain stem reflexes

Advantages

- Used properly, it provides a quick and effective method for killing
- It requires minimal or no restraint and can be used to kill from a distance
- It is suitable for killing agitated animals in open spaces

Disadvantages

- Potentially dangerous to humans and other animals in the area
- Potential for non-lethal wounding
- Destruction of brain tissue may preclude diagnosis of some diseases
- Leakage of bodily fluids may present a biosecurity risk
- Legal requirements may preclude or restrict use
- Limited availability of competent personnel

Conclusions

- A suitable method for cattle, sheep and goats, pigs and poultry, including large animals in open spaces

Appendix XXVI (contd)

Appendix G (contd)

Appendix III (contd)

Article 7

Penetrating captive bolt

Introduction

A penetrating captive bolt is fired from a gun powered by either compressed air or a blank cartridge. There is no free projectile.

The captive bolt should be aimed on the skull in a position to penetrate the cortex and mid-brain of the animal. The impact of the bolt on the skull produces unconsciousness. Physical damage to the brain caused by penetration of the bolt may result in death, however pithing or bleeding should be performed as soon as possible after the shot to ensure the death of the animal.

Requirements for effective use

- For cartridge powered and compressed air guns, the bolt velocity and the length of the bolt should be appropriate to the species and type of animal, in accordance with the manufacturer's recommendations
- Captive bolt guns should be frequently cleaned and maintained in good working condition
- More than one gun may be necessary to avoid overheating and a back-up gun should be available in the event of an ineffective shot
- Animals should be restrained; at a minimum they should be penned for cartridge powered guns and in a race for compressed air guns
- The operator should ensure that the animal's head is accessible
- The operator should fire the captive bolt at right angles to the skull in the optimal position (see figures 1, 3 & 4. The optimum shooting position for hornless sheep is on the highest point of the head, on the midline and aim towards the angle of the jaw)
- To ensure the death of the animal, pithing or bleeding should be performed as soon as possible after stunning
- Animals should be monitored continuously after stunning until death to ensure the absence of brain stem reflexes

Advantages

- Mobility of cartridge powered equipment reduces the need to move animals
- Immediate onset of a sustained period of unconsciousness

Disadvantages

- Poor gun maintenance and misfiring, and inaccurate gun positioning and orientation may result in poor animal welfare

Appendix XXVI (contd)

Appendix G (contd)

Appendix III (contd)

- Post stun convulsions may make pithing difficult and hazardous
- Difficult to apply in agitated animals
- Repeated use of a cartridge powered gun may result in over-heating
- Leakage of bodily fluids may present a biosecurity risk
- Destruction of brain tissue may preclude diagnosis of some diseases

Conclusion

A suitable method for cattle, sheep, goats and pigs (except neonates), when followed by pithing.

Article 8

Captive bolt - non-penetrating

Introduction

A non-penetrating captive bolt is fired from a gun powered by either compressed air or a blank cartridge. There is no free projectile.

The gun should be placed on the front of the skull to deliver a percussive blow which produces unconsciousness in cattle (adults only), sheep, goats and pigs, and death in poultry and neonate sheep, goats and pigs. In mammals, bleeding should be performed as soon as possible after the blow to ensure the death of the animal.

Requirements for effective use

- For cartridge powered and compressed air guns, the bolt velocity should be appropriate to the species and type of animal, in accordance with the manufacturer's recommendations
- Captive bolt guns should be frequently cleaned and maintained in good working condition
- More than one gun may be necessary to avoid overheating and a back-up gun should be available in the event of an ineffective shot
- Animals should be restrained; at a minimum mammals should be penned for cartridge powered guns and in a race for compressed air guns; birds should be restrained in cones, shackles, crushes or by hand.
- The operator should ensure that the animal's head is accessible
- The operator should fire the captive bolt at right angles to the skull in the optimal position
- To ensure death in non-neonate mammals, bleeding should be performed as soon as possible after stunning

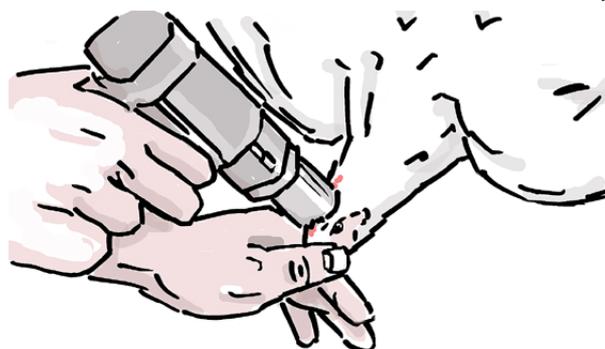


Figure 5. The optimum shooting position for chickens.

Appendix XXVI (contd)Appendix G (contd)Appendix III (contd)

- Animals should be monitored continuously after stunning until death to ensure the absence of brain stem reflexes

Advantages

- Immediate onset of unconsciousness, and death in birds and neonates
- Mobility of equipment reduces the need to move animals

Disadvantages

- As consciousness can be regained quickly in non-neonate mammals, they should be bled as soon as possible after stunning
- Laying hens in cages have to be removed from their cages and most birds have to be restrained
- Poor gun maintenance and misfiring, and inaccurate gun positioning and orientation may result in poor animal welfare
- Post stun convulsions may make bleeding difficult and hazardous
- Difficult to apply in agitated animals
- Repeated use of a cartridge powered gun may result in over-heating
- Bleeding may present a biosecurity risk

Conclusions

- A suitable method for poultry, and neonate sheep, goats and pigs.
- If bleeding does not present a biosecurity issue, this is a suitable method for cattle (adults only), and non-neonate sheep, goats and pigs.

Article 9**Maceration****Introduction**

Maceration, utilising a mechanical apparatus with rotating blades or projections, causes immediate fragmentation and death in neonate poultry and embryonated eggs

Requirements

- Maceration requires specialised equipment which should be kept in excellent working order
- The rate of introducing the birds should not allow the equipment to jam, birds to rebound from the blades or the birds to suffocate before they are macerated

Advantages

- Procedure results in immediate death
- Large numbers can be killed quickly

[Appendix XXVI](#) (contd)

[Appendix G](#) (contd)

[Appendix III](#) (contd)

Disadvantages

- Specialised equipment is required
- Macerated tissues may present a biosecurity issue

Conclusion

A suitable method for killing neonatal poultry and embryonated eggs.

Article 10

Electrical – two stage application

Introduction

A two stage application of electric current comprises firstly an application of current to the head by scissor-type tongs, immediately followed by an application of the tongs across the chest in a position that spans the heart.

The application of sufficient electric current to the head will induce ‘tonic/clonic’ epilepsy and unconsciousness. Once the animal is unconscious, the second stage will induce ventricular fibrillation (cardiac arrest) resulting in death. The second stage (the application of low frequency current across the chest) should only be applied to unconscious animals to prevent unacceptable levels of pain.

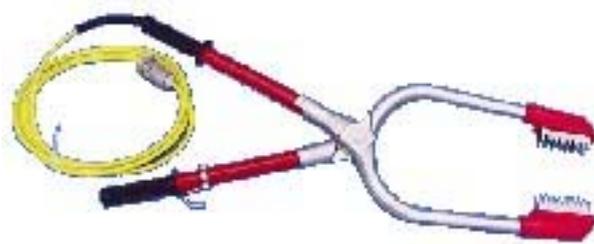


Figure 6. Scissor-type stunning tongs.

Requirements for effective use

- The stunner control device should generate a low frequency (30 – 60 Hz) current with a minimum voltage of 250 volts true RMS under load
- Appropriate protective clothing (including rubber gloves and boots) should be worn
- Animals should be restrained, at a minimum free-standing in a pen, close to an electrical supply
- Two team members are required, the first to apply the electrodes and the second to manipulate the position of the animal to allow the second application to be made
- A stunning current should be applied via scissor-type stunning tongs in a position that spans the brain for a minimum of 3 seconds; immediately following the application to the head, the electrodes should be transferred to a position that spans the heart and the electrodes applied for a minimum of 3 seconds
- Electrodes should be cleaned regularly and after use, to enable optimum electrical contact to be maintained
- Animals should be monitored continuously after stunning until death to ensure the absence of brain stem reflexes

Appendix XXVI (contd)Appendix G (contd)Appendix III (contd)**Advantages**

- The application of the second stage minimises post-stun convulsions and therefore the method is particularly effective with pigs
- Non-invasive technique minimises biosecurity risk

Disadvantages

- Requires a reliable supply of electricity
- The electrodes must be applied and maintained in the correct positions to produce an effective stun and kill
- Most stunner control devices utilise low voltage impedance sensing as an electronic switch prior to the application of high voltages; in unshorn sheep, contact impedance may be too high to switch on the required high voltage (especially during stage two)
- The procedure may be physically demanding, leading to operator fatigue and poor electrode placement

Conclusion

- A suitable method for calves, sheep and goats, and especially for pigs (over one week of age, see table footnote)

Article 11**Electrical – single application****Introduction**

Method 1 comprises the single application of sufficient electrical current to the head and back, to simultaneously stun the animal and fibrillate the heart. Provided sufficient current is applied in a position that spans both the brain and heart, the animal will not recover consciousness.

Method 2 stuns and kills by drawing inverted and shackled poultry through an electrified waterbath stunner. Electrical contact is made between the 'live' water and earthed shackle and, when sufficient current is applied, poultry will be simultaneously stunned and killed.

Method 3 comprises the single application of sufficient electrical current to the head of poultry in a position that spans the brain, causing unconsciousness; this is followed by a killing method (Article 17).

Method 1**Requirements for effective use**

- The stunner control device should generate a low frequency (30 – 60 Hz) current with a minimum voltage of 250 volts true RMS under load
- Appropriate protective clothing (including rubber gloves and boots) should be worn

Appendix XXVI (contd)

Appendix G (contd)

Appendix III (contd)

- Animals should be individually and mechanically restrained close to an electrical supply as the maintenance of physical contact between the stunning electrodes and the animal is necessary for effective use
- The rear electrode should be applied to the back, above or behind the heart, and then the front electrode in a position that is forward of the eyes, with current applied for a minimum of 3 seconds
- Electrodes should be cleaned regularly between animals and after use, to enable optimum electrical contact to be maintained
- Water or saline may be necessary to improve electrical contact with sheep
- An effective stun and kill should be verified by the absence of brain stem reflexes

Advantages

- Stuns and kills simultaneously
- Minimises post-stun convulsions and therefore is particularly effective with pigs
- A single team member only is required for the application
- Non-invasive technique minimises biosecurity risk

Disadvantages

- Requires individual mechanical animal restraint
- The electrodes must be applied and maintained in the correct positions to produce an effective stun and kill
- Requires a reliable supply of electricity

Conclusions

- A suitable method for calves, sheep, goats, and pigs (over 1 week of age)

Method 2

Requirements for effective use

- A mobile waterbath stunner and a short loop of processing line are required
- A low frequency (30-60 Hz) current applied for a minimum of 3 seconds is necessary to stun and kill the birds
- Poultry need to be manually removed from their cage, house or yard, inverted and shackled onto a line which conveys them through a waterbath stunner with their heads fully immersed
- Required minimum currents to stun and kill dry birds are:
 - Quail - 100 mA/bird
 - Chickens – 160 mA/bird
 - Ducks & Geese – 200 mA/bird
 - Turkeys – 250 mA/bird

Appendix XXVI (contd)Appendix G (contd)Appendix III (contd)

A higher current is required for wet birds

- An effective stun and kill should be verified by the absence of brain stem reflexes

Advantages

- Stuns and kills simultaneously
- Capable of processing large numbers of birds reliably and effectively
- Non-invasive technique minimises biosecurity risk

Disadvantages

- Requires a reliable supply of electricity
- Handling, inversion and shackling of birds are required

Conclusion

A suitable method for large numbers of poultry.

Method 3**Requirements for effective use**

- The stunner control device should generate sufficient current (more than 300 mA/bird) to stun
- Appropriate protective clothing (including rubber gloves and boots) should be worn
- Birds should be restrained, at a minimum manually, close to an electrical supply
- A stunning current should be applied in a position that spans the brain for a minimum of 3 seconds; immediately following this application, the birds should be killed (Article 17)
- Electrodes should be cleaned regularly and after use, to enable optimum electrical contact to be maintained
- Birds should be monitored continuously after stunning until death to ensure the absence of brain stem reflexes

Advantages

- Non-invasive technique (when combined with neck dislocation) minimises biosecurity risk

Disadvantages

- Requires a reliable supply of electricity
- The electrodes must be applied and maintained in the correct position to produce an effective stun

Appendix XXVI (contd)

Appendix G (contd)

Appendix III (contd)

Conclusion

Suitable for small numbers of birds

Article 12

CO₂ / air mixture

Introduction

Controlled atmosphere killing is performed by exposing animals to a predetermined gas mixture, either by placing them in a gas-filled container or apparatus (Method 1) or by the gas being introduced into a poultry house (Method 2).

Inhalation of carbon dioxide (CO₂) induces respiratory and metabolic acidosis and hence reduces the pH of cerebrospinal fluid (CSF) and neurones thereby causing unconsciousness and, after prolonged exposure, death.

Method 1

Requirements for effective use in a container or apparatus

- Containers or apparatus should allow the required gas concentration to be maintained and accurately measured
- When animals are exposed to the gas individually or in small groups in a container or apparatus, the equipment used should be designed, constructed, and maintained in such a way as to avoid injury to the animals and allow them to be observed
- Animals should be introduced into the container or apparatus after it has been filled with the required CO₂ concentration, and held in this atmosphere until death is confirmed
- Team members should ensure that there is sufficient time allowed for each batch of animals to die before subsequent ones are introduced into the container or apparatus
- Containers or apparatus should not be overcrowded and measures are needed to avoid animals suffocating by climbing on top of each other

Advantages

- CO₂ is readily available
- Application methods are simple

Disadvantages

- The need for special equipment
- The aversive nature of high CO₂ concentrations
- No immediate loss of consciousness
- The risk of suffocation due to overcrowding

Appendix XXVI (contd)Appendix G (contd)Appendix III (contd)

- Difficulty in verifying death while the animals are in the container or apparatus.

Conclusion

Suitable for use in poultry and neonatal sheep, goats and pigs

Method 2**Requirements for effective use in a poultry house**

- Prior to introduction of the CO₂, the poultry house should be appropriately sealed to allow control over the gas concentration
- The house should be gradually filled with CO₂ so that all birds are exposed to a concentration of >40% until they are dead; a vaporiser may be required to prevent freezing
- Devices should be used to accurately measure the gas concentration at the highest level of birds

Advantages

- Applying gas to birds *in situ* eliminates the need to manually remove live birds
- CO₂ is readily available
- Gradual raising of CO₂ concentration minimises the aversiveness of the induction of unconsciousness

Disadvantages

- Difficulty in determining volume of gas required to achieve adequate concentrations of CO₂ in some poultry houses
- Difficulty in verifying death while the birds are in the poultry house.

Conclusion

Suitable for use in poultry in closed-environment sheds

Article 13**Nitrogen/inert gas mixed with CO₂****Introduction**

CO₂ may be mixed in various proportions with nitrogen or an inert gas eg argon, and the inhalation of such mixtures leads to hypercapnic-hypoxia and death when the oxygen concentration by volume is $\leq 2\%$. This method involves the introduction of animals into a container or apparatus containing the gases. Such mixtures do not induce immediate loss of consciousness, therefore the aversiveness of various gas mixtures containing high concentrations of CO₂ and the respiratory distress occurring during the induction phase, are important animal welfare considerations.

Appendix XXVI (contd)

Appendix G (contd)

Appendix III (contd)

Pigs and poultry appear not to find low concentrations of CO₂ strongly aversive, and a mixture of nitrogen or argon with ≤30% CO₂ by volume and ≤2% O₂ by volume can be used for killing poultry and neonatal sheep, goats and pigs.

Requirements for effective use

- Containers or apparatus should allow the required gas concentrations to be maintained, and the O₂ and CO₂ concentrations accurately measured
- When animals are exposed to the gases individually or in small groups in a container or apparatus, the equipment used should be designed, constructed, and maintained in such a way as to avoid injury to the animals and allow them to be observed
- Animals should be introduced into the container or apparatus after it has been filled with the required gas concentrations (with ≤2% O₂), and held in this atmosphere until death is confirmed
- Team members should ensure that there is sufficient time allowed for each batch of animals to die before subsequent ones are introduced into the container or apparatus
- Containers or apparatus should not be overcrowded and measures are needed to avoid animals suffocating by climbing on top of each other

Advantages

- Low concentrations of CO₂ cause little aversiveness and, in combination with nitrogen or an inert gas, produces a fast induction of unconsciousness

Disadvantages

- Need for a properly designed container or apparatus
- Difficulty in verifying death while the animals are in the container or apparatus
- No immediate loss of consciousness
- Exposure times required to kill are considerable

Conclusion

A suitable method for poultry and neonatal sheep, goats and pigs.

Article 14

Nitrogen and/or inert gasses

Introduction

This method involves the introduction of animals into a container or apparatus containing nitrogen or an inert gas such as argon. The controlled atmosphere produced leads to unconsciousness and death from hypoxia.

Research has shown that hypoxia is not aversive to pigs and poultry, as it doesn't induce any signs of respiratory distress prior to loss of consciousness.

Appendix XXVI (contd)Appendix G (contd)Appendix III (contd)**Requirements for effective use**

- Containers or apparatus should allow the required gas concentrations to be maintained, and the O₂ concentration accurately measured
- When animals are exposed to the gases individually or in small groups in a container or apparatus, the equipment used should be designed, constructed, and maintained in such a way as to avoid injury to the animals and allow them to be observed
- Animals should be introduced into the container or apparatus after it has been filled with the required gas concentrations (with $\leq 2\%$ O₂), and held in this atmosphere until death is confirmed
- Team members should ensure that there is sufficient time allowed for each batch of animals to die before subsequent ones are introduced into the container or apparatus
- Containers or apparatus should not be overcrowded and measures are needed to avoid animals suffocating by climbing on top of each other

Advantages

- Animals are unable to detect nitrogen or inert gases, and the induction of hypoxia by this method is not aversive to animals

Disadvantages

- Need for a properly designed container or apparatus
- Difficulty in verifying death while the animals are in the container or apparatus
- No immediate loss of consciousness
- Exposure times required to kill are considerable

Conclusion

A suitable method for poultry and neonatal sheep, goats and pigs.

Article 15**Lethal injection****Introduction**

A lethal injection using high doses of anaesthetic and sedative drugs causes CNS depression, unconsciousness and death. In practice, barbiturates in combination with other drugs are commonly used.

Requirements for effective use

- Doses and routes of administration that cause rapid loss of consciousness followed by death should be used.

Appendix XXVI (contd)

Appendix G (contd)

Appendix III (contd)

- Prior sedation may be necessary for some animals
- Intravenous administration is preferred, but intraperitoneal or intramuscular administration may be appropriate, especially if the agent is non-irritating
- Animals should be restrained to allow effective administration
- Animals should be monitored to ensure the absence of brain stem reflexes

Advantages

- The method can be used in all species
- Death can be induced smoothly

Disadvantages

- Restraint and/or sedation may be necessary prior to injection
- Some combinations of drug type and route of administration may be painful, and should only be used in unconscious animals
- Legal requirements may restrict use to veterinarians

Conclusion

A suitable method for killing small numbers of cattle, sheep, goats, pigs and poultry

Article 16

Addition of anaesthetics to feed or water

Introduction

An anaesthetic agent which can be mixed with poultry feed or water may be used to kill poultry in houses. Poultry which are only anaesthetised need to be killed by another method such as cervical dislocation

Requirements for effective use

- Sufficient quantities of anaesthetic need to be ingested rapidly for effective response
- Intake of sufficient quantities is facilitated if the birds are fasted or water is withheld
- Must be followed by killing (Article 17) if birds are anaesthetised only

Advantages

- Handling is not required until birds are anaesthetised
- May be biosecurity advantages in the case of large numbers of diseased birds

Disadvantages

- Non-target animals may accidentally access the medicated feed or water when provided in an open environment

Appendix XXVI (contd)

Appendix G (contd)

Appendix III (contd)

- Dose taken is unable to be regulated and variable results may be obtained
- Animals may reject adulterated feed or water due to illness or adverse flavour
- May need to be followed by killing
- Care is essential in the preparation and provision of treated feed or water, and in the disposal of uneaten treated feed/water and contaminated carcasses

Conclusion

A suitable method for killing large numbers of poultry in houses.

Article 17

Killing methods in unconscious animals

Method 1 Cervical dislocation (manual and mechanical)

Introduction

Poultry may be killed by either manual cervical dislocation (stretching) or mechanical neck crushing with a pair of pliers. Both methods result in death from asphyxiation and/or cerebral anoxia.

Requirements for effective use

- Killing should be performed either by manually or mechanically stretching the neck to sever the spinal cord or by using mechanical pliers to crush the cervical vertebrae with consequent major damage to the spinal cord
- Consistent results require strength and skill so team members should be rested regularly to ensure consistently reliable results
- Birds should be monitored continuously until death to ensure the absence of brain stem reflexes

Advantages

- It is a non-invasive killing method
- Can be performed manually on small birds.

Disadvantages

- Operator fatigue
- The method is more difficult in larger birds

Conclusion

This method is suitable for killing unconscious poultry.

Appendix XXVI (contd)

Appendix G (contd)

Appendix III (contd)

Method 2 Decapitation

Introduction

Decapitation results in death by cerebral ischaemia using a guillotine or knife.

Requirements for effective use

- The required equipment should be kept in good working order

Advantages

- The technique is effective and does not require monitoring

Disadvantages

- Contamination of the working area with body fluids

Conclusion

This method is suitable for killing unconscious poultry.

Method 3 Pithing

Introduction

Pithing is a method of killing animals which have been stunned by a penetrating captive bolt. Pithing results in the physical destruction of the brain and upper regions of the spinal cord, through the insertion of a rod or cane through the bolt hole.

Requirements for effective use

- Pithing cane or rod
- Access to the head of the animal and to the brain through the skull
- Animals should be monitored continuously until death to ensure the absence of brain stem reflexes

Advantages

- The technique is effective in producing immediate death

Disadvantages

- Delayed and/or ineffective pithing due to convulsions
- Contamination of the working area with body fluids

Conclusion

This method is suitable for killing unconscious animals which have been stunned by a penetrating captive bolt.

Appendix XXVI (contd)

Appendix G (contd)

Appendix III (contd)

Method 4 Bleeding

Introduction

Bleeding is a method of killing animals through the severance of the major blood vessels in the neck or chest that results in a rapid fall in blood pressure, leading to cerebral ischaemia and death.

Requirements for effective use

- Sharp knife
- Access to the neck or chest of the animal
- Animals should be monitored continuously until death to ensure the absence of brain stem reflexes

Advantages

- The technique is effective in producing death after an effective stunning method which does not permit pithing

Disadvantages

- Delayed and/or ineffective bleeding due to convulsions
- Contamination of the working area with body fluids

Conclusion

This method is suitable for killing unconscious animals.

Animal Welfare Working Group 2004 work programme

	Decisions of Working Group	Implementation	Status at December 2004
Guiding principles	To be submitted for adoption by International Committee	To revise text on 'scientific basis for guidelines' by end April (Fraser)	adopted
Development of guidelines	Priorities identified <ol style="list-style-type: none"> 1. Transport by land (including by rail) 2. Transport by sea 3. Humane slaughter for human consumption 4. Killing for disease control 5. Aquaculture animal welfare 6. Transport by air 	second meeting held in September second meeting held in September second meeting held in October second meeting held in November Terms of reference prepared: Liaison with IATA to continue;	draft standards on four priority issues proposed for adoption transport and slaughter AHGs to meet in 2005 OIE attended IATA LAB meeting; pre- and post-flight issues to be addressed
Expertise database	Identification of possible expertise (centres of expertise and individual experts)	Continuing (all)	expertise database to be posted onto OIE Web site
Presentation at OIE General Session	Chair of Working Group to present paper and respond to questions from Member Country delegates	May 2004 (Bayvel)	delivered
Improved animal welfare awareness	Coordinate with WVA / CVA activities	Continuing (Rahman)	animal welfare to be on agenda of all CVA regional meetings
Inclusion of AW in veterinary curricula and CPD	Encourage uptake of WSPA Concepts programme	Continuing (Rahman)	initiated in Asia (India)

Appendix XXVI (contd)

Appendix H (contd)

Animal Welfare Working Group 2004 work programme (contd)

	Decisions of Working Group	Implementation	Status at December 2004
Collaboration among academic and research institutions re animal welfare research	to contact ISAE (International Society for Applied Ethology) and ISAH (International Society for Animal Hygiene) re collaboration	continuing (Fraser) (Gavinelli)	no action
Communications plan	<p>Working Group members to take up opportunities for publishing information articles in appropriate journals, Web pages and newsletters</p> <p>Working Group members to utilise OIE Regional conferences, and other relevant conferences</p> <p>OIE to develop animal welfare CD-ROM for Working Group members and Delegate use</p> <p>OIE and the WTO to draft a document clarifying the international legal issues associated with animal welfare and international trade</p> <p>To liaise with CIWF re March 2005 conference re speaker opportunity</p> <p>To liaise with governments and international organisations re animal welfare topics at upcoming conferences:</p> <ul style="list-style-type: none"> - Netherlands conference, December 2004 - WVA conference, July 2005 <p>Working Group members to provide stakeholder information for use by OIE</p>	<p>continuing (All)</p> <p>continuing (All)</p> <p>end 2004 (Maria Zampaglione)</p> <p>end April (Thiermann)</p> <p>(Bayvel)</p> <p>Continuing (All)</p> <p>(Gavinelli)(Bayvel)</p> <p>(All)</p>	<p>many examples</p> <p>CVA Australasian/Oceania conference in PNG; OIE Regional Conferences in Spain and Panama; many other examples supplanted by OIE Web site</p> <p>to be completed</p> <p>Bayvel speaking; OIE attending</p> <p>completed</p>
OIE <i>Revue Scientifique et Technique</i>	Request to coordinate mid-2005 edition on animal welfare	(Bayvel, Rahman, Gavinelli)	proceeding on schedule
Membership	Member drawn from animal industries with an interest in animal transport, production and slaughter.	Director General to write to relevant international organisations	correspondence with IFAP, IDF and IMS; IFAP attended December meeting as observer

Appendix XXVI (contd)

Appendix H (contd)

Animal Welfare Working Group 2005 work programme

	Decisions of Working Group	Implementation	Status at December 2005
Further work on adopted standards	land transport sea transport slaughter for human consumption	Review outcomes of General Session regarding future meetings of <i>ad hoc</i> groups Address outstanding species specific issues	
Aquatic animal welfare standards	Proceed initially on development of standards for transportation and killing/slaughter, to be followed by production standards	AHG's to meet in first half 2005, under chairmanship of Prof Hastein	
Expertise database	Identification of possible expertise (centres of expertise and individual experts)	Continuing (all)	
Presentation at OIE General Session	Chair of Working Group to present paper and respond to questions from Member Country delegates	May 2005 (Bayvel)	
Improved animal welfare awareness within veterinary profession	Coordinate with WVA / CVA activities OIE Collaborating Centre at Teramo	Continuing (Rahman) discuss role of Centre and relationship with WG (Gavinelli/ Wilson)	
Inclusion of animal welfare in veterinary curricula and CPD	Encourage uptake of WSPA Concepts programme	Continuing (Rahman/Wilkins)	
Communications plan	Working Group members to take up opportunities for publishing information articles in appropriate journals, Web pages and newsletters Working Group members to utilise OIE Regional conferences, and other relevant conferences OIE and the WTO to draft a document clarifying the international legal issues associated with animal welfare and international trade	Continuing (All) Continuing (All) (Thiermann)	

Appendix XXVI (contd)

Appendix H (contd)

Animal Welfare Working Group 2005 work programme

	Decisions of Working Group	Implementation	Status at December 2005
Communications plan	To liaise with governments and international organisations re animal welfare topics at upcoming conferences:	Continuing (All)	
OIE <i>Revue Scientifique et Technique</i>	Request to coordinate mid-2005 edition on animal welfare	(Bayvel, Rahman, Gavinelli)	Proceeding on schedule
Membership	Member drawn from animal industries with an interest in animal transport, production and slaughter.		
Coordination with other international organisations	FAO IDF/IMS IFAP AATA/IATA/WAZA	Director General to continue to discuss membership with relevant international organisations eg IDF/IMS/IFAP Director General to discuss continuing collaboration with FAO coordination on transport standards	
Education	animal welfare in the veterinary curriculum content/facilities personnel capacity building		
Development of new standards	companion animal welfare - urban animal control	Collaborating Centre to review existing information (Rahman/Aidaros/Wilkins)	
	wildlife and zoo animal welfare harvesting/culling	Collaborating Centre to review existing information (Masiga/Wilkins/Rahman)	
	laboratory animal welfare housing animals used in regulation and diagnostic testing (including on vaccines) alternatives to animal use	Collaborating Centre to review existing information (Bayvel)	
	terrestrial animal welfare – housing/production generic housing systems	Collaborating Centre to review existing information (Fraser/Aidaros)	

Appendix XXVI (contd)

Appendix I

GUIDELINES FOR THE SLAUGHTER OF ANIMALS FOR HUMAN CONSUMPTION

See Appendix XXII of this report.

GUIDELINES FOR THE SLAUGHTER OF ANIMALS FOR HUMAN CONSUMPTION

The ad hoc group approached its work by assessing the animal welfare concerns associated with every procedure during the pre-slaughter and slaughter processes, reviewing them on the basis of the available scientific data, independent of any religious or cultural context. Once those animal welfare concerns were qualified, the ad hoc group considered the specific issues associated with slaughter without stunning, such as the necessary restraint, the pain likely to be associated with the cut (for which it noted that there were no definitive data) and distress prior to unconsciousness (using available data to estimate the length of this period).

The ad hoc group acknowledged the significance of religious requirements, cultural and ethnic factors associated with some forms of slaughter. The ad hoc group felt it important that these should not be treated as exempt from these guidelines, which are intended to provide a framework within which variations to certain steps in the process may be practised to improve animal welfare.

The ad hoc group believed that methods of lairaging, and the moving and restraining of animals prior to and during religious slaughter are separate issues from religious slaughter requirements; with regard to restraint, there is a wide variation in methods, ranging from those with acceptable animal welfare to some which are totally unacceptable under any slaughter method. The ad hoc group also contended that some distressful and painful methods applied to conscious animals such as shackling and hoisting by the hind leg(s) or dragging by the leg(s) are not part of any religious requirements, are unacceptable in all circumstances, and should be phased out.

Article 1

General principles for slaughter

These guidelines address the need to ensure the welfare of food animals during pre-slaughter and slaughter processes, until they are dead.

These guidelines apply to those domestic animals commonly slaughtered in slaughterhouses, that is: cattle, buffalo, sheep, goats, deer, horses, pigs, ratites and poultry. Other animals, wherever they have been reared, should be managed to ensure that their transport, lairaging, restraint and slaughter is carried out without causing undue stress to the animals; the principles underpinning these guidelines apply also to these animals.

Personnel

Persons engaged in the unloading, moving, lairaging, care, restraining, stunning, slaughter and bleeding of animals play an important role in the welfare of those animals. For this reason, there should be a sufficient number of personnel, who should be patient, considerate, competent and familiar with the guidelines in this document and their application within the national context

The management of the slaughterhouse and the *Veterinary Services* should ensure that slaughterhouse staff carry out their tasks in accordance with the principles of animal welfare.

Animal behaviour

Animal handlers should be experienced and competent in handling and moving farm livestock, and understand the behaviour patterns of animals and the underlying principles necessary to carry out their tasks.

The behaviour of individual animals or groups of animals will vary, depending on their breed, sex, temperament and age and the way in which they have been reared and handled. Despite these differences, the following behaviour patterns which are always present to some degree in domestic animals, should be taken into consideration in handling and moving the animals.

Appendix XXII (contd)

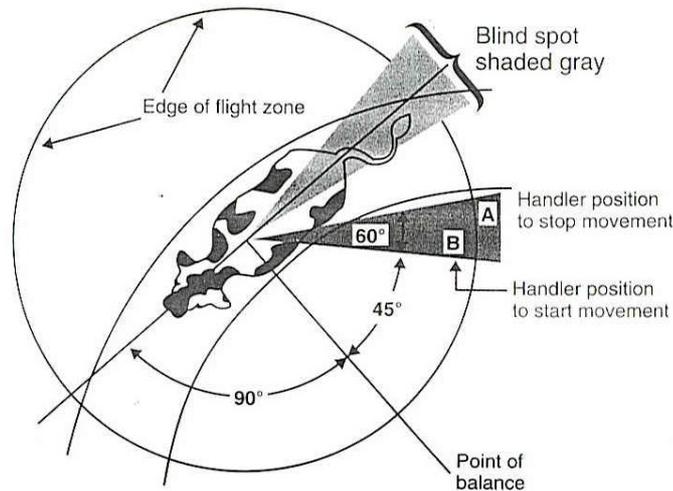
Most domestic livestock are kept in herds and follow a leader by instinct.

Animals which are likely to be hostile to each other in a group situation should not be mixed at slaughterhouses.

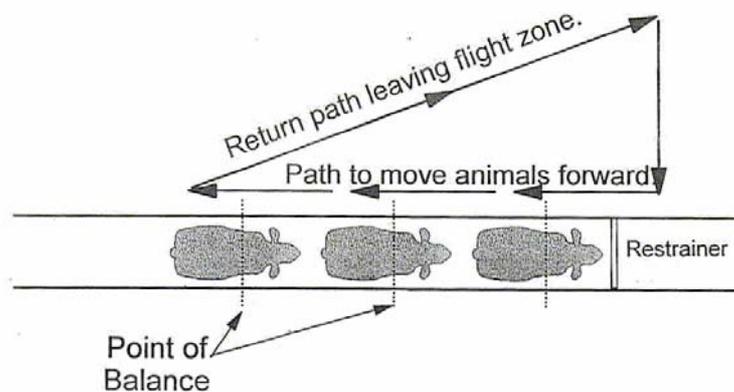
The desire of some animals to control their personal space should be taken into account in designing facilities.

Domestic animals will try to escape if an animal handler approaches closer than a certain distance. This critical distance, which defines the flight zone, varies among species and individuals of the same species, and depends upon previous contact with humans. Animals reared in close proximity to humans i.e. tame have no flight zone, whereas those kept in free range or extensive systems may have flight zones which may vary from one metre to many metres. Animal handlers should avoid sudden penetration of the flight zone which may cause a panic reaction which could lead to aggression or attempted escape.

An example of a flight zone (cattle)



Handler movement pattern to move cattle forward



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

Domestic animals have wide-angle vision but only have limited forward binocular vision and poor perception of depth. This means that they can detect objects and movements beside and behind them, but can only judge distances directly ahead.

Although all domestic animals have a highly sensitive sense of smell, they react in different ways to the smells of slaughterhouses. Smells which cause fear or other negative responses should be taken into consideration when managing animals.

Appendix XXII (contd)

Domestic animals can hear over a greater range of frequencies than humans and are more sensitive to higher frequencies. They tend to be alarmed by constant loud noise and by sudden noises, which may cause them to panic.

Distractions and their removal

Distractions that may cause approaching animals to stop, baulk or turn back should be designed out from new facilities or removed from existing ones. Below are examples of common distractions and methods for eliminating them:

- Reflections on shiny metal or wet floors - move a lamp or change lighting.
- Dark entrances to chutes, races, stun boxes or conveyor restrainers - illuminate with indirect lighting which does not shine directly into the eyes of approaching animals.
- Animals seeing moving people or equipment up ahead - install solid sides on chutes and races or install shields.
- Chains or other loose objects hanging in chutes or on fences - remove them.
- Uneven floors or a sudden drop in floor levels at the entrance to conveyor restrainers – avoid uneven floor surfaces or install a solid false floor under the restrainer to provide an illusion of a solid and continuous walking surface.
- Sounds of air hissing from pneumatic equipment - install silencers or use hydraulic equipment.
- Clanging and banging of metal objects - install rubber stops on gates and other devices to reduce metal to metal contact.
- Air currents from fans or air curtains blowing into the face of animals - redirect or reposition equipment.

Article 2**Moving and handling animals**

The following principles should apply to unloading animals, moving them into lairage pens, out of the lairage pens and up to the slaughter point:

- The conditions of the animals should be assessed upon their arrival for any animal welfare problems.
- Injured or sick animals, requiring immediate slaughter, should be killed humanely at the site where they are found.
- The use of force on animals that have little or no room to move should not occur.
- The use of instruments which administer electric shocks (e.g. goads and prods) and their power output should be restricted to that necessary to assist movement of the animals. If such use is necessary, it should be limited to the hindquarters of pigs and large ruminants, and never on sensitive areas such as the eyes, mouth, ears, anogenital region or belly. Such instruments should not be used on horses, sheep and goats of any age, or on calves or piglets, nor on animals that have little or no room to move.
- Performance standards should be established in which numerical scoring is used to evaluate the use of such instruments and to measure the percentage of animals moved with an electric instrument. In properly designed and constructed facilities with competent animal handlers, it should be possible to move 75% or more of the animals without the use of electric instruments.

Appendix XXII (contd)

- Useful and permitted aids for moving animals include panels, flags, plastic paddles, flappers (a length of cane with a short strap of leather or canvas attached), plastic bags and metallic rattles; they should be used in a manner sufficient to encourage and direct movement of the animals but without physical contact with them.
- Shouting or yelling at animals to encourage them to move should not occur as such actions may make the animals agitated, leading to crowding or falling.
- Implements which cause pain and suffering such as large sticks, sticks with sharp ends, metal piping, fencing wire or heavy leather belts should not be used to move animals.
- Animals should be grasped or lifted in a manner which avoids pain or suffering and physical damage (e.g. bruising, fractures, dislocations). In the case of quadrupeds, manual lifting by a person should only be used in young animals or small species, and in a manner appropriate to the species; grasping or lifting such animals only by their wool, hair, feet, neck, ears or tails causing pain or suffering should not be permitted, except in an emergency where animal welfare or human safety may otherwise be compromised.
- Conscious animals should not be thrown or dragged.
- Animals should not be forced to move at a speed greater than their normal walking pace, in order to minimise injury through falling or slipping. Performance standards should be established where numerical scoring of the prevalence of animals slipping or falling is used to evaluate whether animal moving practices and/or facilities should be improved. In properly designed and constructed facilities with competent animal handlers, it should be possible to move 99% of animals without their falling.
- Animal handlers should not force an animal to walk over the top of other animals.
- Under no circumstances should animal handlers resort to violent acts to move animals, such as crushing or breaking animals' tails, grasping animals' eyes or pulling them by their ears. Animal handlers should never apply an injurious object or irritant substance to sensitive areas such as eyes, mouth, ears, anogenital region or belly.

Requirements for animals delivered in containers

- Containers in which animals are transported should be handled with care, and should not be thrown, dropped or knocked over. Where possible, they should be loaded and unloaded horizontally and mechanically.
- Animals delivered in containers with perforated or flexible bottoms should be unloaded with particular care in order to avoid injury. Where appropriate, animals should be unloaded from the containers individually.
- Animals which have been transported in containers should be slaughtered as soon as possible; mammals and ratites which are not taken directly upon arrival to the place of slaughter should have drinking water available to them from appropriate facilities at all times. Delivery of poultry for slaughter should be scheduled such that they are not deprived of water at the premises for longer than 12 hours. Animals which have not been slaughtered within 12 hours of their arrival should be fed, and should subsequently be given moderate amounts of food at appropriate intervals.

Appendix XXII (contd)**Provision relevant to restraining and containing animals**

Provisions relevant to restraining animals for stunning or slaughter without stunning, to help maintain animal welfare include:

- Provision of a non-slip floor
- Avoidance of excessive pressure applied by restraining equipment that causes struggling or vocalisation in animals
- Equipment engineered to reduce noise of air hissing and clanging metal
- Absence of sharp edges in restraining equipment that would harm animals
- Avoidance of jerking or sudden movement of restraining device

Methods of restraint causing avoidable suffering, such as the following, should not be used in conscious animals because they cause severe pain and stress:

- suspending or hoisting animals (other than poultry) by the feet or legs
- indiscriminate and inappropriate use of stunning equipment
- mechanical clamping of an animal's legs or feet (other than shackles used in poultry and ostriches) as the sole method of restraint
- breaking legs, cutting leg tendons or blinding animals in order to immobilise them
- severing the spinal cord, for example using a puntilla or dagger, to immobilise animals
- using electric currents to immobilise animals, except for proper stunning.

Article 3**Lairage design and construction**

The lairage should be designed and constructed to hold an appropriate number of animals in relation to the throughput rate of the slaughterhouse without compromising the welfare of the animals.

In order to permit operations to be conducted as smoothly and efficiently as possible without injury or undue stress to the animals, the lairage areas should be designed and constructed so as to allow the animals to move freely in the required direction, using their behavioural characteristics and without undue penetration of their flight zone.

The following guidelines may help to achieve this.

Design

- The lairage should be designed to allow a one-way flow of animals from unloading to the point of slaughter, with a minimum of abrupt corners to negotiate.
- In red meat slaughterhouses, pens, passageways and races should be arranged in such a way as to permit inspection of animals at any time, and to permit the removal of sick or injured animals when considered to be appropriate, for which separate appropriate accommodation should be provided.

Appendix XXII (contd)

- Each animal should have room to stand up and lie down and, when confined in a pen, to turn around. The lairage should have sufficient accommodation for the number of animals intended to be held. Drinking water should always be available to the animals, and the method of delivery should be appropriate to the type of animal held. Troughs should be designed and installed in such a way as to minimise the risk of fouling by faeces, without introducing risk of bruising and injury in animals, and should not hinder the movement of animals.
- Holding pens should be rectangular rather than square, to allow as many animals as possible to stand or lie down against a wall. Where feed troughs are provided, they should be sufficient in number and feeding space to allow adequate access of all animals to feed. The feed trough should not hinder the movement of animals.
- Where tethers, ties or individual stalls are used, these should be designed so as not to cause injury or distress especially when the animals are lying down, standing up, drinking and feeding.
- Passageways and races should be either straight or slightly curved, as appropriate to the animal species. Passageways and races should have solid sides, but when there is a double race the shared partition should allow adjacent animals to see each other. For pigs and sheep, passageways should be wide enough to enable two or more animals to walk side by side for as long as possible. At the point where passageways are reduced in width, this should be done by a means which prevents excessive bunching of the animals.
- Animal handlers should be positioned alongside races and passageways on the inside radius of any curve, to take advantage of the natural tendency of animals to circle an intruder. Where one-way gates are used, they should be of a design which avoids bruising. Races should be horizontal but where there is a slope, they should be constructed to allow the free movement of animals without injury.
- There should be a waiting pen, with a level floor and solid sides, between the holding pens and the race leading to the point of stunning or slaughter, to ensure a steady supply of animals for stunning or slaughter and to avoid having animal handlers trying to rush animals from the holding pens. The waiting pen should preferably be circular, but in any case, so designed that animals cannot be trapped or trampled.
- Ramps or lifts should be used for loading and unloading of animals where there is a difference in height or a gap between the floor of the vehicle and the unloading area. The ramp should be well drained, non-slippery and adjustable to facilitate easy movement of animals without causing distress or injury.

Construction

- Lairages should be constructed and maintained so as to provide protection from unfavourable climatic conditions, using strong and resistant materials such as concrete and metal which has been treated to prevent corrosion. Surfaces should be easy to clean. There should be no sharp edges or protuberances which may injure the animals.
- Floors should be well drained and not slippery; they should not cause injury to the animals' feet. Where necessary floors should be insulated or provided with appropriate bedding. Drainage grids should be placed at the sides of pens and passageways and not where animals would have to cross them. Discontinuities or changes in floor patterns or texture which could cause baulking in the movement of animals should be avoided.

Appendix XXII (contd)

- Lairages should be provided with adequate lighting, but care should be taken to avoid harsh lights and shadows, which frighten the animals or affect their movement. The fact that animals will move more readily from a darker area into a well-lit area might be exploited by providing for lighting that can be regulated accordingly.
- Lairages should be well ventilated, and the air flow should be arranged so that odours and draughts do not adversely affect the health and welfare of the animals.
- Care should be taken to protect the animals from excessively or potentially disturbing noises, for example by avoiding the use of noisy hydraulic or pneumatic equipment, and muffling noisy metal equipment by the use of suitable padding, or by minimising the transmission of such noise to the areas where animals are held and slaughtered.
- Where animals are kept in outdoor lairages without natural shelter or shade, they should be protected from the effects of adverse weather conditions.

Article 4**Care in lairages**

Animals in lairages should be cared for in accordance with the following guidelines:

- As far as possible established groups of animals should be kept together. Each animal should have enough space to stand up, lie down and turn around. Animals hostile to each other should be separated.
- Where tethers, ties or individual stalls are used they should allow animals to stand up and lie down without causing injury or distress.
- Where bedding is provided, it should be maintained in a condition that minimises risks to the health and safety of the animals, and sufficient should be used so that animals do not become soiled with manure.
- Animals should be kept securely in the lairage and care should be taken to prevent them from escaping and from predators.
- Suitable drinking water should be available to the animals on their arrival and at all times to animals in lairages unless they are to be slaughtered without delay.
- If animals are not to be slaughtered as soon as possible, suitable feed should be available to the animals on arrival and at intervals appropriate to the species. Unweaned animals should be slaughtered as soon as possible.
- In order to prevent heat stress, animals subjected to high temperatures, particularly pigs and poultry, should be cooled by the use of water sprays, fans or other suitable means.
- That lairage area should be well lit in order to enable the animals to see clearly without being dazzled. During the night, the lights should be dimmed.
- The condition and state of health of the animals in a lairage should be inspected at least every morning and evening by a veterinarian or, under the latter's responsibility, by another competent person. Animals which are sick, weak, injured or showing visible signs of distress should be treated or killed immediately.
- Lactating dairy animals should be slaughtered as soon as possible. Dairy animals with obvious udder distension should be milked to minimise udder discomfort.

Appendix XXII (contd)

- Pregnant animals giving birth during the journey or in the lairage should be slaughtered as soon as possible or provided with conditions which are appropriate for suckling and the welfare of the newborn.
- Animals with horns or tusks capable of injuring other animals, if aggressive, should be penned separately.

Recommendations for specific species are described in detail in Articles 6-9.

Article 5**Management of foetuses during slaughter of pregnant animals**

The welfare of foetuses during slaughter of pregnant animals needs to be safeguarded.

- Foetuses should not be removed from the uterus sooner than five minutes after the maternal neck or chest cut, to ensure absence of consciousness. A foetal heartbeat will usually still be present and foetal movements may occur at this stage, but these are only a cause for concern if the exposed foetus successfully breathes air.
- If a live mature foetus is removed from the uterus, it should be prevented from inflating its lungs and breathing air (e.g. by clamping the trachea).
- When uterine, placental or foetal tissues, including foetal blood, are not to be collected as part of the post-slaughter processing of pregnant animals, all foetuses should be left inside the unopened uterus until they are dead. When uterine, placental or foetal tissues are to be collected, where practical, foetuses should not be removed from the uterus until at least 15-20 minutes after the maternal neck or chest cut.
- If there is any doubt about consciousness, the foetus should be killed with a captive bolt or a blow to the head with a suitable blunt instrument.

The above guidelines do not refer to foetal rescue. Foetal rescue, the practice of attempting to revive foetuses found alive at evisceration of the dam, should not be attempted during normal commercial slaughter as it may lead to serious welfare complications in the newborn animal. These include impaired brain function resulting from oxygen shortage before rescue is completed, compromised breathing and body heat production because of foetal immaturity, and an increased incidence of infections due to a lack of colostrum.

Appendix XXII (contd)

Article 6

Summary of acceptable handling and restraining methods, and the associated animal welfare issues

	Presentation of animals	Specific procedure	Specific purpose	AW concerns/implications	Key AW requirements	Applicable species
No restraint	Animals are grouped	Group container	Gas stunning	Specific procedure is suitable only for gas stunning	Competent animal handlers in lairage; facilities; stocking density	Pigs, poultry
		In the field	Free bullet	Shooting distance, calibre and ballistics	Operator competence	Deer
		Group stunning pen	Head-only electrical Captive bolt	Uncontrolled movement of animals impedes use of hand operated electrical and mechanical stunning methods	Competent animal handlers in lairage and at stunning point	Pigs, sheep, goats, calves
	Individual animal confinement	Stunning pen/box	Electrical and mechanical stunning methods	Loading of animal; accuracy of stunning method, slippery floor and animal falling down	Competent animal handlers	Cattle, buffalo, sheep, goats, horses, pigs, deer, camelids, ratites
Restraining methods	Head restraint, upright	Halter/ head collar/bridle	Captive bolt Free bullet	Suitable for halter-trained animals; stress in untrained animals	Competent animal handlers	Cattle, buffalo, horses, camelids
	Head restraint, upright	Neck yoke	Captive bolt Electrical-head-only Free bullet Slaughter without stunning	Stress of loading and neck capture; stress of prolonged restraint, horn configuration; unsuitable for fast line speeds, animals struggling and falling due to slippery floor, excessive pressure	Equipment; competent animal handlers, prompt stunning or slaughter	Cattle
	Leg restraint	Single leg tied in flexion (animal standing on 3 legs)	Captive bolt Free bullet	Ineffective control of animal movement, misdirected shots	Competent animal handler	Breeding pigs (boars and sows)

Appendix XXII (contd)

	Presentation of animals	Specific procedure	Specific purpose	AW concerns/implications	Key AW requirements	Applicable species
Restraining methods	Upright restraint	Beak holding	Captive bolt Electrical-head-only	Stress of capture	Sufficient competent animal handlers	Ostriches
		Head restraint in electrical stunning box	Electrical-head-only	Stress of capture and positioning	Competent animal handler	Ostriches
	Holding body upright- manual	Manual restraint	Captive bolt Electrical-head-only Slaughter without stunning	Stress of capture and restraint; accuracy of stunning/slaughter	Competent animal handlers	Sheep, goats, calves, ratites, small camelids, poultry
	Holding body upright mechanical	Mechanical clamp / crush / squeeze/ V-restrainer (static)	Captive bolt Electrical methods Slaughter without stunning	Loading of animal and overriding; excessive pressure	Proper design and operation of equipment	Cattle, buffalo, sheep, goats, deer, pigs, ostriches
	Lateral restraint – manual or mechanical	Restrainer/cradle /cratch	Slaughter without stunning	Stress of restraint	Competent animal handlers	Sheep, goats, calves, camelids, cattle
	Upright restraint mechanical	Mechanical straddle (static)	Slaughter without stunning Electrical methods Captive bolt	Loading of animal and overriding	Competent animal handlers	Cattle, sheep, goats, pigs
	Upright restraint – manual or mechanical	Wing shackling	Electrical	Excessive tension applied prior to stunning	Competent animal handlers	Ostriches

Appendix XXII (contd)

	Presentation of animals	Specific procedure	Specific purpose	AW concerns/implications	Key AW requirements	Applicable species
Restraining and /or conveying methods	Mechanical - upright	V-restrainer	Electrical methods Captive bolt Slaughter without stunning	Loading of animal and overriding; excessive pressure, size mismatch between restrainer and animal	Proper design and operation of equipment	Cattle, calves, sheep, goats, pigs
	Mechanical-upright	Mechanical straddle – band restrainer (moving)	Electrical methods Captive bolt Slaughter without stunning	Loading of animal and overriding, size mismatch between restrainer and animal	Competent animal handlers, proper design and layout of restraint	Cattle, calves, sheep, goats, pigs
	Mechanical - upright	Flat bed/deck Tipped out of containers on to conveyors	Presentation of birds for shackling prior to electrical stunning Gas stunning	Stress and injury due to tipping in dump-module systems height of tipping conscious poultry broken bones and dislocations	Proper design and operation of equipment	Poultry
	Suspension and/or inversion	Poultry shackle	Electrical stunning Slaughter without stunning	Inversion stress; pain from compression on leg bones	Competent animal handlers; proper design and operation of equipment	Poultry
	Suspension and/or inversion	Cone	Electrical – head-only; Captive bolt Slaughter without stunning	Inversion stress	Competent animal handlers; proper design and operation of equipment	Poultry
	Upright restraint	Mechanical leg clamping	Electrical – head-only	Stress of resisting restraint in ostriches	Competent animal handlers; proper equipment design and operation	Ostriches

Appendix XXII (contd)

	Presentation of animals	Specific procedure	Specific purpose	AW concerns/implications	Key AW requirements	Applicable species
Restraining by inversion	Rotating box	Fixed side(s) (e.g. Weinberg)	Slaughter without stunning	Inversion stress; stress of resisting restraint, prolonged restraint. Keep restraint as brief as possible	Proper design and operation of equipment	Cattle
		Compressible side(s)	Slaughter without stunning	Inversion stress, stress of resisting restraint, prolonged restraint. Preferable to rotating box with fixed sides; Keep restraint as brief as possible	Proper design and operation of equipment	Cattle
Body restraint	Casting/hobbling	Manual	Mechanical stunning methods Slaughter without stunning	Stress of resisting restraint; animal temperament; bruising. Keep restraint as short as possible	Competent animal handlers	Sheep, goats, calves, small camelids, pigs
Leg restraints		Rope casting	Mechanical stunning methods Slaughter without stunning	Stress of resisting restraint; prolonged restraint, animal temperament; bruising. Keep restraint as short as possible	Competent animal handlers	Cattle, camelids
		Tying of 3 or 4 legs	Mechanical stunning methods Slaughter without stunning	Stress of resisting restraint; prolonged restraint, animal temperament; bruising. Keep restraint as short as possible	Competent animal handlers	Sheep, goats, small camelids, pigs

Appendix XXII (contd)**Article 7****Stunning methods****Stunning**

The competence of the operators, and the appropriateness and effectiveness of the method used for stunning are the responsibility of the management of the slaughterhouse, and should be checked regularly by a competent authority.

Persons carrying out stunning should be properly trained and competent, and should ensure that:

- the animal is adequately restrained,¹
- animals in restraint are stunned as soon as possible;
- the equipment used for stunning is maintained and operated properly in accordance with the manufacturer's recommendations, in particular with regard to the species and size of the animal;
- the instrument is applied correctly;
- stunned animals are bled out (slaughtered) as soon as possible,
- do not stun animals when slaughter is likely to be delayed.

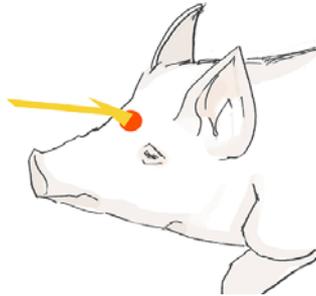
In addition, such persons should be able to recognise when an animal is not correctly stunned and should take appropriate action.

Mechanical stunning

A mechanical device should be applied usually to the front of the head and perpendicular to the bone surface. The following diagrams illustrate the proper application of the device for certain species.



The optimum position for cattle is at the intersection of two imaginary lines drawn from the rear of the eyes to the opposite horn buds.

Pigs

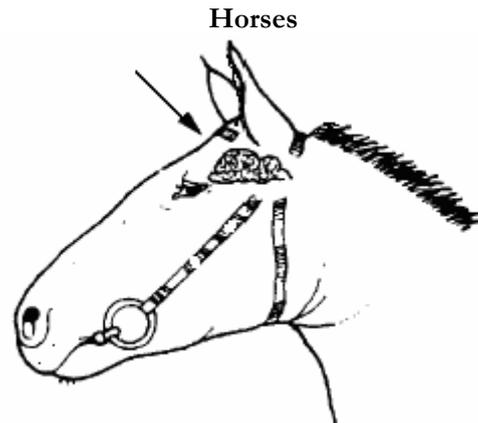
The optimum position for pigs is just above the eyes and directing the shot down the line of the spinal chord.

Sheep

The optimum position for hornless sheep and goats is on the midline, just above the eyes and directing the shot down the line of the spinal chord.

Goats

The optimum position for heavily horned sheep and horned goats is behind the poll, aiming towards the angle of the jaw.

Appendix XXII (contd)

Place the muzzle at right angles to the frontal surface well above the point where imaginary lines from eye to ear cross.

Signs of correct stunning using a mechanical instrument:

- i) the animal collapses immediately and does not attempt to stand up;
- ii) the body and muscles of the animal become tonic (rigid) immediately after the shot;
- iii) normal rhythmic breathing stops; and
- iv) the eyelid is open with the eyeball facing straight ahead and is not rotated.

Electrical stunning

b) General

An electrical device should be applied to the animal in accordance with the following guidelines.

Electrodes should be designed, constructed, maintained and cleaned regularly to ensure that the flow of current is optimal and in accordance to manufacturing specification. They should be placed so that they span the brain. The application of electrical currents which bypass the brain are unacceptable unless the animal has been stunned. The use of a single current leg-to-leg is unacceptable as a stunning method.

If, in addition, it is intended to cause cardiac arrest, the electrodes should either span the brain and immediately thereafter the heart, on the condition that it has been ascertained that the animal is adequately stunned, or span brain and heart simultaneously.

Electrical stunning equipment should not applied on animals as a means of guidance, movement, restraint or immobilisation, and shall not deliver any shock to the animal before the actual stunning or killing.

Electrical stunning apparatus should be tested prior to application on animals using appropriate resistors or dummy loads to ensure the power output is adequate to stun animals.

The apparatus should incorporate a device which monitors and displays stunning current delivered to the animals

Appendix XXII (contd)

Appropriate measures, such as removing excess wool or wetting the skin only at the point of contact can be taken to minimise impedance of the skin and facilitate effective stunning.

The stunning apparatus requires for electrical stunning should be provided with adequate power to achieve continuously the minimum current level recommended for stunning as indicate in the table below:

Species	Minimum current levels
Cattle	1.5 amps
Calves	1.0 amps
Pigs	1.25 amps
Sheep & Goats	0.5 amps
Ostriches	0.4 amps

In all cases, the correct current level shall be attained within one second of the initiation of stun and maintained at least for between one and three seconds and in accordance with the manufacturer's instructions.

b) Electrical stunning of birds using a waterbath

In the case of birds suspended on a moving line, measures should be taken to ensure that the birds are not wing flapping at the entrance of the stunner. The birds should be secure in their shackle, but there should not be undue pressure on their shanks.

Waterbaths for poultry should be adequate in size and depth for the type of bird being slaughtered, and their height should be adjustable to allow for the head of each bird to be immersed. The electrode immersed in the bath should extend the full length of the waterbath. Birds should be immersed in the bath up to the base of their wings.

The waterbath should be designed and maintained in such a way that when the shackles pass over the water they are in continuous contact with the earthed rubbing bar.

The control box for the waterbath stunner should incorporate an ammeter which displays the total current flowing through the birds.

The shackle-to-leg contact should be wetted preferably before the birds are inserted in the shackles. In order to improve electrical conductivity of the water it is recommended that salt be added in the waterbath as necessary.

Birds should receive the current for at least 4 seconds.

Using waterbaths, birds are stunned in groups and different birds will have different impedances. The voltage should be adjusted so that the total current is the required current per bird as shown in the table hereafter, multiplied by the number of birds in the waterbath at the same time.

Appendix XXII (contd)

The following values have been found to be satisfactory when employing a 50 Hertz sinusoidal alternating current.

Species	Current (milliamperes per bird)
Broilers	120
Layers (spent hens)	120
Turkeys	150
Ducks and Geese	130

While a lower current may also be satisfactory, the current shall in any case be such as to ensure that unconsciousness occurs immediately and lasts until the bird has been killed by cardiac arrest or by bleeding. When higher electrical frequencies are used, higher currents may be required.

Every effort shall be made to ensure that no conscious or live birds enter the scalding tank.

In the case of automatic systems, until fail-safe systems of stunning and bleeding have been introduced, a manual back-up system should be in place to ensure that any birds which have missed the waterbath stunner and/or the automatic neck-cutter are immediately stunned and/or humanely killed, and they are dead before entering scald tank.

To lessen the number of unstunned birds, reaching neck cutters, steps should be taken to ensure that small birds do not go on the line amongst bigger birds and that these small birds are stunned separately.

Gas stunning***a) Stunning of pigs by exposure to carbon dioxide (CO₂)***

The concentration of CO₂ for stunning should be preferably 90% by volume but in any case no less than 80% by volume. After entering the stunning chamber the animals should be conveyed to the point of maximum concentration of the gas and be kept until they are dead or brought into a state of insensibility which lasts until death occur due to bleeding. Ideally, pigs should be exposed to this concentration of CO₂ for three minutes.

In any case, the concentration of the gas should be such that it minimises as far as possible all stress of the animal prior to loss of consciousness.

The chamber in which animals are exposed to CO₂ and the equipment used for conveying them through it shall be designed, constructed and maintained in such a way as to avoid injury or unnecessary stress to the animals. The animal density within the chamber should be such to avoid stacking animals on top of each others.

The conveyor and the chamber shall be adequately lit to allow the animals to see their surroundings and if possible, each other.

It should be possible to inspect the CO₂ chamber whilst it is in use, and to have access to the animals in emergency cases.

The chamber shall be equipped to continuously measure and display register at the point of stunning the CO₂ concentration and the time of exposure, and to give a clearly visible and audible warning if the concentration of CO₂ falls below the required level.

b) Inert gas mixtures for stunning pigs (under development)

Inhalation of high concentration of carbon dioxide is aversive and can be distressing to animals. Therefore, the use of non-aversive gas mixtures is being developed.

Gas mixtures:

- i) a maximum of 2% by volume of oxygen in argon, nitrogen or other inert gases, or
- ii) to a maximum of 30% by volume of carbon dioxide and a maximum of 2% by volume of oxygen in mixtures with carbon dioxide and argon, nitrogen or other inert gases.

Exposure time to the gas mixtures should be sufficient to ensure that no pigs regain consciousness before death supervenes through bleeding or cardiac arrest is induced.

c) Gas stunning of poultry

The main objective of gas stunning is to avoid the pain and suffering associated with shackling conscious poultry under water bath stunning and killing systems. Therefore, gas stunning should be limited to birds contained in crates or on conveyors only. The gas mixture should be non-aversive to poultry.

Gas stunning of poultry in their transport containers will eliminate the need for live bird handling at the processing plant and all the problems associated with the electrical stunning.

Gas stunning poultry on a conveyor eliminates the problems associated with the electrical water bath stunning.

Live poultry shall be conveyed into the gas mixtures either in transport crates or on conveyor belts.

- i) Gas mixtures used for stunning poultry
 - Minimum of 2 min exposure to 40% carbon dioxide, 30% oxygen and 30% nitrogen, followed by a minimum of 1 min exposure to 80% carbon dioxide in air; or
 - Minimum of 2 min exposure to any mixture of argon, nitrogen or other inert gases with atmospheric air and carbon dioxide, provided that the carbon dioxide concentration does not exceed 30% by volume and the residual oxygen concentration does not exceed 2% by volume; or
 - Minimum of 2 min exposure to argon, nitrogen, other inert gases or any mixture of these gases in atmospheric air with a maximum of 2% residual oxygen by volume; or
 - Minimum of 2 minutes exposure to a minimum of 55% carbon dioxide in air.
- ii) Requirements for effective use:
 - Compressed gases should be vaporised prior to administration into the chamber.
 - Under no circumstances, should solid gases with freezing temperatures enter the chamber.
 - Gas mixtures should be humidified.
 - Appropriate gas concentrations should be monitored and displayed continuously at the level of the birds inside the chamber.

Appendix XXII (contd)

Under no circumstances should birds exposed to gas mixtures be allowed to regain consciousness. If necessary, the exposure time should be extended.

Bleeding

From the point of view of animal welfare, animals which are stunned with a reversible method should be bled without delay and in any case within the following time limits:

Stunning method	Maximum delay for bleeding to be started
Electrical methods and non penetrating bolt	20 seconds
CO ₂	60 seconds (after leaving the chamber)

All animals should be bled by incising both carotid arteries, or the vessels from which they arise (e.g. chest stick). However, when the stunning method used causes cardiac arrest, the incision of all of these vessels is not necessary from the point of animal welfare.

It should be possible for staff to observe, inspect and access the animals throughout the bleeding period. Any animal showing signs of recovering consciousness should be restunned.

After incision of the blood vessels, no scalding carcass treatment or dressing procedures should be performed on the animals for at least thirty seconds, or in any case until all brain-stem reflexes have ceased.

Article 8

Summary of acceptable stunning methods and the associated animal welfare issues

Method	Specific method	AW concerns/implications	Key AW requirements applicable	Species	Comment
Mechanical	Free bullet	Inaccurate targeting and inappropriate ballistics	Accuracy; head shots only correct ballistics	Cattle, calves, buffalo, deer, horses, pigs (boars and sows)	Personnel safety
	Captive bolt - penetrating	Inaccurate targeting, velocity and diameter of bolt	Competent operation and maintenance of equipment; restraint; accuracy	Cattle, calves, buffalo, sheep, goats, deer, horses, pigs, camelids, ratites	(Unsuitable for specimen collection from TSE suspects). A back-up gun should be available in the event of an ineffective shot
	Captive bolt - non-penetrating	Inaccurate targeting, velocity of bolt, potentially higher failure rate than penetrating captive bolt	Competent operation and maintenance of equipment; restraint; accuracy	Cattle, calves, sheep, goats, deer, pigs, camelids, ratites	Presently available devices are not recommended for young bulls and animals with thick skull
	Manual percussive blow	Inaccurate targeting; insufficient power; size of instrument	Competent animal handlers; restraint; accuracy. Not recommended for general use	Young and small mammals, ostriches and poultry	Mechanical devices potentially more reliable. Where manual percussive blow is used, unconsciousness should be achieved with single sharp blow delivered to central skull bones
Electrical	Split application: 1. across head then head to chest; 2. across head then across chest	Accidental pre-stun electric shocks; electrode positioning; application of a current to the body while animal conscious; inadequate current and voltage	Competent operation and maintenance of equipment; restraint; accuracy	Cattle, calves, sheep, goats and pigs, ratites and poultry	Systems involving repeated application of head-only or head-to-leg with short current durations (<1 second) in the first application should not be used. Where cardiac arrest occurs, the carcass may not be suitable for Halal

Appendix XXII (contd)

Method	Specific method	AW concerns/implications	Key AW requirements applicable	Species	Comment
Electrical	Single application: 1. head only; 2. head to body; 3. head to leg	Accidental pre-stun electric shocks; inadequate current and voltage; wrong electrode positioning; recovery of consciousness	Competent operation and maintenance of equipment; restraint; accuracy	Cattle, calves, sheep, goats, pigs, ratites, poultry	Where cardiac arrest occurs, the carcass may not be suitable for Halal
	Waterbath	Restraint, accidental pre-stun electric shocks; inadequate current and voltage; recovery of consciousness	Competent operation and maintenance of equipment	Poultry only	Where cardiac arrest occurs, the carcass may not be suitable for Halal
Gaseous	CO ₂ air/O ₂ mixture; CO ₂ inert gas mixture	Aversiveness of high CO ₂ ; respiratory distress; inadequate exposure	Concentration; duration of exposure; design, maintenance and operation of equipment; stocking density management	Pigs, poultry	Gaseous methods may not be suitable for Halal
	Inert gases	Recovery of consciousness	Concentration; duration of exposure; design, maintenance and operation of equipment; stocking density management	Pigs, poultry	Gaseous methods may not be suitable for Halal

Article 9

Summary of acceptable slaughter methods, and the associated animal welfare issues

Slaughter methods	Specific method	AW concerns / implications	Key requirements	Species	Comments
Bleeding out by severance of blood vessels in the neck without stunning	Full frontal cutting across the throat	Failure to cut both common carotid arteries; occlusion of cut arteries	A very sharp blade or knife, of sufficient length so that the point of the knife remains outside the incision during the cut; the point of the knife should not be used to make the incision. An incision which does not close over the knife during the throat cut.	Cattle, buffalo, horses, camelids, sheep, goats, poultry, ratites	This method is applicable to Halal and Kosher for relevant species
Bleeding with prior stunning	Neck stab followed by forward cut	Ineffective stunning; failure to cut both common carotid arteries; impaired blood flow; delay in cutting after reversible stunning	Prompt and accurate cutting;	Camelids, sheep, goats, poultry, ratites	
	Neck stab alone	Ineffective stunning; failure to cut both common carotid arteries; impaired blood flow; delay in cutting after reversible stunning	Prompt and accurate cutting	Camelids, sheep, goats, poultry, ratites	
	Chest stick into major arteries or hollow-tube knife into heart	Ineffective stunning; Inadequate size of stick wound inadequate length of sticking knife; delay in sticking after reversible stunning	Prompt and accurate sticking;	Cattle, sheep, goats, pigs	
	Neck skin cut followed by severance of vessels in the neck	Ineffective stunning; Inadequate size of stick wound; Inadequate length of sticking knife; delay in sticking after reversible stunning	Prompt and accurate cutting of vessels	Cattle	

Appendix XXII (contd)

Slaughter methods	Specific method	AW concerns / implications	Key requirements	Species	Comments
Bleeding with prior stunning	Automated mechanical cutting	Ineffective stunning; failure to cut and misplaced cuts. Recovery of consciousness following reversible stunning systems	Design, maintenance and operation of equipment; accuracy of cut; manual back-up	Poultry only	
	Manual neck cut on one side	Ineffective stunning; recovery of consciousness following reversible stunning systems	Prior non-reversible stunning	Poultry only	N.B. slow induction of unconsciousness under slaughter without stunning
	Oral cut	Ineffective stunning; recovery of consciousness following reversible stunning systems	Prior non-reversible stunning	Poultry only	N.B. slow induction of unconsciousness in non-stun systems
Other methods without stunning	Decapitation with a sharp knife	Pain due to loss of consciousness not being immediate		Sheep, goats, poultry	This method is only applicable to Jhatka
	Manual neck dislocation and decapitation	Pain due to loss of consciousness not being immediate; difficult to achieve in large birds	Neck dislocation should be performed in one stretch to sever the spinal cord	Poultry only	Slaughter by neck dislocation should be performed in one stretch to sever the spinal cord
Cardiac arrest in a waterbath electric stunner	Bleeding by evisceration		Induction of cardiac arrest	Quail	
	Bleeding by neck cutting			Poultry	

Article 10**Methods, procedures or practices unacceptable on animal welfare grounds**

- The restraining methods through immobilisation by injury like ‘puntilla’, breaking legs and ‘leg tendon cutting’, cause severe pain and stress in animals. Those methods are not acceptable in any species.
 - The use of electrical stunning method with single application leg to leg is ineffective and unacceptable in any species. The electrocution in this way is likely to be painful. The animal welfare concerns are:
 - accidental pre-stun electric shocks;
 - inadequate current and voltage;
 - wrong electrode positioning;
 - recovery of consciousness.
 - The slaughter method of brain stem severance by piercing through the eye socket or skull bone is not acceptable in any species except fish.
-

Appendix XXII (contd)**GUIDELINES FOR THE LAND TRANSPORT OF ANIMALS****Article 1****Responsibilities**

The welfare of animals during their *transport* is the joint responsibility of all people involved.

The roles of each of those responsible are defined below:

- Owners and managers of animals are responsible for the general health of the animals and their fitness for the *journey*, and their welfare during the *journey*, regardless of whether duties are subcontracted to other parties during *transport*. They are also responsible for ensuring compliance with any required veterinary or other certification, and for the presence during the *journey* of at least one *animal handler* competent for the species being transported, with the authority to take prompt action. They are also responsible for ensuring that equipment and veterinary assistance are provided as appropriate for the species and *journey*.
- Business agents or buying/selling agents have a joint responsibility with owners for the selection of animals that are fit to travel. They have a joint responsibility with market owners and managers of facilities at the start and at the end of the *journey* for the availability of suitable facilities for the assembly, *loading*, *transport*, *unloading* and holding of animals, and for emergencies.
- *Animal handlers* are responsible for the humane handling and care of the animals, especially during *loading* and *unloading*, and for maintaining a journey log. In the absence of a separate animal handler, the driver is the animal handler.
- Transport companies, *vehicle* owners and drivers are responsible for planning the *journey* to ensure the care of the animals:
 - transport companies and vehicle owners are responsible for choosing appropriate *vehicles* and ensuring that properly trained staff are available for *loading* and caring for animals,
 - transport companies and vehicle owners are responsible for developing and keeping up to date contingency plans to address emergencies and minimise stress during *transport*,
 - transport companies and vehicle owners are responsible for producing a journey plan which includes a loading plan, journey duration and location of resting places,
 - drivers are responsible for *loading* only those animals which are fit to travel, for their correct *loading* into the *vehicle* and their inspection during the *journey*, and for appropriate responses to problems arising.
- Managers of facilities at the start and at the end of the *journey*, and at *resting points* are responsible for:
 - providing suitable premises for *loading*, *unloading* and securely holding the animals, with water and feed when required, until further *transport*, sale or other use (including rearing or slaughter),
 - providing competent animal handlers to load, unload, drive and hold animals in a manner that causes minimum stress and injury,
 - minimising the opportunities for disease transmission,
 - providing appropriate facilities, with water and feed when required,

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- providing appropriate facilities for emergencies,
- providing facilities for washing and disinfecting *vehicles* after *unloading*,
- providing facilities and competent staff to allow the humane killing of animals when required,
- ensuring proper rest times and minimal delay during stops. See Article XXX
- The responsibilities of *Competent Authorities* include:
 - establishing minimum standards for animal welfare, including requirements for inspection of animals before, during and after their *travel*, and appropriate certification and record keeping,
 - approving facilities, *containers* and *vehicles* for the *transport* of animals,
 - setting standards for the competence of drivers, *animal handlers* and managers,
 - ensuring appropriate awareness and training of drivers, *animal handlers* and managers,
 - implementation of the standards, including through accreditation of / interaction with other organisations,
 - monitoring and evaluating the effectiveness of standards of health and other aspects of welfare,
 - monitoring and evaluating the use of veterinary medications.
- All individuals, including veterinarians, involved in transporting animals and the associated handling procedures should receive appropriate training and be competent to meet their responsibilities.

Article 2**Competence**

- All people handling animals, or who are otherwise responsible for animals during *journeys*, should be competent according to their responsibilities listed in Article 1. Competence may be gained through formal training or practical experience. Competence in areas other than animal welfare would need to be addressed separately.
- The competence of *animal handlers* should be demonstrated through a current certificate from an independent body, accredited by the *Competent Authority*. The certificate should be in one of the OIE official languages if the international *transport* of animals is involved.
- The assessment of the competence of *animal handlers* should at a minimum address knowledge, and ability to apply that knowledge, in the following areas:
 - planning a *journey*, including appropriate *space allowance*, and feed, water and ventilation requirements,
 - responsibilities for animals during the *journey*, including *loading* and *unloading*,

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- sources of advice and assistance,
- animal behaviour, general signs of disease, and indicators of poor animal welfare such as stress, pain and fatigue, and their alleviation,
- relevant authorities and applicable transport regulations, and associated documentation requirements,
- general disease prevention procedures, including cleaning,
- appropriate methods of driving,
- methods of inspecting animals, managing situations frequently encountered during *transport* such as adverse weather conditions, and dealing with emergencies,
- species-specific aspects of animal handling and care, including feeding, watering and inspection,
- maintaining a journey log and other records.

Article 3**Planning the journey****General**

- Adequate planning is a key factor affecting the welfare of animals during a *journey*.
- Before the journey starts, plans should be made in relation to:
 - preparation of animals for the *journey*,
 - choice of road or rail,
 - nature and duration of the *journey*,
 - *vehicle / container* design and maintenance, including roll-on roll-off vessels,
 - required documentation,
 - *space allowance*,
 - rest, water and feed,
 - observation of animals en route,
 - control of disease, and
 - emergency response procedures.
- Regulations concerning drivers (for example maximum driving periods) should be harmonised with maximum transport journey intervals appropriate for the species.

Preparation of animals for the journey

- When animals are to be provided with a novel diet or method of water provision during *transport*, an adequate period of adaptation should be planned.
- Animals should be exposed to appropriate contact with humans and handling conditions (including methods of restraint) prior to *transport* to reduce their fearfulness and improve their approachability (see Article 5).

- Behaviour-modifying compounds (such as tranquillisers) should not be used routinely during *transport*. Such compounds should only be administered when a problem exists in an individual animal, and should be administered by a veterinarian or other person who has been instructed in their use by a veterinarian.

Nature and duration of the journey

- The maximum duration of a *journey* should be determined according to:
 - the ability of the animals to cope with the stress of *transport* (such as very young, old, lactating or pregnant animals),
 - the animals' previous transport experience,
 - the onset of fatigue,
 - the need for special attention,
 - the need for feed and water,
 - the increased susceptibility to injury and disease,
 - *space allowance*, vehicle design, road conditions, driving quality,
 - weather conditions.

Vehicle and container design and maintenance

- *Vehicles* and *containers* used for the *transport* of animals should be designed, constructed and fitted as appropriate to the species, size and weight of the animals to be transported; special attention should be paid to the avoidance of injury to animals through the use of secure smooth fittings free from sharp protrusions. The avoidance of injury to drivers and *animal handlers* while carrying out their responsibilities should be emphasised.
- *Vehicles* and *containers* should be designed with the structures necessary to provide protection from adverse weather conditions and to minimise the opportunity for animals to escape.
- In order to minimise the likelihood of the spread of pathogenic agents during transport, *vehicles* and *containers* should be designed to permit thorough cleaning and disinfection, and the containment of faeces and urine during a *journey*.
- *Vehicles* and *containers* should be maintained in good mechanical and structural condition.
- *Vehicles* and *containers* should *have* adequate ventilation to meet variations in climate and the thermo-regulatory needs of the animal species being transported; the ventilation system should be capable of operating when the *vehicles* is stationary and the air flow should be adjustable.
- *Vehicles* should be designed so that the faeces or urine from animals on upper levels do not soil animals on lower levels, nor their feed and water.
- When *vehicles* are carried on board ferries, facilities for adequately securing them should be available.

Appendix XXII (contd)

- If feeding or watering while the *vehicle* is moving is required, adequate facilities on the *vehicle* should be available.
- Suitable bedding should be added to vehicle floors to assist absorption of urine and faeces, to minimise slipping by animals, and protect animals (especially young animals) from hard flooring surfaces and adverse weather conditions.

Special provisions for transport in vehicles (road and rail) on roll-on/roll-off vessels or for containers

- *Vehicles* and *containers* should be equipped with a sufficient number of adequately designed, positioned and maintained securing points enabling them to be securely fastened to the *vessel*.
- *Vehicles* and *containers* should be secured to the ship before the start of the sea journey to prevent them being displaced by the motion of the vessel.
- Roll-on/roll-off vessels should have adequate ventilation to meet variations in climate and the thermo-regulatory needs of the animal species being transported, especially where the animals are transported in a secondary *vehicle/container* on enclosed decks.

Space allowance

- The number of animals which should be transported on a *vehicle* or in a *container* and their allocation to different compartments should be determined before the *vehicle* or *container* is loaded.
- The space required on a *vehicle* or in a *container* depends upon whether or not the animals need to lie down (for example pigs, camels and poultry), or to stand (horses). Animals which will need to lie down often stand when first loaded or when the *vehicle* is driven with too much lateral movement or sudden braking.
- When animals lie down, they should all be able to adopt a comfortable, normal lying posture which allows necessary thermoregulation.
- When animals are standing, they should have sufficient space to adopt a balanced position without body contact with other animals.
- The amount of headroom necessary depends on the species of animal. Each animal should be able to assume its natural position for *transport* (including during *loading* and *unloading*) without coming into contact with the roof or upper deck of the *vehicle*.
- Calculations according to the *space allowance* permitted for each animal should be carried out, using the figures given in these guidelines (see Appendix XXX) or, in their absence, in a relevant national or international document. The size of already established groups will affect the number and size of the pens, and the distribution of animals in pens on the *vehicle*.
- Other factors which may influence *space allowance* include:
 - *vehicle / container* design
 - length of journey
 - need to provide feed and water on the *vehicle*
 - quality of roads
 - expected weather conditions.

Rest, water and feed

- There should be planning for the availability of suitable water and feed during the *journey*. Feed should be of appropriate quality and composition for the species, age, condition of the animals, climatic conditions, etc.
- Animals should be rested at *resting points* at appropriate intervals during the *journey*. The type of transport and species being transported should determine the frequency of rest stops and whether the animals are unloaded. There should be planning for water and feed availability during rest stops.

Ability to observe animals en route in relation to journey duration

- Animals should be positioned to enable each animal to be observed regularly during the *journey* to ensure their safety and good welfare.
- If the animals are in crates or on multi-tiered vehicles which do not allow free access for observation, for example where the roof of the tier is too low (i.e. less than 1.3 m), animals cannot be inspected adequately, and serious injury or disease could go undetected. In these circumstances, a shorter journey duration should be allowed, and the maximum duration will vary according to the rate at which problems arise in the species and under the conditions of transport.

Control of disease

- As animal transport is often a significant factor in the spread of infectious diseases, journey planning should take the following into account:
 - mixing of animals from different sources in a single consignment should be minimised,
 - contact at resting points between animals from different sources should be avoided,
 - when possible, animals should be vaccinated against diseases to which they are likely to be exposed at their destination,
 - medications used prophylactically or therapeutically should only be administered by a veterinarian or other person who has been instructed in their use by a veterinarian.

Emergency response procedures

- Appropriate contingency plans to address emergencies should be prepared in advance (see Article 7).

Other considerations

- Extreme weather conditions are hazardous for animals undergoing *transport* and require appropriate vehicle design to minimise risks. Special precautions should be taken for animals that have not been acclimatised or which are unsuited to either hot or cold conditions. In some extreme conditions of heat or cold, animals should not be transported at all.
- In some circumstances, transportation during the night may reduce thermal stress or the adverse effects of other external stimuli.

Appendix XXII (contd)**Article 4****Documentation**

- Animals should not be loaded until the required documentation is complete.
- The documentation accompanying the consignment should include:
 - journey travel plan,
 - date, time, and place of loading and unloading,
 - veterinary certification, when required,
 - driver's competencies,
 - identities of the animals transported to allow traceback of individual animals to the premises of departure, and where possible to the premises of origin,
 - details of any animals considered 'at risk' (Article 5),
 - documentation of the period of rest, and access to feed and water, prior to the journey,
 - stocking density estimate for each load in the consignment,
 - the journey log - daily record of inspection and important events, including records of morbidity and mortality, climatic conditions, rest stops, travel time and distance, feed and water offered and estimates of consumption, medication provided, and mechanical defects.
- When veterinary certification is required to accompany consignments of animals, it should include:
 - appropriate animal identification (description, number, etc.),
 - health status including test, treatment and vaccination status
 - when required, details of disinfection carried out.

At the time of certification, the veterinarian should notify the animal handler of any factors affecting the animals' fitness to travel for a particular journey.

Article 5**Pre-journey period****General**

- Pre-journey rest is necessary if the welfare of animals has become poor during the collection period because of the physical environment or the social behaviour of the animals.
- Feed and water should be provided pre-journey if the journey duration is greater than the normal inter-feeding and drinking interval for the animal. Recommendations for specific species are described in detail in Article XXX.

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- When animals will be provided with a novel diet or method of water provision during or after *transport*, an adequate period of pre-exposure is necessary.
- Before each *journey*, *vehicles* and *containers* should be thoroughly cleaned and, if necessary, treated for animal health and public health purposes, using methods approved by the *Competent Authority*. When cleaning is necessary during a *journey*, this should be carried out with the minimum of stress to the animals.
- Where an *animal handler* believes that there is a significant risk of disease among the animals to be loaded or significant doubt as to their fitness to travel, the animals should be inspected by a veterinarian.

Selection of compatible groups

- Compatible groups should be selected before *transport* to avoid adverse animal welfare consequences. The following guidelines should be applied when assembling groups of animals:
 - animals reared together should be maintained as a group; animals with a strong social bond should be transported together,
 - animals of the same species should not be mixed if there is a significant likelihood of aggression; aggressive individuals should be segregated (recommendations for specific species are described in detail in Article XXX). For some species, animals from different groups should not be mixed because poor welfare occurs unless they have established a social structure,
 - young or small animals should be separated from older or larger animals, with the exception that dam and offspring should be transported together,
 - animals with horns or antlers should not be mixed with animals lacking horns or antlers,
 - animals of different species should not be mixed unless they are judged to be compatible.

Shelter in the assembly/holding area

- Assembly/holding areas should be designed to:
 - securely hold the animals,
 - maintain a safe environment from hazards, including predators and disease,
 - protect animals from exposure to severe weather conditions,
 - allow for maintenance of social groups, and
 - allow for rest, and appropriate water and feed.

Effect of travel experience, long and short term

- Consideration should be given to an animal's previous transport experience, training and conditioning as these may reduce fear and stress in animals. Animals that are carefully and regularly transported may show less adverse responses to transport.

Appendix XXII (contd)

- Exposure to familiar personnel should reduce the fearfulness of animals and improve their approachability during transport procedures.

Fitness to travel

- Each animal should be inspected by a veterinarian or an *animal handler* to assess fitness to travel. Animals found unfit to travel should not be loaded onto a *vehicle*, except for transport to receive veterinary treatment.
- Humane and effective arrangements should be made by the owner or agent for the handling and care of any animal rejected as unfit to travel.
- Animals that are unfit to travel include:
 - those that are sick, injured, weak, disabled or fatigued,
 - those that are unable to stand unaided and bear weight on each leg,
 - those that are blind in both eyes,
 - those that cannot be moved without causing them additional suffering,
 - pregnant animals which are likely to give birth during the journey,
 - those whose body condition would result in poor welfare because of the expected climatic conditions.
- Risks during *transport* can be reduced by selecting animals best suited to the conditions of travel and those that are acclimatised to expected weather conditions.
- Animals 'at risk' which require special conditions (such as in the design of facilities and vehicles, and the length of the journey) and additional attention during *transport*, may include:
 - large or obese individuals,
 - very young or old animals,
 - excitable or aggressive animals,
 - animals which have had little contact with humans,
 - animal subject to motion sickness,
 - females in late pregnancy or heavy lactation; dam and offspring,
 - those with a history of exposure to stressors or pathogenic agents prior to transport.

Specific species requirements

Transport procedures should be able to take account of variations in the behaviour of the species. Flight zones, social interactions and other behaviour vary significantly among species and even within species. Facilities and handling procedures that are successful with one species are often ineffective or dangerous with another.

- Recommendations for specific species are described in detail in Article XXX.

Article 6

Loading

Experienced supervision

- Since *loading* has been shown to be the procedure most likely to be the cause of poor welfare in transported animals, the methods to be used should be carefully planned.
- *Loading* should be supervised by *animal handlers*. These *animal handlers* should ensure that animals are loaded quietly and without unnecessary noise, harassment or force, and that untrained assistants or spectators do not impede the process.
- When *containers* are loaded onto a *vehicle*, this should be carried out in such a way to avoid poor animal welfare.

Facilities

- The facilities for *loading* including the collecting area, races and loading ramps should be designed and constructed to take into account the needs and abilities of the animals with regard to dimensions, slopes, surfaces, absence of sharp projections, flooring, etc.
- Loading facilities should be properly illuminated to allow the animals to be observed by the *animal handler(s)*, and to allow the animals' ease of movement at all times. Facilities should provide uniform lighting directly over approaches to sorting pens, chutes, loading ramps, with brighter lighting inside *vehicles / containers*, in order to minimise baulking. Dim lighting may be advantageous for the catching of poultry and some other animals.
- Ventilation during *loading* and the *journey* should provide for fresh air, the removal of excessive heat, humidity and noxious fumes (such as ammonia and carbon monoxide), and the prevention of accumulations of ammonia and carbon dioxide. Under warm and hot conditions, ventilation should allow for the adequate convective cooling of each animal. In some instances, adequate ventilation can be achieved by increasing the *space allowance* for animals.

Goads and other aids

- The following principles should apply:
 - Animals which have little or no room to move should not be subjected to physical force or goads and other aids which compel movement.
 - Useful and permitted aids include panels, flags, plastic paddles, flappers (a length of cane with a short strap of leather or canvas attached), plastic bags and metallic rattles; they should be used in a manner sufficient to encourage and direct movement of the animals but without physical contact with them.
 - Painful procedures (including whipping, tail twisting, use of nose twitches, pressure on eyes, ears or external genitalia), or the use of unsuitable goads or other aids (including sticks with sharp ends, lengths of metal piping, fencing wire or heavy leather belts), should not be used to move animals.

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- The use of goads which administer electric shocks should be discouraged, and restricted to that necessary to assist movement of the animal. Such use should be limited to battery-powered goads on the hindquarters of adult pigs and cattle, and never on sensitive areas such as the eyes, mouth, ears, anogenital region or belly. Such instruments should not be used on other animals.
- The use of muzzled, well trained dogs to help with the *loading* of some species may be acceptable.
- The throwing or dropping of animals, or their lifting or dragging by their tail, head, horns, ears, limbs, wool, hair or feathers should not be permitted. The manual lifting of small animals is permissible.

Article 7**Travel**

- Drivers and *animal handlers* should check the load immediately before departure to ensure that the animals have been properly loaded. Each load should be checked again early in the trip and adjustments made as appropriate. Periodic checks should be made throughout the trip.
- Drivers should utilise smooth, defensive driving techniques, without sudden turns or stops, to minimise uncontrolled movements of the animals.

Methods of restraining or containing animals

- Methods of restraining animals should be appropriate to the species involved and the training of the individual animal.
- Recommendations for specific species are described in detail in Article XXX.

Regulating the environment within vehicles or containers

- Animals should be protected against harm from hot or cold conditions during *travel*. Effective ventilation procedures for maintaining the animals' environment within *vehicles* or *containers* will vary according to whether conditions are cold, hot and dry or hot and humid, but in all conditions a build-up of noxious gases should be prevented. Specific temperature and humidity parameters are described in detail in Appendix XXX.
- The animals' environment in hot weather can be regulated by the flow of air produced by the movement of the *vehicle*. In warm and hot weather, the duration of journey stops should be minimised and *vehicles* should be parked under shade, with maximal ventilation.
- To minimise slipping and soiling, and maintain a healthy environment, urine and faeces should be removed from floors when necessary and disposed of in such a way as to prevent the transmission of disease and in compliance with all relevant health and environmental legislation.

Sick, injured and dead animals

- A driver or *animal handler* finding sick, injured or dead animals should act according to a predetermined emergency response plan (see Appendix XXX).
- If possible, sick or injured animals should be segregated.
- Ferries (roll-on roll-off) should have procedures to treat sick or injured animals during the *journey*.

Appendix XXII (contd)

- In order to reduce the likelihood that animal transport will increase the spread of infectious disease, contact between transported animals, or the products of the transported animals, and other farm animals should be minimised.
- During the *journey*, when disposal of a dead animal becomes necessary, this should be carried out in such a way as to prevent the transmission of disease and in compliance with all relevant health and environmental legislation.
- When euthanasia is necessary, the driver or *animal handler* should ensure that it is carried out humanely, and results in immediate death. When necessary, assistance should be sought from a veterinarian or other person(s) competent in euthanasia procedures. Recommendations for specific species are described in the Chapter on humane killing of animals for disease control purposes.

Water and feed requirements

- If journey duration is such that feeding or watering is required or if the species requires feed or water throughout, access to suitable feed and water for all the animals carried in the *vehicle* should be provided. There should be adequate space for all animals to move to the feed and water sources and due account taken of likely competition for feed.
- Recommendations for specific species are described in detail in Article XXX.

Rest periods and conditions including hygiene

- Animals that are being transported should be rested at appropriate intervals during the *journey* and offered feed and water, either on the *vehicle* or, if necessary, unloaded into suitable facilities.
- Suitable facilities should be used en route, when resting requires the *unloading* of the animals. These facilities should meet the needs of the particular animal species and should allow access of all animals to feed and water.

In-transit observations

- Animals being transported by road should be observed soon after a *journey* is commenced and whenever the driver has a rest stop (with a maximum interval of 5 hours). After meal breaks and refuelling stops, the animals should be observed immediately prior to departure.
- Animals being transported by rail should be observed at each scheduled stop nearest to 5 hours since the last observation. The responsible rail transporter should monitor the progress of trains carrying animals and take all appropriate action to minimise delays.
- During stops, it should be ensured that the animals continue to be properly confined, have appropriate feed and water, and their physical condition is satisfactory.

Article 8**Unloading and post-journey handling****General**

- The required facilities and the principles of animal handling detailed in Article 6 (Loading) apply equally to *unloading*, but consideration should be given to the likelihood that the animals will be fatigued.

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- *Unloading* should be supervised by an *animal handler* with knowledge and experience of the behavioural and physical characteristics of the species being unloaded. Animals should be unloaded from the *vehicle* into appropriate facilities as soon as possible after arrival at the destination but sufficient time should be allowed for unloading to proceed quietly and without unnecessary noise, harassment or force.
- Facilities should provide all animals with appropriate care and comfort, adequate space and ventilation, access to feed (if appropriate) and water, and shelter from extreme weather conditions.
- For details regarding the *unloading* of animals at a slaughterhouse, see Chapter on Slaughter of animals for human consumption.

Sick and injured animals

- An animal that has become sick, injured or disabled during a *journey* should be appropriately treated or humanely killed (see Appendix XXX). When necessary, veterinary advice should be sought in the care and treatment of these animals.
- At the destination, the *animal handler* during transit should ensure that responsibility for the welfare of sick, injured or disabled animals is transferred to a suitable person.
- There should be appropriate facilities and equipment for the humane unloading of animals that are non-ambulatory due to fatigue, injury or sickness. These animals should be unloaded in a manner that causes the least amount of suffering. After *unloading*, separate pens and other appropriate facilities should be available for sick or injured animals.
- Feed, if appropriate, and water should be available for each sick or injured animal.

Addressing disease risks

- The following should be taken into account in addressing the greater risk of disease due to animal transport and the possible need for segregation of transported animals at the destination:
 - increased contact among animals, including those from different sources and with different disease histories,
 - increased shedding of pathogens and increased susceptibility to infection related to stress and impaired defences against disease, including immunosuppression,
 - exposure of animals to pathogens which may contaminate *vehicles*, *resting points*, markets etc.

Cleaning and disinfection

- *Vehicles*, crates, *containers*, etc. used to carry the animals should be cleaned before re-use through the physical removal of manure and bedding by scraping, washing and flushing *vehicles* and *containers* with water and detergent. This should be followed by *disinfection* when there are concerns about disease transmission.
- Manure, litter and bedding should be disposed of in such a way as to prevent the transmission of disease and in compliance with all relevant health and environmental legislation.
- When disposal of a dead animal becomes necessary, this should be carried out in such a way as to prevent the transmission of disease and in compliance with all relevant health and environmental legislation.

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- Establishments like livestock markets, slaughterhouses, resting sites, railway stations, etc. where animals are unloaded should be provided with appropriate areas for the cleaning and *disinfection* of *vehicles*.
- Where *disinfestation* is necessary, it should be carried out with the minimum stress to the animals.

Article 9**Actions in the event of a refusal to allow the completion of the journey**

- The welfare of the animals should be the first consideration in the event of a refusal to allow the completion of the *journey*.
- When the animals have been refused import, the *Competent Authority* of that country should make available suitable isolation facilities to allow the *unloading* of animals from a *vehicle* and their secure holding, without posing a risk to the health of national herd or flock, pending resolution of the situation. In this situation, the priorities should be:
 - the *Competent Authority* of the importing country should provide urgently in writing the reasons for the refusal,
 - in the event of a refusal for animal health reasons, the *Competent Authority* of the importing country should provide urgent access to a veterinarian, where possible an OIE veterinarian(s) appointed by the Director General, to assess the animals' health status with regard to the importing country's concerns, and the necessary facilities and approvals to expedite the required diagnostic testing,
 - the *Competent Authority* of the importing country should provide access to allow continued assessment of the health and other aspects of the welfare of the animals,
 - if the matter cannot be promptly resolved, the *Competent Authorities* of the exporting and importing countries should call on the OIE to mediate.
- In the event that a *Competent Authority* requires the animals to remain on the *vehicle*, the priorities should be:
 - the *Competent Authority* should allow reprovisioning of the *vehicle* with water and feed as necessary,
 - the *Competent Authority* should provide urgently in writing the reasons for the refusal,
 - in the event of a refusal for animal health reasons, the *Competent Authority* should provide urgent access to an independent veterinarian(s) to assess the animals' health status, and the necessary facilities and approvals to expedite the required diagnostic testing,
 - the *Competent Authority* should provide access to allow continued assessment of the health and other aspects of the welfare of the animals.
- The OIE should utilise its dispute settlement mechanism to identify a mutually agreed solution which will address animal health and any other welfare issues in a timely manner.

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Article XXX
Species specific issues
(To be developed)

GUIDELINES FOR THE TRANSPORT OF ANIMALS BY SEA

Article 1

Responsibilities

Once the decision to transport animals by sea has been made, the welfare of animals during their transport is paramount and is the joint responsibility of all people involved. These guidelines may also be applied to the transport of animals by water within a country.

The management of animals at post-discharge facilities is outside the scope of this document.

The roles of each of those responsible are defined below:

- *Exporters*, owners of animals and managers of facilities are jointly responsible for the general health of the animals and their fitness for the *journey*.
- The *exporter* has overall responsibility for the organisation, carrying out and completion of the *journey*, regardless of whether duties are subcontracted to other parties during transport. The *exporter* is also responsible for ensuring that equipment and medication are provided as appropriate for the species and *journey*, and for the presence during the *journey* of at least one *animal handler* competent for the species being transported. The *exporter* is also responsible for ensuring compliance of the animals with any required veterinary certification and, in the case of animals for export, any other requirements of the importing and exporting countries.
- Business or buying/selling agents have a joint responsibility with owners for the selection of animals that are fit to travel. They have a joint responsibility with masters of vessels and managers of facilities at the start and at the end of the *journey* for the availability of suitable facilities for the assembly, *loading*, transport, *unloading* and holding of animals, and for emergencies.
- *Animal handlers* are responsible for the humane handling and care of animals, especially during *loading* and *unloading*. To carry out these responsibilities, they should have the authority to take prompt action.
- The *exporter*, the shipping company and the master of the vessel are jointly responsible for planning the *journey* to ensure the care of the animals, including:
 - choosing appropriate *vessels* and ensuring that competent *animal handlers* are available for *loading* and caring for animals throughout the *journey*,
 - developing and keeping up to date contingency plans to address emergencies (including adverse weather conditions) and minimise stress during transport,
 - correct *loading* of the ship, regular inspections during the *journey* and for appropriate responses to problems arising
 - disposal of carcasses according to international law.
- To carry out these responsibilities, the people involved should be competent regarding transport regulations, equipment usage, humane handling and the care of animals.

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- Managers of facilities during *loading* of the animals are responsible for:
 - providing suitable premises for *loading* the animals,
 - providing competent *animal handlers* to load the animals in a manner that causes minimum stress and injury,
 - providing appropriate facilities for emergencies,
 - providing facilities and veterinarians or competent *animal handlers* capable of killing animals humanely when required.

- Managers of facilities at the end of the *journey* are responsible for:
 - providing suitable facilities for *unloading* the animals onto transport vehicles for immediate movement or securely holding the animals in lairage, with shelter, water and feed, when required, for transit,
 - providing competent *animal handlers* to unload the animals with minimum stress and injury,
 - minimising the opportunities for disease transmission while the animals are in the facilities,
 - providing appropriate facilities for emergencies,
 - providing facilities and veterinarians or competent *animal handlers* capable of killing animals humanely when required.

- The responsibilities of the *Competent Authority* of the exporting country include:
 - establishing minimum standards for animal welfare, including requirements for inspection of animals before and during their travel, and for certification and record keeping,
 - approving facilities, *containers, vehicles/vessels* for the holding and transport of animals,
 - setting competence standards for *animal handlers* and managers,
 - ensuring that the *vessel* transporting animals meets the required standards, including those of the importing country,
 - implementation of the standards, including through accreditation of / interaction with other organisations and competent authorities,
 - monitoring and evaluating health and welfare performance, including the use of any veterinary medications.

- The responsibilities of the *Competent Authority* of the importing country include:
 - establishing minimum standards for animal welfare, including requirements for inspection of animals after their travel, and for certification and record keeping,
 - approving facilities, *containers* and vehicles for the *unloading*, holding and transport of animals,
 - setting competence standards for *animal handlers* and managers,

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- implementation of the standards, including through accreditation of / interaction with other organisations and competent authorities,
- ensuring that the exporting country is aware of the required standards for the *vessel* transporting the animals,
- monitoring and evaluating health and welfare performance, including the use of any veterinary medications.
- Veterinarians are responsible for the humane handling and treatment of animals during the *journey*. To carry out these responsibilities, they should have the authority to act and report independently.
 - The veterinarian should meet with the Master, Chief Officer and the senior *animal handler* on a daily basis.

Article 2**Competence**

- All people handling animals or who are otherwise responsible for animals during *journeys*, should be competent according to their responsibilities listed in Article 1. Competence in areas other than animal welfare would need to be addressed separately. Competence may be gained through formal training and/or practical experience.
- This competence should be demonstrated through a current certificate in one of the OIE official languages from an independent body accredited by a *Competent Authority*.
- Assessment of competence for *animal handlers* should at a minimum address knowledge, and ability to apply that knowledge, in the following areas:
 - responsibilities for animals during the *journey*,
 - sources of advice and assistance,
 - animal behaviour, general signs of disease, and indicators of poor animal welfare such as stress, pain and fatigue, and their alleviation,
 - relevant authorities and applicable transport regulations, and associated documentation requirements,
 - general disease prevention procedures, including cleaning,
 - appropriate methods of animal handling during transport and associated activities such as assembling, *loading*, and *unloading*,
 - methods of inspecting animals, managing situations frequently encountered during transport such as adverse weather conditions, and dealing with emergencies,
 - species-specific aspects of animal handling and care, including feeding, watering and inspection,
 - appropriate record keeping and journey log.
- Assessment of competence for *exporters* should at a minimum address knowledge, and ability to apply that knowledge, in the following areas:
 - planning a *journey*, including appropriate *space allowances*, and feed, water and ventilation requirements,
 - relevant authorities and applicable transport regulations, and associated documentation requirements,

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- appropriate methods of animal handling during transport and associated activities such as cleaning and disinfection, assembling, *loading*, and *unloading*,
- species-specific aspects of animal handling and care, including appropriate equipment and medication,
- sources of advice and assistance,
- appropriate record keeping and journey log.
- managing situations frequently encountered during transport such as adverse weather conditions, and dealing with emergencies

Article 3**Documentation**

- Animals should not be loaded until the documentation required to that point is complete.
- The documentation accompanying the consignment should include:
 - journey travel plan,
 - time, date and place of *loading*,
 - the journey log – a daily record of inspection and important events which includes records of morbidity and mortality, climatic conditions, food and water consumed, medication provided, mechanical defects,
 - time, date and place of arrival and *unloading*,
 - veterinary certification, when required,
 - animal identification to allow traceback of individual animals to the premises of departure, and where possible to the premises of origin,
 - details of animals at risk,
 - number of *animal handlers* on board, and their competencies,
 - stocking density estimate for each load in the consignment.
- Veterinary certification should accompany consignments of animals and address:
 - cleaning and disinfection of the *vessel*,
 - fitness of the animals to travel,
 - animal identification (description, number, etc.),
 - health status including tests, treatment and vaccinations carried out, if required.

Article 4**Planning the journey****General**

- Adequate planning is a key factor affecting the welfare of animals during a *journey*.

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- Before the journey starts, plans should be made in relation to:
 - type of transport *vessel* required,
 - route, taking into account distance, expected weather and sea conditions,
 - nature and duration of *journey*,
 - daily care and management of the animals,
 - avoiding the mixing of animals from different sources in a single pen group.
 - provision of appropriate equipment and medication for the numbers and species carried
 - emergency response procedures
- Preconditioning may be required, e.g. for dry food, and unfamiliar methods of supply of feed and water.
- Potential for spread of infectious disease
 - when requested by the *Veterinary Authority* of the importing country, animals should be vaccinated against diseases to which they are likely to be exposed at their destination.
- There should be planning for water and feed availability during the *journey*. Feed should be of appropriate quality and composition for the species, age, condition of the animals, etc.
- Extreme weather conditions are hazards for animals undergoing transport and require appropriate vessel design to minimise risks. Special precautions should be taken for animals that have not been acclimatised or which are unsuited to either hot or cold conditions. In some extreme conditions of heat or cold, animals should not be transported at all.
- Behaviour-modifying or other medication should not be used routinely during transport. Such medicines should only be administered when a problem exists in an individual animal, and should be administered by a veterinarian or other person who has been instructed in their use by a veterinarian. Treated animals should be placed in a dedicated area.
- There should be an emergency management plan that identifies the important adverse events that may be encountered during the *journey*, the procedures for managing each event and the action to be taken in an emergency. For each important event, the plan should document the actions to be undertaken and the responsibilities of all parties involved, including communications and record keeping.

Vessel and container design and maintenance

- *Vessels* used for the sea transport of animals should be designed, constructed and fitted as appropriate to the species, size and weight of the animals to be transported; special attention should be paid to the avoidance of injury to animals through the use of secure smooth fittings free from sharp protrusions and the provision of non-slip flooring. The avoidance of injury to animal handlers while carrying out their responsibilities should be emphasised.
- *Vessels* should be designed to permit thorough cleaning and disinfection, and the management of faeces and urine.

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- *Vessels* should be maintained in good mechanical and structural condition.
- *Vessels* should have adequate ventilation to meet variations in climate and the thermo-regulatory needs of the animal species being transported; the ventilation system should be capable of operating when the *vessel* is stationary and the air flow should be adjustable.
- The feeding and watering system should be designed to permit adequate access to feed and water appropriate to the species, size and weight of the animals, and to minimise soiling of pens.
- *Vessels* should be designed so that the faeces or urine from animals on upper levels do not soil animals on lower levels, or their feed or water.
- Stowage of feed and bedding should be carried out in such a way to ensure protection from the elements and sea water
- Where appropriate, suitable bedding, such as straw or sawdust, should be added to vessel floors to assist absorption of urine and faeces, provide better footing for animals and protect animals (especially young animals) from hard or rough flooring surfaces and adverse weather conditions.
- The above principles apply also to *containers* used for the transport of animals.

Special provisions for transport in road vehicles on roll-on/roll-off vessels or for containers

- Road vehicles and *containers* should be equipped with a sufficient number of adequately designed, positioned and maintained securing points enabling them to be securely fastened to the *vessel*.
- Road vehicles and *containers* should be secured to the ship before the start of the sea journey to prevent them being displaced by the motion of the *vessel*.
- *Vessels* should have adequate ventilation to meet variations in climate and the thermo-regulatory needs of the animal species being transported, especially where the animals are transported in a secondary *vehicle/container* on enclosed decks.

Space allowance

- The number of animals which should be transported on a *vessel* and their allocation to different pens on the *vessel* should be determined before *loading*.
- The amount of space required, including headroom, depends on the species of animal and should allow the necessary thermoregulation. Each animal should be able to assume its natural position for transport (including during *loading* and *unloading*) without coming into contact with the roof or upper deck of the *vessel*. When animals lie down, there should be enough space for every animal to adopt a comfortable, normal lying posture.
- Calculations for the space allowance for each animal should be carried out, using the figures given in these guidelines or, in their absence, in a relevant national or international document. The size of pens will affect the number of animals in each.
- The same principles apply when animals are transported in *containers*.

Ability to observe animals en route

- Animals should be positioned to enable them to be observed regularly during the *journey* to ensure their safety and good welfare.

- To allow an adequate inspection of animals en route, it should be possible for each animal to be clearly observed by the *animal handler* or other responsible person.

Emergency response procedures

- Appropriate contingency plans to address emergencies should be prepared in advance.

Article 5

Pre-journey period

General

- Before each *journey*, *vessels* should be thoroughly cleaned and treated for animal and public health purposes, using chemicals approved by the *Competent Authority*. When cleaning is necessary during a *journey*, this should be carried out with the minimum of stress to the animals.
- In some circumstances, animals may require pre-journey assembly. In these circumstances, the following points should be considered:
 - For animals such as pigs which are susceptible to motion sickness, and in order to reduce urine and faeces production during the *journey*, a short period of feed deprivation prior to *loading* is desirable.
 - When animals will be provided with a novel diet or method of water provision during or after transport, an adequate period of pre-exposure is necessary. Preconditioning to the feed to be used on the *vessel* may be necessary in such cases.
- Pre-journey holding areas should be designed to:
 - securely contain the animals,
 - maintain an environment safe from hazards, including predators and disease,
 - protect animals from exposure to adverse weather conditions, and
 - allow for rest, watering and feeding.

Selection of compatible groups

- Compatible groups should be selected before transport to avoid adverse animal welfare consequences. The following guidelines should be applied when assembling groups of animals:
 - animals of different species should not be mixed unless they are judged to be compatible,
 - animals of the same species can be mixed unless there is a significant likelihood of aggression; aggressive individuals should be segregated,
 - young or small animals may need to be separated from older or larger animals, with the exception of nursing mothers with young at foot,
 - animals with horns or antlers should not be mixed with animals lacking horns or antlers,

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- animals reared together should be maintained as a group; animals with a strong social bond, such as a dam and offspring, should be transported together.

Fitness to travel

- Animals should be inspected before travel and those found unfit to travel by farm staff, *animal handlers* or veterinarians should not be loaded onto a *vessel*.
- Humane and effective arrangements should be made by the owner or agent for the handling and care of any animal rejected as unfit to travel.
- Animals that are unfit to travel include:
 - those that are sick, injured, weak, disabled or fatigued,
 - those that are unable to stand unaided and bear weight on each leg,
 - those that are blind in both eyes,
 - those that cannot be moved without causing them additional suffering,
 - newborn with an unhealed navel,
 - females travelling without young which have given birth within the previous 48 hours,
 - pregnant animals which would be in the final 10% of their gestation period at the planned time of unloading.
- Risks during transport can be reduced by selecting animals best suited to the conditions of travel and those that are acclimatised to expected weather conditions.
- Animals at risk, and requiring better conditions and additional attention during transport include:
 - very large or obese individuals,
 - very young or old animals,
 - excitable or aggressive animals,
 - animals which have had little contact with humans,
 - females in the last third of pregnancy or in heavy lactation.
- Hair or wool length needs consideration in relation to the weather conditions expected.

Article 6**Loading****Experienced supervision**

- *Loading* should be carefully planned as it has the potential to be the cause of poor welfare in transported animals.
- *Loading* should be supervised by the *Competent Authority* and managed by an *animal handler(s)*. *Animal handlers* should ensure that animals are loaded quietly and without unnecessary noise, harassment or force, and that untrained assistants or spectators do not impede the process.

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- Ventilation during *loading* and the *journey* should provide for fresh air, and the removal of excessive heat, humidity and noxious fumes (such as ammonia and carbon monoxide). Under warm and hot conditions, ventilation should allow for the adequate convective cooling of each animal. In some instances, adequate ventilation can be achieved by increasing the *space allowance* for animals.

Facilities

- The facilities for *loading* including the collecting area at the wharf, races and loading ramps should be designed and constructed to take into account of the needs and abilities of the animals with regard to dimensions, slopes, surfaces, absence of sharp projections, flooring, sides etc.
- All loading facilities should be properly illuminated to allow the animals to be easily inspected by the *animal handler(s)*, and to allow the animals' ease of movement at all times.

Goads and other aids

- The following principles should apply:
 - Goads (aids for encouraging animals to move) should not be used on animals that have little or no room to move.
 - Useful and permitted goads include panels, flags, plastic paddles, flappers (a length of cane with a short strap of leather or canvas attached), plastic bags and metallic rattles; they should be used in a manner sufficient to encourage and direct movement of the animals but without physical contact with them.
 - Unsuitable goads such as large wooden sticks, sticks with sharp ends, lengths of metal piping, fencing wire or heavy leather belts should not be used to strike animals.
 - The use of goads which administer electric shocks should be discouraged, and restricted to that necessary to assist movement of the animal. If such use is necessary, it should be limited to the hindquarters of pigs and large ruminants, and never on sensitive areas such as the eyes, mouth, ears, anogenital region or belly. Such instruments should not be used on horses, sheep and goats of any age, or on calves or piglets.
 - The use of well trained dogs to help with the *loading* of some species may be acceptable.
 - Manual lifting is permissible for young animals that may have difficulty negotiating ramps, but the lifting of animals by their tail, head, horns, ears, limbs, wool or hair should not be permitted.

Article 7**Travel****Inspections**

- Competent *animal handler(s)* should check the consignment immediately before departure to ensure that the animals have been loaded according to the load plan. Each consignment should be checked again within 24 hours.
- Adjustments should be made to the stocking density within 48 hours of departure and as appropriate during the *journey*.

Appendix XXII (contd)

- Each pen of animals should be observed on a daily basis for normal behaviour, health and welfare, and the correct operation of ventilation, watering and feeding systems. There should also be a night patrol. Any necessary corrective action should be undertaken promptly.
- Adequate access to suitable feed and water should be ensured for all animals in each pen.

Sick and injured animals

- Sick or injured animals should be segregated/isolated.
- Sick or injured animals should be treated promptly and appropriately, and veterinary advice should be sought if necessary. All drugs and products should be used in accordance with the manufacturer's recommendations.
- A record of treatments carried out and their outcomes should be kept.
- When euthanasia is necessary, the person responsible for the animals must ensure that it is carried out humanely, and results in immediate death. When necessary, assistance should be sought from a veterinarian or other person(s) competent in euthanasia procedures. Recommendations for specific species are described in Chapter on humane killing of animals for disease control purposes.

Cleaning and disinfection

- *Vessels* and *containers*, used to carry the animals should be cleaned before re-use through the physical removal of manure and bedding by scraping, washing and flushing *vessels* and *containers* with water. This should be followed by *disinfection* when there are concerns about disease transmission.
- Manure, litter and bedding should be disposed of in such a way as to prevent the transmission of disease and in compliance with all relevant health and environmental legislation.
- Where cleaning or *disinfestation* is necessary during travel, it should be carried out with the minimum stress to the animals.

Article 8**Unloading and post-journey handling****General**

- The required facilities and the principles of animal handling detailed in Article 6 (Loading) apply equally to *unloading*, but consideration should be given to the likelihood that the animals will be fatigued.
- *Unloading* should be carefully planned as it has the potential to be the cause of poor welfare in transported animals.
- A livestock *vessel* should have priority attention when arriving in port and have priority access to a berth with suitable unloading facilities. As soon as possible after the ship's arrival at the port and acceptance of the consignment by the *Competent Authority*, animals should be unloaded into appropriate facilities.
- The accompanying *veterinary certificate* and other documents should meet the requirements of the importing country. Veterinary inspections should be completed as quickly as possible.

Appendix XXII (contd)

- *Unloading* should be supervised by the *Competent Authority* and managed by a competent *animal handler(s)*. The *animal handlers* should ensure that animals are unloaded quietly and without unnecessary noise, harassment or force, and that untrained assistants or spectators do not impede the process.

Facilities

- The facilities for *unloading* including the collecting area at the wharf, races and unloading ramps should be designed and constructed to take into account of the needs and abilities of the animals with regard to dimensions, slopes, surfaces, absence of sharp projections, flooring, sides etc.
- All unloading facilities should be properly illuminated to allow the animals to be easily inspected by the *animal handler(s)*, and to allow the animals' ease of movement at all times.
- In case of emergencies, port facilities should provide animals with appropriate care and comfort, adequate space, access to quality feed and clean drinking water, and shelter from extreme weather conditions.

Sick and injured animals

- In some cases, where animals are non-ambulatory due to fatigue, injury or sickness, it may be in the best welfare interests of the animal to be treated or euthanased aboard the *vessel*.
- If *unloading* is in the best welfare interests of animals that are fatigued, injured or sick, there should be appropriate facilities and equipment for the humane unloading of such animals. These animals should be unloaded in a manner that causes the least amount of suffering. After *unloading*, appropriate facilities and treatments should be provided for sick or injured animals.

Article 9**Actions in the event of a refusal to allow the import of a shipment**

- The welfare of the animals should be the first consideration in the event of a refusal to import.
- When a shipment has been refused import, the *Competent Authority* of that country should make available suitable isolation facilities to allow the *unloading* of animals from a *vessel* and their secure holding, without posing a risk to the health of the national herd, pending resolution of the situation. In this situation, the priorities should be:
 - the *Competent Authority* of the importing country should provide urgently in writing the reasons for the refusal,
 - in the event of a refusal for animal health reasons, the *Competent Authority* of the importing country should provide urgent access to an OIE-appointed veterinarian(s) to assess the animals' health status with regard to the importing country's concerns, and the necessary facilities and approvals to expedite the required diagnostic testing
 - the *Competent Authority* of the importing country should provide access to allow continued assessment of the ongoing health and welfare situation,
 - if the matter cannot be promptly resolved, the *Competent Authority* of the exporting and importing countries should call on the OIE to mediate.
- In the event that the animals are required to remain on the *vessel*, the priorities should be:
 - the *Competent Authority* of the importing country should allow reprovision of the *vessel* with water and feed as necessary,

Appendix XXII (contd)

- the *Competent Authority* of the importing country should provide urgently in writing the reasons for the refusal,
 - in the event of a refusal for animal health reasons, the *Competent Authority* of the importing country should provide urgent access to an OIE-appointed veterinarian(s) to assess the animals' health status with regard to the importing country's concerns, and the necessary facilities and approvals to expedite the required diagnostic testing,
 - the *Competent Authority* of the importing country should provide access to allow continued assessment of the ongoing health and welfare situation,
 - if the matter cannot be urgently resolved, the *Competent Authorities* of the exporting and importing countries should call on the OIE to mediate.
- The OIE should utilise its dispute settlement mechanism to identify a mutually agreed solution which will address the animal health and welfare issues in a timely manner.

Article 10**Species specific issues**

Cattle are sociable animals and may become agitated if they are singled out. Social order is usually established at about two years of age. When groups are mixed, social order has to be re-established and aggression may occur until a new order is established. Crowding of cattle may also increase aggression as the animals try to maintain personal space. Social behaviour varies with age, breed and sex; *Bos indicus* and *Bos indicus*-cross animals are usually more temperamental than European breeds. Young bulls, when moved in groups, show a degree of playfulness (pushing and shoving) but become more aggressive and territorial with age. Adult bulls have a minimum personal space of six square metres. Cows with young calves can be very protective, and handling calves in the presence of their mothers can be dangerous.

Goats should be handled calmly and are more easily led or driven than if they are excited. When goats are moved, their gregarious tendencies should be exploited. Activities which frighten, injure or cause agitation to animals should be avoided. Bullying is particularly serious in goats. Housing strange goats together could result in fatalities, either through physical violence, or subordinate goats being refused access to food and water.

Sheep are sociable animals with good eyesight and tend to "flock together", especially when they are agitated. They should be handled calmly and their tendency to follow each other should be exploited when they are being moved. Sheep may become agitated if they are singled out for attention and will strive to rejoin the group. Activities which frighten, injure or cause agitation to sheep should be avoided. They can negotiate steep ramps.

Pigs have poor eyesight, and may move reluctantly in strange surroundings. They benefit from well lit loading bays. Since they negotiate ramps with difficulty, these should be as level as possible. Ideally a hydraulic lift should be used for greater heights. Pigs also negotiate steps with difficulty. A good 'rule-of-thumb' is that no step should be higher than the pig's front knee.

Appendix XXII (contd)

Horses in this context include all solipeds, donkeys, mules, hinnies and zebra. They have good eyesight and a very wide angle of vision. They may have a history of loading resulting in good or bad experiences. Good training should result in easier loading, but some horses can prove difficult, especially if they are inexperienced or have associated loading with poor transport conditions. In these circumstances two experienced handlers can load an animal by linking arms or using a strop below its rump. Blindfolding may even be considered. Ramps should be as shallow as possible. Steps are not usually a problem when horses mount a ramp, but they tend to jump a step when descending, so steps should be as low as possible. Horses benefit from being individually stalled, but may be transported in compatible groups. When horses are to travel in groups, their shoes should be removed.

Camelids in this context comprise llamas, alpacas, guanaco and vicuna. They have good eyesight and, like sheep, can negotiate steep slopes, though ramps should be as shallow as possible. They load most easily in a bunch as a single animal will strive to rejoin the others. Whilst they are usually docile, they have an unnerving habit of spitting in self-defence. During transport they usually lie down. They frequently extend their front legs forward when lying, so gaps below partitions should be high enough so that their legs are not trapped when the animals rise.

Appendix XXII (contd)**GUIDELINES FOR THE HUMANE KILLING OF ANIMALS
FOR DISEASE CONTROL PURPOSES****Article 1****General principles**

This chapter is based on the premise that a decision to kill the animals has been made.

- All personnel involved in the humane killing of animals should have the relevant skills and competencies.
- As necessary, operational procedures should be adapted to the specific circumstances operating on the premises and should address, apart from animal welfare, operator safety, biosecurity and environmental aspects.
- Following the decision to kill the animals, killing should be carried out as quickly as possible and normal husbandry should be maintained until the animals are killed.
- The handling and movement of animals should be minimised and when done, it should be done in accordance with the guidelines described below.
- Animal restraint should be sufficient to facilitate effective killing, and in accordance with animal welfare and operator safety requirements; when restraint is required, killing should follow with minimal delay.
- When animals are killed for disease control purposes, methods used should result in immediate death or immediate loss of consciousness lasting until death; when loss of consciousness is not immediate, induction of unconsciousness should be non-aversive and should not cause anxiety, pain, distress or suffering in the animals.
- For animal welfare considerations, young animals should be killed before older animals; for biosecurity considerations, infected animals should be killed first, followed by in-contact animals, and then the remaining animals.
- There should be continuous monitoring of the procedures to ensure they are consistently effective with regard to animal welfare, operator safety and biosecurity.
- When the operational procedures are concluded, there should be a written report describing the practices adopted and their effect on animal welfare, operator safety and biosecurity.
- To the extent possible to minimise public distress, killing of animals and carcase disposal should be carried out away from public view.
- These general principles should also apply when animals need to be killed for other purposes such as after natural disasters.

Article 2**Organisational structure**

Disease control contingency plans should be in place at a national level and should contain details of management structure, disease control strategies and operational procedures; animal welfare considerations should be addressed within these disease control contingency plans. The plans should also include a strategy to ensure that an adequate number of personnel trained in the humane killing of animals is available.

Appendix XXII (contd)

Disease control contingency plans should address the animal welfare issues that may result from animal movement controls.

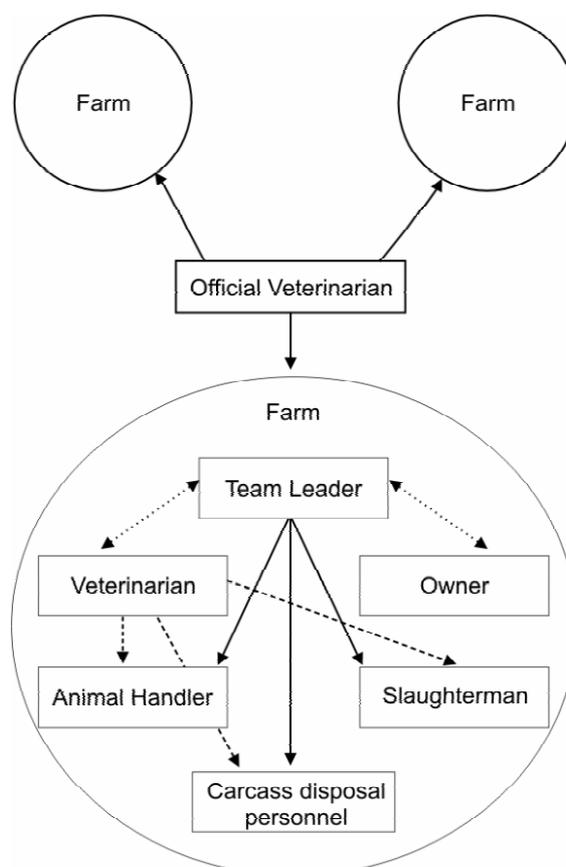
The operational activities should be led by an *official veterinarian* who has the authority to appoint the personnel in the specialist teams and ensure that they adhere to the required animal welfare and biosecurity standards. When appointing the personnel, he/she should ensure that the personnel involved has the required competencies.

The *official veterinarian* should be responsible for all activities across one or more affected premises and should be supported by coordinators for planning (including communications), operations and logistics to facilitate efficient operations.

The *official veterinarian* should provide overall guidance to personnel and logistic support for operations on all affected premises to ensure consistency in adherence to the OIE animal welfare and animal health guidelines.

A specialist team, led by a team leader answerable to the *official veterinarian*, should be deployed to work on each affected premises. The team should consist of personnel with the competencies to conduct all required operations; in some situations, personnel may be required to fulfil more than one function. Each team should contain a veterinarian.

In considering the animal welfare issues associated with killing animals, the key personnel, their responsibilities and competencies required are described in Article 3.



Appendix XXII (contd)**Article 3****Responsibilities and competencies of the specialist team****Team leader**

- Responsibilities
 - plan overall operations on an affected premises
 - determine and address requirements for animal welfare, operator safety and biosecurity
 - organise, brief and manage team of people to facilitate humane killing of the relevant animals on the premises in accordance with national regulations and these guidelines
 - determine logistics required
 - monitor operations to ensure animal welfare, operator safety and biosecurity requirements are met
 - report upwards on progress and problems
 - provide a written report at the conclusion of the killing, describing the practices adopted and their effect on animal welfare
- Competencies
 - appreciation of animal welfare and the underpinning behavioural, anatomical and physiological processes involved in the killing process
 - skills to manage all activities on premises and deliver outcomes on time
 - awareness of psychological effects on farmer, team members and general public
 - effective communication skills

Veterinarian

- Responsibilities
 - determine and implement the most appropriate killing method to ensure that animals are killed without avoidable pain and distress
 - determine and implement the additional requirements for animal welfare, including the order of killing
 - minimise the risk of disease spread within and from the premises through the supervision of biosecurity procedures
 - continuously monitor animal welfare and biosecurity procedures
 - in cooperation with the leader, prepare a written report at the conclusion of the killing, describing the practices adopted and their effect on animal welfare
- Competencies
 - ability to assess animal welfare, especially the effectiveness of stunning and killing and to correct any deficiencies
 - ability to assess biosecurity risks

Animal handlers

- Responsibilities
 - review on-site facilities in terms of their appropriateness
 - design and construct temporary animal handling facilities, when required
 - move and restrain animals
- Competencies
 - experience of animal handling in emergency situations and in close confinement

Slaughterers

- Responsibilities
 - ensure humane killing of animals through effective stunning and killing
- Competencies
 - when required by regulations, licensed to use necessary equipment or licensed to be slaughterers
 - competent to use and maintain relevant equipment
 - competent to use techniques for the species involved
 - competent to assess effective stunning and killing

Carcase disposal personnel

- Responsibilities
 - ensure efficient carcass disposal (to ensure killing operations are not hindered)
- Competencies
 - competent to use and maintain available equipment and apply techniques for the species involved

Farmer / owner / manager

- Responsibilities
 - assist when requested
- Competencies
 - specific knowledge of his/her animals and their environment

Article 4**Operational guidelines****Planning the humane killing of animals**

Many activities will need to be conducted on affected premises, including the humane killing of animals. The team leader should develop a plan for humanely killing animals on the premises which should include consideration of:

Appendix XXII (contd)

- Minimising handling and movement of animals
- Killing the animals on the affected premises; however, there may be circumstances where the animals may need to be moved to another location for killing; when the killing is conducted at an abattoir, the guidelines in the Chapter on slaughter of animal for human consumption should be followed.
- The species, number, age and size of animals to be killed, and the order of killing them
- Methods of killing the animals, and their cost
- Housing and location of the animals
- The availability and effectiveness of equipment needed for killing of the animals
- The facilities available on the premises that will assist with the killing
- Biosecurity and environmental issues
- The health and safety of personnel conducting the killing
- Any legal issues that may be involved, for example where restricted veterinary drugs or poisons may be used, or where the process may impact on the environment, and
- The presence of other nearby premises holding animals.

In designing a killing plan, it is essential that the method chosen be consistently reliable to ensure that all animals are humanely and quickly killed.

Article 5**Table summarising killing methods described in Articles 6-17***

Species	Age range	Procedure	Restraint necessary	Animal welfare concerns with inappropriate application	Article reference
Cattle	All	free bullet	no	non-lethal wounding	
	all except neonates	captive bolt - penetrating, followed by pithing or bleeding	yes	ineffective stunning	
	adults only	captive bolt - non-penetrating, followed by bleeding	yes	ineffective stunning, regaining of consciousness before killing	
	calves only	electrical, two stage application	yes	pain associated with cardiac arrest after ineffective stunning	
	calves only	electrical, single application (method 1)	yes	ineffective stunning	
	All	injection with barbiturates and others	yes	non-lethal dose, pain associated with injection site	

Appendix XXII (contd)

Species	Age range	Procedure	Restraint necessary	Animal welfare concerns with inappropriate application	Article reference
Sheep and goats	all	free bullet	no	non-lethal wounding	
	all except neonates	captive bolt - penetrating, followed by pithing or bleeding	yes	ineffective stunning, regaining of consciousness before killing	
	all except neonates	captive bolt - non-penetrating, followed by bleeding	yes	ineffective stunning, regaining of consciousness before killing	
	neonates	captive bolt - non-penetrating	yes	non-lethal wounding	
	all	electrical, two stage application	yes	pain associated with cardiac arrest after ineffective stunning	
	all	electrical, single application (Method 1)	yes	ineffective stunning	
	neonates only	CO ₂ air mixture	yes	slow induction of unconsciousness, aversiveness of induction	
	neonates only	nitrogen/inert gas mixed with CO ₂	yes	slow induction of unconsciousness, aversiveness of induction	
	neonates only	Nitrogen/inert gases	yes	slow induction of unconsciousness,	
	all	injection of barbiturates and others	yes	non-lethal dose, pain associated with injection site	
Pigs	all	free bullet	no	non-lethal wounding	
	all except neonates	captive bolt - penetrating, followed by pithing or bleeding	yes	ineffective stunning,	
	neonates only	captive bolt - non-penetrating	yes	non-lethal wounding	
	All §	electrical, two stage application	yes	pain associated with cardiac arrest after ineffective stunning	

Appendix XXII (contd)

Species	Age range	Procedure	Restraint necessary	Animal welfare concerns with inappropriate application	Article reference
Pigs	All	electrical, single application (Method 1)	yes	ineffective stunning	
	neonates only	CO ₂ air mixture	yes	slow induction of unconsciousness, aversiveness of induction	
	neonates only	nitrogen/inert gas mixed with CO ₂	yes	slow induction of unconsciousness, aversiveness of induction	
	neonates only	Nitrogen/inert gases	yes	slow induction of unconsciousness,	
	All	injection with barbiturates and others	yes	non-lethal dose, pain associated with injection site	
Poultry	adults only	captive bolt - non-penetrating	yes	ineffective stunning	
	day-olds and eggs only	maceration	no	non-lethal wounding, non- immediacy;	
	adults only	electrical single application (Method 2)	yes	ineffective stunning	
	adults only	electrical single application, followed by killing (Method 3)	yes	ineffective stunning; regaining of consciousness before killing	
	All	CO ₂ air mixture Method 1 Method 2	yes no	slow induction of unconsciousness, aversiveness of induction	
	All	nitrogen/inert gas mixed with CO ₂	yes	slow induction of unconsciousness, aversiveness of induction	
	All	Nitrogen/inert gases	yes	slow induction of unconsciousness	
	All	injection of barbiturates and others	yes	non-lethal dose, pain associated with injection site	

Appendix XXII (contd)

Species	Age range	Procedure	Restraint necessary	Animal welfare concerns with inappropriate application	Article reference
Poultry	adults only	addition of anaesthetics to feed or water, followed by an appropriate killing method	no	ineffective or slow induction of unconsciousness	

* the methods are described in the order of mechanical, electrical and gaseous, not in an order of desirability from an animal welfare viewpoint

§ the only preclusion against the use of this method for neonates is the design of the stunning tongs that may not facilitate their application across such a small-sized head/body.

Article 6

Free bullet

Introduction

A free bullet is a projectile fired from a shotgun, rifle, handgun or purpose-made humane killer.

The most commonly used firearms for close range use are:

- humane killers (specially manufactured/adapted single-shot weapons)
- shotguns (12, 16, 20, 28 bore and .410)
- rifles (.22 rimfire)
- handguns (various calibres from .32 to .45)

The most commonly used firearms for long range use are:

- rifles (.22, .243, .270 and .308)

A free bullet used from long range should be aimed to penetrate the skull or soft tissue at the top of the neck of the animal, to cause irreversible concussion and death and should only be used by properly trained and competent marksmen.

Requirements for effective use

- The marksman should take account of human safety in the area in which he/she is operating
- The marksman should ensure that the animal is not moving and in the correct position to enable accurate targeting and the range should be as short as possible (5 –50 cm for a shotgun) but the barrel should not be in contact with the animal's head
- The correct cartridge, calibre and type of bullet for the different species age and size should be used. Ideally the ammunition should expand upon impact and dissipate its energy within the cranium
- Shot animals should be checked to ensure the absence of brain stem reflexes.

Appendix XXII (contd)

Figure 1. The optimum shooting position for cattle is at the intersection of two imaginary lines drawn from the rear of the eyes to the opposite horn buds.

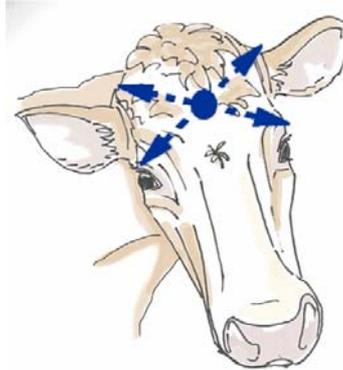


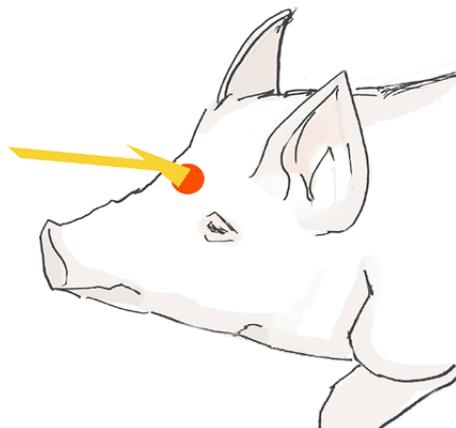
Figure 2. The optimum shooting position for hornless sheep and goats is on the midline, just above the eyes and directing the shot down the line of the spinal chord.



Figure 3. The optimum shooting position for heavily horned sheep and horned goats is behind the poll.



Figure 4. The optimum shooting position for pigs is just above the eyes and directing the shot down the line of the spinal chord.



Advantages

- Used properly, it provides a quick and effective method for killing
- It requires minimal or no restraint and can be used to kill from a distance
- It is suitable for killing agitated animals in open spaces

Disadvantages

- Potentially dangerous to humans and other animals in the area
- Potential for non-lethal wounding
- Destruction of brain tissue may preclude diagnosis of some diseases
- Leakage of bodily fluids may present a biosecurity risk
- Legal requirements may preclude or restrict use
- Limited availability of competent personnel

Conclusions

- A suitable method for cattle, sheep, goats and pigs, including large animals in open spaces.

Appendix XXII (contd)**Article 7****Penetrating captive bolt****Introduction**

A penetrating captive bolt is fired from a gun powered by either compressed air or a blank cartridge. There is no free projectile.

The captive bolt should be aimed on the skull in a position to penetrate the cortex and mid-brain of the animal. The impact of the bolt on the skull produces unconsciousness. Physical damage to the brain caused by penetration of the bolt may result in death, however pithing or bleeding should be performed as soon as possible after the shot to ensure the death of the animal.

Requirements for effective use

- For cartridge powered and compressed air guns, the bolt velocity and the length of the bolt should be appropriate to the species and type of animal, in accordance with the manufacturer's recommendations
- Captive bolt guns should be frequently cleaned and maintained in good working condition
- More than one gun may be necessary to avoid overheating and a back-up gun should be available in the event of an ineffective shot
- Animals should be restrained; at a minimum they should be penned for cartridge powered guns and in a race for compressed air guns
- The operator should ensure that the animal's head is accessible
- The operator should fire the captive bolt at right angles to the skull in the optimal position (see figures 1, 3 & 4. The optimum shooting position for hornless sheep is on the highest point of the head, on the midline and aim towards the angle of the jaw)
- To ensure the death of the animal, pithing or bleeding should be performed as soon as possible after stunning
- Animals should be monitored continuously after stunning until death to ensure the absence of brain stem reflexes

Advantages

- Mobility of cartridge powered equipment reduces the need to move animals
- Immediate onset of a sustained period of unconsciousness

Disadvantages

- Poor gun maintenance and misfiring, and inaccurate gun positioning and orientation may result in poor animal welfare
- Post stun convulsions may make pithing difficult and hazardous
- Difficult to apply in agitated animals
- Repeated use of a cartridge powered gun may result in over-heating

- Leakage of bodily fluids may present a biosecurity risk
- Destruction of brain tissue may preclude diagnosis of some diseases

Conclusion

A suitable method for cattle, sheep, goats and pigs (except neonates), when followed by pithing.

Article 8

Captive bolt - non-penetrating

Introduction

A non-penetrating captive bolt is fired from a gun powered by either compressed air or a blank cartridge. There is no free projectile.

The gun should be placed on the front of the skull to deliver a percussive blow which produces unconsciousness in cattle (adults only), sheep, goats and pigs, and death in poultry and neonate sheep, goats and pigs. In mammals, bleeding should be performed as soon as possible after the blow to ensure the death of the animal.

Requirements for effective use

- For cartridge powered and compressed air guns, the bolt velocity should be appropriate to the species and type of animal, in accordance with the manufacturer's recommendations
- Captive bolt guns should be frequently cleaned and maintained in good working condition
- More than one gun may be necessary to avoid overheating and a back-up gun should be available in the event of an ineffective shot
- Animals should be restrained; at a minimum mammals should be penned for cartridge powered guns and in a race for compressed air guns; birds should be restrained in cones, shackles, crushes or by hand.
- The operator should ensure that the animal's head is accessible
- The operator should fire the captive bolt at right angles to the skull in the optimal position (figures 1-5)
- To ensure death in non-neonate mammals, bleeding should be performed as soon as possible after stunning
- Animals should be monitored continuously after stunning until death to ensure the absence of brain stem reflexes

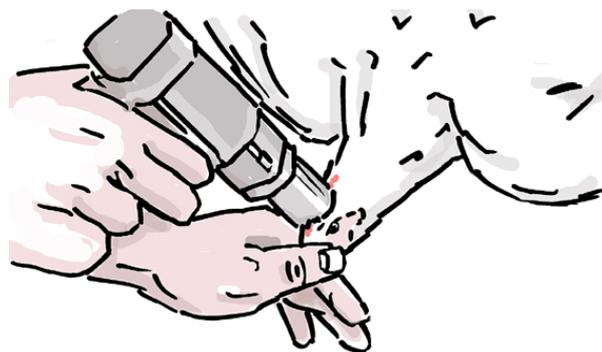


Figure 5. The optimum shooting position for

Advantages

- Immediate onset of unconsciousness, and death in birds and neonates
- Mobility of equipment reduces the need to move animals

Appendix XXII (contd)**Disadvantages**

- As consciousness can be regained quickly in non-neonate mammals, they should be bled as soon as possible after stunning
- Laying hens in cages have to be removed from their cages and most birds have to be restrained
- Poor gun maintenance and misfiring, and inaccurate gun positioning and orientation may result in poor animal welfare
- Post stun convulsions may make bleeding difficult and hazardous
- Difficult to apply in agitated animals; such animals may be sedated in advance of the killing procedure
- Repeated use of a cartridge powered gun may result in over-heating
- Bleeding may present a biosecurity risk

Conclusions

- A suitable method for poultry, and neonate sheep, goats and pigs.
- If bleeding does not present a biosecurity issue, this is a suitable method for cattle (adults only), and non-neonate sheep, goats and pigs.

Article 9**Maceration****Introduction**

Maceration, utilising a mechanical apparatus with rotating blades or projections, causes immediate fragmentation and death in day-old poultry and embryonated eggs

Requirements

- Maceration requires specialised equipment which should be kept in excellent working order
- The rate of introducing the birds should not allow the equipment to jam, birds to rebound from the blades or the birds to suffocate before they are macerated

Advantages

- Procedure results in immediate death
- Large numbers can be killed quickly

Disadvantages

- Specialised equipment is required
- Macerated tissues may present a biosecurity issue

Conclusion

A suitable method for killing day-old poultry and embryonated eggs.

Article 10

Electrical – two stage application

Introduction

A two stage application of electric current comprises firstly an application of current to the head by scissor-type tongs, immediately followed by an application of the tongs across the chest in a position that spans the heart.

The application of sufficient electric current to the head will induce ‘tonic/clonic’ epilepsy and unconsciousness. Once the animal is unconscious, the second stage will induce ventricular fibrillation (cardiac arrest) resulting in death. The second stage (the application of low frequency current across the chest) should only be applied to unconscious animals to prevent unacceptable levels of pain.

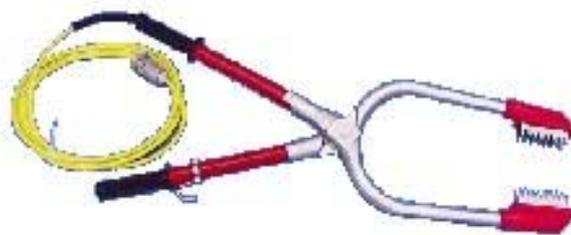


Figure 6. Scissor-type stunning tongs.

Requirements for effective use

- The stunner control device should generate a low frequency (30 – 60 Hz) current with a minimum voltage of 250 volts true RMS under load.
- Appropriate protective clothing (including rubber gloves and boots) should be worn.
- Animals should be restrained, at a minimum free-standing in a pen, close to an electrical supply.
- Two team members are required, the first to apply the electrodes and the second to manipulate the position of the animal to allow the second application to be made.
- A stunning current should be applied via scissor-type stunning tongs in a position that spans the brain for a minimum of 3 seconds; immediately following the application to the head, the electrodes should be transferred to a position that spans the heart and the electrodes applied for a minimum of 3 seconds.
- Electrodes should be cleaned regularly and after use, to enable optimum electrical contact to be maintained.
- Animals should be monitored continuously after stunning until death to ensure the absence of brain stem reflexes.

Advantages

- The application of the second stage minimises post-stun convulsions and therefore the method is particularly effective with pigs.
- Non-invasive technique minimises biosecurity risk.

Disadvantages

- Requires a reliable supply of electricity.
- The electrodes must be applied and maintained in the correct positions to produce an effective stun and kill.

Appendix XXII (contd)

- Most stunner control devices utilise low voltage impedance sensing as an electronic switch prior to the application of high voltages; in unshorn sheep, contact impedance may be too high to switch on the required high voltage (especially during stage two).
- The procedure may be physically demanding, leading to operator fatigue and poor electrode placement.

Conclusion

- A suitable method for calves, sheep and goats, and especially for pigs (over one week of age).

Article 11**Electrical – single application****Introduction**

Method 1 comprises the single application of sufficient electrical current to the head and back, to simultaneously stun the animal and fibrillate the heart. Provided sufficient current is applied in a position that spans both the brain and heart, the animal will not recover consciousness.

Method 2 stuns and kills by drawing inverted and shackled poultry through an electrified waterbath stunner. Electrical contact is made between the 'live' water and earthed shackle and, when sufficient current is applied, poultry will be simultaneously stunned and killed.

Method 3 comprises the single application of sufficient electrical current to the head of poultry in a position that spans the brain, causing unconsciousness; this is followed by a killing method (Article 17).

Method 1**Requirements for effective use**

- The stunner control device should generate a low frequency (30 – 60 Hz) current with a minimum voltage of 250 volts true RMS under load.
- Appropriate protective clothing (including rubber gloves and boots) should be worn.
- Animals should be individually and mechanically restrained close to an electrical supply as the maintenance of physical contact between the stunning electrodes and the animal is necessary for effective use.
- The rear electrode should be applied to the back, above or behind the heart, and then the front electrode in a position that is forward of the eyes, with current applied for a minimum of 3 seconds.
- Electrodes should be cleaned regularly between animals and after use, to enable optimum electrical contact to be maintained.
- Water or saline may be necessary to improve electrical contact with sheep.
- An effective stun and kill should be verified by the absence of brain stem reflexes.

Advantages

- Stuns and kills simultaneously.
- Minimises post-stun convulsions and therefore is particularly effective with pigs.
- A single team member only is required for the application.

- Non-invasive technique minimises biosecurity risk.

Disadvantages

- Requires individual mechanical animal restraint.
- The electrodes must be applied and maintained in the correct positions to produce an effective stun and kill.
- Requires a reliable supply of electricity.

Conclusions

- A suitable method for calves, sheep, goats, and pigs (over 1 week of age).

Method 2

Requirements for effective use

- A mobile waterbath stunner and a short loop of processing line are required.
- A low frequency (30-60 Hz) current applied for a minimum of 3 seconds is necessary to stun and kill the birds.
- Poultry need to be manually removed from their cage, house or yard, inverted and shackled onto a line which conveys them through a waterbath stunner with their heads fully immersed.
- Required minimum currents to stun and kill dry birds are:
 - Quail - 100 mA/bird
 - Chickens – 160 mA/bird
 - Ducks & Geese – 200 mA/bird
 - Turkeys – 250 mA/bird.

A higher current is required for wet birds.
- An effective stun and kill should be verified by the absence of brain stem reflexes.

Advantages

- Stuns and kills simultaneously.
- Capable of processing large numbers of birds reliably and effectively.
- Non-invasive technique minimises biosecurity risk.

Disadvantages

- Requires a reliable supply of electricity.
- Handling, inversion and shackling of birds are required.

Conclusion

A suitable method for large numbers of poultry.

Appendix XXII (contd)**Method 3****Requirements for effective use**

- The stunner control device should generate sufficient current (more than 300 mA/bird) to stun.
- Appropriate protective clothing (including rubber gloves and boots) should be worn.
- Birds should be restrained, at a minimum manually, close to an electrical supply.
- A stunning current should be applied in a position that spans the brain for a minimum of 3 seconds; immediately following this application, the birds should be killed (Article 17).
- Electrodes should be cleaned regularly and after use, to enable optimum electrical contact to be maintained.
- Birds should be monitored continuously after stunning until death to ensure the absence of brain stem reflexes.

Advantages

- Non-invasive technique (when combined with neck dislocation) minimises biosecurity risk.

Disadvantages

- Requires a reliable supply of electricity.
- The electrodes must be applied and maintained in the correct position to produce an effective stun.

Conclusion

Suitable for small numbers of poultry.

Article 12**CO₂ / air mixture****Introduction**

Controlled atmosphere killing is performed by exposing animals to a predetermined gas mixture, either by placing them in a gas-filled container or apparatus (Method 1) or by the gas being introduced into a poultry house (Method 2).

Inhalation of carbon dioxide (CO₂) induces respiratory and metabolic acidosis and hence reduces the pH of cerebrospinal fluid (CSF) and neurones thereby causing unconsciousness and, after prolonged exposure, death.

Method 1**Requirements for effective use in a container or apparatus**

- Containers or apparatus should allow the required gas concentration to be maintained and accurately measured.

Appendix XXII (contd)

- When animals are exposed to the gas individually or in small groups in a container or apparatus, the equipment used should be designed, constructed, and maintained in such a way as to avoid injury to the animals and allow them to be observed.
- Animals should be introduced into the container or apparatus after it has been filled with the required CO₂ concentration, and held in this atmosphere until death is confirmed.
- Team members should ensure that there is sufficient time allowed for each batch of animals to die before subsequent ones are introduced into the container or apparatus.
- Containers or apparatus should not be overcrowded and measures are needed to avoid animals suffocating by climbing on top of each other.

Advantages

- CO₂ is readily available.
- Application methods are simple.

Disadvantages

- The need for special equipment
- The aversive nature of high CO₂ concentrations
- No immediate loss of consciousness
- The risk of suffocation due to overcrowding
- Difficulty in verifying death while the animals are in the container or apparatus.

Conclusion

Suitable for use in poultry and neonatal sheep, goats and pigs.

Method 2**Requirements for effective use in a poultry house**

- Prior to introduction of the CO₂, the poultry house should be appropriately sealed to allow control over the gas concentration.
- The house should be gradually filled with CO₂ so that all birds are exposed to a concentration of >40% until they are dead; a vaporiser may be required to prevent freezing.
- Devices should be used to accurately measure the gas concentration at the highest level of birds.

Advantages

- Applying gas to birds *in situ* eliminates the need to manually remove live birds.
- CO₂ is readily available.
- Gradual raising of CO₂ concentration minimises the aversiveness of the induction of unconsciousness.

Appendix XXII (contd)**Disadvantages**

- Difficulty in determining volume of gas required to achieve adequate concentrations of CO₂ in some poultry houses
- Difficulty in verifying death while the birds are in the poultry house.

Conclusion

Suitable for use in poultry in closed-environment sheds

Article 13**Nitrogen/inert gas mixed with CO₂****Introduction**

CO₂ may be mixed in various proportions with nitrogen or an inert gas eg argon, and the inhalation of such mixtures leads to hypercapnic-hypoxia and death when the oxygen concentration by volume is $\leq 2\%$. This method involves the introduction of animals into a container or apparatus containing the gases. Such mixtures do not induce immediate loss of consciousness, therefore the aversiveness of various gas mixtures containing high concentrations of CO₂ and the respiratory distress occurring during the induction phase, are important animal welfare considerations.

Pigs and poultry appear not to find low concentrations of CO₂ strongly aversive, and a mixture of nitrogen or argon with $\leq 30\%$ CO₂ by volume and $\leq 2\%$ O₂ by volume can be used for killing poultry and neonatal sheep, goats and pigs.

Requirements for effective use

- Containers or apparatus should allow the required gas concentrations to be maintained, and the O₂ and CO₂ concentrations accurately measured.
- When animals are exposed to the gases individually or in small groups in a container or apparatus, the equipment used should be designed, constructed, and maintained in such a way as to avoid injury to the animals and allow them to be observed.
- Animals should be introduced into the container or apparatus after it has been filled with the required gas concentrations (with $\leq 2\%$ O₂), and held in this atmosphere until death is confirmed.
- Team members should ensure that there is sufficient time allowed for each batch of animals to die before subsequent ones are introduced into the container or apparatus.
- Containers or apparatus should not be overcrowded and measures are needed to avoid animals suffocating by climbing on top of each other.

Advantages

- Low concentrations of CO₂ cause little aversiveness and, in combination with nitrogen or an inert gas, produces a fast induction of unconsciousness.

Disadvantages

- Need for a properly designed container or apparatus
- Difficulty in verifying death while the animals are in the container or apparatus

- No immediate loss of consciousness
- Exposure times required to kill are considerable.

Conclusion

A suitable method for poultry and neonatal sheep, goats and pigs.

Article 14

Nitrogen and/or inert gasses

Introduction

This method involves the introduction of animals into a container or apparatus containing nitrogen or an inert gas such as argon. The controlled atmosphere produced leads to unconsciousness and death from hypoxia.

Research has shown that hypoxia is not aversive to pigs and poultry, and it doesn't induce any signs of respiratory distress prior to loss of consciousness.

Requirements for effective use

- Containers or apparatus should allow the required gas concentrations to be maintained, and the O₂ concentration accurately measured.
- When animals are exposed to the gases individually or in small groups in a container or apparatus, the equipment used should be designed, constructed, and maintained in such a way as to avoid injury to the animals and allow them to be observed.
- Animals should be introduced into the container or apparatus after it has been filled with the required gas concentrations (with $\leq 2\%$ O₂), and held in this atmosphere until death is confirmed.
- Team members should ensure that there is sufficient time allowed for each batch of animals to die before subsequent ones are introduced into the container or apparatus.
- Containers or apparatus should not be overcrowded and measures are needed to avoid animals suffocating by climbing on top of each other.

Advantages

- Animals are unable to detect nitrogen or inert gases, and the induction of hypoxia by this method is not aversive to animals.

Disadvantages

- Need for a properly designed container or apparatus
- Difficulty in verifying death while the animals are in the container or apparatus
- No immediate loss of consciousness
- Exposure times required to kill are considerable.

Appendix XXII (contd)**Conclusion**

A suitable method for poultry and neonatal sheep, goats and pigs.

Article 15**Lethal injection****Introduction**

A lethal injection using high doses of anaesthetic and sedative drugs causes CNS depression, unconsciousness and death. In practice, barbiturates in combination with other drugs are commonly used.

Requirements for effective use

- Doses and routes of administration that cause rapid loss of consciousness followed by death should be used.
- Prior sedation may be necessary for some animals.
- Intravenous administration is preferred, but intraperitoneal or intramuscular administration may be appropriate, especially if the agent is non-irritating.
- Animals should be restrained to allow effective administration.
- Animals should be monitored to ensure the absence of brain stem reflexes.

Advantages

- The method can be used in all species.
- Death can be induced smoothly.

Disadvantages

- Restraint and/or sedation may be necessary prior to injection.
- Some combinations of drug type and route of administration may be painful, and should only be used in unconscious animals.
- Legal requirements may restrict use to veterinarians.

Conclusion

A suitable method for killing small numbers of cattle, sheep, goats, pigs and poultry.

Article 16**Addition of anaesthetics to feed or water****Introduction**

An anaesthetic agent which can be mixed with poultry feed or water may be used to kill poultry in houses. Poultry which are only anaesthetised need to be killed by another method such as cervical dislocation

Requirements for effective use

- Sufficient quantities of anaesthetic need to be ingested rapidly for effective response.

Appendix XXII (contd)

- Intake of sufficient quantities is facilitated if the birds are fasted or water is withheld.
- Must be followed by killing (see Article 17) if birds are anaesthetised only.

Advantages

- Handling is not required until birds are anaesthetised.
- May be biosecurity advantages in the case of large numbers of diseased birds.

Disadvantages

- Non-target animals may accidentally access the medicated feed or water when provided in an open environment.
- Dose taken is unable to be regulated and variable results may be obtained.
- Animals may reject adulterated feed or water due to illness or adverse flavour.
- May need to be followed by killing.
- Care is essential in the preparation and provision of treated feed or water, and in the disposal of uneaten treated feed/water and contaminated carcasses.

Conclusion

A suitable method for killing large numbers of poultry in houses.

Article 17**Killing methods in unconscious animals****Method 1 Cervical dislocation (manual and mechanical)****Introduction**

Poultry may be killed by either manual cervical dislocation (stretching) or mechanical neck crushing with a pair of pliers. Both methods result in death from asphyxiation and/or cerebral anoxia.

Requirements for effective use

- Killing should be performed either by manually or mechanically stretching the neck to sever the spinal cord or by using mechanical pliers to crush the cervical vertebrae with consequent major damage to the spinal cord.
- Consistent results require strength and skill so team members should be rested regularly to ensure consistently reliable results.
- Birds should be monitored continuously until death to ensure the absence of brain stem reflexes.

Advantages

- It is a non-invasive killing method
- Can be performed manually on small birds.

Appendix XXII (contd)**Disadvantages**

- Operator fatigue
- The method is more difficult in larger birds.

Conclusion

This method is suitable for killing unconscious poultry.

Method 2 Decapitation**Introduction**

Decapitation results in death by cerebral ischaemia using a guillotine or knife.

Requirements for effective use

- The required equipment should be kept in good working order

Advantages

- The technique is effective and does not require monitoring

Disadvantages

- Contamination of the working area with body fluids

Conclusion

This method is suitable for killing unconscious poultry.

Method 3 Pithing**Introduction**

Pithing is a method of killing animals which have been stunned by a penetrating captive bolt. Pithing results in the physical destruction of the brain and upper regions of the spinal cord, through the insertion of a rod or cane through the bolt hole.

Requirements for effective use

- Pithing cane or rod
- Access to the head of the animal and to the brain through the skull
- Animals should be monitored continuously until death to ensure the absence of brain stem reflexes.

Advantages

- The technique is effective in producing immediate death

Disadvantages

- Delayed and/or ineffective pithing due to convulsions
- Contamination of the working area with body fluids

Conclusion

This method is suitable for killing unconscious animals which have been stunned by a penetrating captive bolt.

Method 4 Bleeding**Introduction**

Bleeding is a method of killing animals through the severance of the major blood vessels in the neck or chest that results in a rapid fall in blood pressure, leading to cerebral ischaemia and death.

Requirements for effective use

- Sharp knife
- Access to the neck or chest of the animal
- Animals should be monitored continuously until death to ensure the absence of brain stem reflexes.

Advantages

- The technique is effective in producing death after an effective stunning method which does not permit pithing.

Disadvantages

- Delayed and/or ineffective bleeding due to convulsions
- Contamination of the working area with body fluids.

Conclusion

This method is suitable for killing unconscious animals.
