

**Code of Recommendations
and Minimum Standards for the
Welfare of Animals at the Time of Slaughter at
Licensed and Approved Premises**

Code of Animal Welfare No. 10

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Preface

The codes of recommendations and minimum standards for the welfare of animals have been prepared by the Animal Welfare Advisory Committee (AWAC), which was established in 1989 by the then Minister of Agriculture to advise him on matters concerning animal welfare.

AWAC consists of members from the following backgrounds: the farming community, animal welfare groups, the veterinary profession, animal behaviour and the Ministry of Agriculture and Fisheries. It also includes the chairman of the National Animal Ethics Advisory Committee and an independent chairman.

Extensive consultation takes place with industry and other interested groups in the development of codes.

This *Code of Conduct for the Welfare for Animals at the Time of Slaughter at Licensed and Approved Premises* was endorsed as a national code at the committee meeting held on 17 February 1994.

The codes of recommendation and minimum standards which have been endorsed by AWAC are:

Code of Recommendations for the Welfare of Circus Animals and Information for Circus Operators.

Code of Recommendations and Minimum Standards for the Sea Transport of Sheep from New Zealand.

Code of Recommendations and Minimum Standards for the Welfare for Sheep.

Code of Recommendations and Minimum Standards for the Welfare of Dairy Cattle.

Code of Recommendations and Minimum Standards for the Welfare of Deer During the Removal of Antlers.

Code of Recommendations and Minimum Standards for the Welfare of Animals Used in Rodeo Events.

Code of Recommendations and Minimum Standards for the Welfare of Horses.

Code of Recommendations and Minimum Standards for the Welfare of Bobby Calves.

Code of Recommendations and Minimum Standards for the Care of Animals in Boarding Establishments.

The Animals Protection Act 1960 and its Implications for Those Responsible for Farm Animals.

The codes of welfare may be revised to take into account changes in practices of animal management and knowledge of animal welfare.

1. Introduction

1.1 General

Animal welfare considerations are becoming increasingly important, both in New Zealand and internationally. Practices which may once have been deemed acceptable are now being reassessed and modified according to new knowledge and changing attitudes. High standards of animal welfare are not only important legally, but also have direct economic benefits by enhancing productivity and helping to facilitate international market access.

Without good stockmanship, animal welfare can never be adequately protected. This code is intended to encourage all responsible for its implementation, and especially the inexperienced, to adopt the highest standards of husbandry.

The code takes account of five basic requirements:

- freedom from thirst, hunger and malnutrition
- the provision of appropriate comfort and shelter
- the prevention or rapid diagnosis and treatment of injury, disease or infection
- freedom from distress
- the ability to display normal patterns of behaviour.

1.2 Scope

This code covers the welfare of animals from the point of unloading from trucks at a slaughter premises to the time that they become permanently unconscious.

It applies to all animals, excluding birds, destined for meat or byproducts which are slaughtered in licensed or approved premises.

This code addresses four main areas of concern related to the welfare of animals at slaughtering premises:

- the physiological needs of the animals
- the design, construction and maintenance of pre-slaughter facilities
- the handling and movement of animals
- the stunning and sticking (bleeding) of animals

The code initially describes the principles relating to the handling of animals prior to stunning. It then addresses the principles relating to the stunning and sticking of animals.

2. Welfare of Animals from the Time of Unloading to the Point of Stunning

2.1 Physiological Needs

At all times, the physiological needs of animals destined for slaughter shall be adequately addressed.

Issues which must be adequately addressed include the species of animal, the provision of food and water, the state of lactation of the animal, the stage of maturity, the presence of injuries or sickness, and environmental factors such as temperature, ventilation, shelter, lighting, surfaces in contact with animals and noise.

Animals from different mobs (particularly males and including cryptorchids) should be kept separate. Consideration should be given, when mixing mobs, to the size, temperament, presence or absence of horns and whether or not the animals would be distressed or injured.

With regard to horns and antlers:

- No deer with growing or hard antler, or pointed hard antler regrowth, shall be submitted for slaughter.
- Horned cattle should not be submitted for slaughter. If such animals are submitted, due consideration must be given to the prevention of injury. Unfamiliar mobs of horned cattle should not be mixed with other mobs of horned or hornless cattle, and consideration must be given to the type of animal and ways of preventing potential problems, e.g. separation, early slaughter.
- If problems of aggressive behaviour occur within or between mobs of horned sheep or goats, the mobs should be held separately and/or slaughtered as soon as practicable.

Animals shall not be held for periods longer than necessary before slaughter. The appropriate period will be determined by their physiological requirements.

This means that consideration must be given to the physiological state of the animals, e.g. unweaned animals, such as bobby calves and beta lambs, and monogastric animals, such as pigs and horses, should be slaughtered on the day of arrival. They shall not be held for more than 24 hours after arrival, unless fed.

Lactating animals should be slaughtered or milked before udder distension causes distress.

Sick and injured animals shall be treated appropriately in terms of both the condition affecting them and their welfare.

For example:

- Animals with an immobilising fracture shall be slaughtered by emergency methods without the injury being made worse.
- Animals with minor injuries should be slaughtered as soon as possible by normal methods of slaughter.
- Metabolic diseases such as hypocalcaemia may be treated on veterinary advice before slaughter.

When animals give birth in the holding pens, the welfare of both dam and offspring shall be protected.

This may be achieved by either:

- The immediate humane slaughter of offspring and treatment of dam as a lactating animal (described above).

or

- The immediate removal of dam and offspring to an appropriate environment and method of husbandry.

If animals are held in holding paddocks at a licensed or approved premises, they shall be subjected to adequate standards of husbandry.

2.2 Facilities

The design and construction of facilities shall be suitable for the species passing through the premises, and facilities shall be maintained in such a condition to minimise distress and injury.

Issues which must be adequately addressed include the prevention of injury to animals, the minimisation of distress, and the provision of adequate food, water and protection from the environment to meet the physiological needs of the individual species. Factors to be considered are the ease of movement of animals, the angle of slope of ramps, floor and wall surfaces, washing facilities, watering and feeding facilities, disposal of effluent, ventilation, lighting, races (including those leading to point of slaughter) and noise.

Unloading facilities shall be constructed and maintained so that they do not cause injury to animals.

Facilities should be designed to allow normal mobility. Ideally, the top of the unloading ramp should be level with the floor of the transport vehicle. Because animals move more readily uphill than downhill, ramps should be horizontal or slope upwards. If ramps slope downwards, the slope should be as flat as possible. The maximum incline should not exceed 20° for all animals, except for bobby calves, where slopes should not exceed 12°. The ramp shall be designed to minimise animals skidding. The distance between the ramp walls should be at least as wide as the exit door of the transport vehicle, and sheeted and smooth with no projections which may injure animals.

Holding facilities shall be constructed and maintained so that they do not cause injury to animals.

The pen floor shall be made of a non-slip material. If gratings are used they shall be of an appropriate design to prevent injury. Fences and gates should have smooth surfaces with no projections which may injure animals.

Adequate clean water supplied by watering facilities appropriate for the species shall be provided in all holding areas.

Animal washing facilities shall be designed and operated in a manner that causes minimal distress and mortality.

2.3 Handling of the Animals

Animals shall be handled and moved in such a manner which causes minimal distress and avoids injury and suffering.

Issues to be addressed include the appropriate and minimal use of electric goads and dogs, and the appropriate use of backing boards and shields.

Electric goads shall not be used on bobby calves.

Dogs shall not be used to move bobby calves, pigs or deer.

3. Welfare of Animals during Stunning and Sticking

3.1 General

Present legislation requires all animals slaughtered in licensed and approved premises to be rendered insensible (unconscious) before slaughter and to remain so during the slaughtering process. The only exceptions are to certain forms of religious slaughter where specific permission is given by the Chief Meat Veterinary Officer of the Ministry of Agriculture and Fisheries (MAF).

To comply with the regulations, animals are stunned before slaughter. The effect of stunning must be virtually instantaneous. The period of insensibility must include both the time between stunning and the start of the slaughter process, and the time taken for the animal to subsequently bleed to insensibility. The last period finally results in death, due to a lack of oxygen to the brain which is supplied via the arterial blood flow.

Different species of animals take different times to bleed to death. The time to death can be delayed if the arteries on only one side of the neck are severed, or the ends of the arteries become occluded (blocked) before bleeding is complete. This is more likely to occur after the transverse incision of the neck in halal slaughter than after an intra-thoracic (chest) stick between the first two ribs.

In some forms of electrical stunning, the function of the heart is also severely affected. If the heart is not functioning, blood cannot be supplied to the brain, irrespective of whether or not the blood vessels have been severed. Animals stunned by this latter method will eventually die, irrespective of whether or not they are slaughtered.

Like any other procedure in the meat industry, the system of slaughter of animals must be subject to a quality management programme to ensure that these relatively simple principles of humane slaughter are properly implemented and maintained. Such an approach will ensure the welfare of the animals as well as efficiency of production.

3.2 Animal Restraint

Adequate restraint of the animal to allow easy access to the head shall be achieved.

All methods of stunning require the accurate application of instruments to the head of the animal.

If the natural behaviour of the animal and the system of handling does not allow the accurate application of stunning equipment to the head, special restraining apparatus shall be used. The special restraining apparatus shall be designed and used in a way which avoids excessive stress to the animal during the pre-slaughter period. This is particularly important for pigs.

For sheep, goats, calves and pigs, a moving V-shaped conveyor in which individual animals are separated is effective. The width and angle of such conveyors must suit lines of animals of different size and conformation. Animals should be prevented from climbing upon the backs of animals in front of them by an appropriate mechanical design or another means.

Other methods which allow rapid and accurate application of stunning equipment, such as individual restraining crates or crushes in the case of sheep, goats, calves and pigs, can be used. Automated systems of stunning can be used if shown to be effective.

Cattle and horses must be individually restrained in appropriately designed knocking boxes or conveyors. Adequate presentation of an animal to allow effective access to the head is necessary, as the major cause of ineffective stunning is improper placement of stunning equipment. Knocking boxes should not be wide enough for animals to turn around. They should also provide easy and quick access to the heads of animals.

In cases of emergency, it must be possible to stun an animal which goes down in a knocking box. This must be achieved by either the appropriate design of the box, or the availability of long handled stunners.

The same principles of restraining apply to deer. In addition, the knocking box or point of stunning should be in an area of reduced light intensity for deer.

3.3 Methods of Stunning

The type of stun used should result in insensibility that lasts until death intervenes.

3.3.1 *Use of a penetrating captive bolt*

The instrument shall be applied to the heads of animals in a position as indicated in the diagrams in Appendix I.

These sites, which are not in the midline, ensure that maximum damage is caused to a cerebral hemisphere in an area of the skull which is most easily penetrated. The

kinetic energy of the bolt must be sufficient to cause an appropriate impact to the head and to penetrate the tissues.

Animals which have been stunned must show reactions that indicate an effective stun as outlined in Appendix II.

A second captive bolt pistol shall at all times be available for use in case of an initial ineffective stun.

3.3.2 *Non-penetrating percussive stunning*

This form of stunning is used on cattle. The technique employs a captive bolt with a non-penetrating 'mushroom' percussive head. The same criteria apply to the use of this method as the use of a penetrating captive bolt.

A penetrating captive bolt pistol shall be immediately available to the operator to be used in the case of the initial ineffective stun.

3.3.3 *Electrical stunning*

All electrical stunners shall be capable of supplying a regulated current of up to 1 amp for sheep and goats, and up to 1.3 amps for pigs, cattle and red deer. To ascertain whether or not such currents are being applied to animals with varying impedance, the apparatus shall be fitted with meters to indicate current at the time of stunning, an automatic timing device to determine the duration of the stun and a visual method of recording the duration of actual current flow. Safety switches to protect operators from having contact with animals or other non-insulated structures during stunning shall also be fitted.

Electrodes shall be placed so they span the brain within the head of the animal to be stunned. The duration of the stun shall be for at least 2 seconds in manually controlled systems, so that this time can be monitored in a quality management programme.

In head-to-body stunning where concurrent cardiac dysfunction is required, other electrodes must be placed on the body in such a manner that functional heart activity ceases. Electrode placement includes head-to-back, head-to-chest, and head-to-legs. The currents designed to cause cardiac dysfunction must not precede the stunning current. The effects shall be monitored periodically by checking cardiac activity in a sample of animals within 2 minutes of stunning.

The use of head-to-body electrical stunning is recommended whenever possible, as stun-to-stick intervals are less critical and the chances of an animal recovering consciousness during the slaughter process are reduced to a minimum. Electrical stunning of pigs by hand-held caliper-type electrodes which employ a controlled voltage as opposed to a controlled current system should not be used.

3.3.4 *Carbon dioxide*

Carbon dioxide narcosis is an approved method of stunning which is not currently utilised in New Zealand.

3.4 Stun-to-Stick Intervals

The time between stunning and bleeding shall be kept to a minimum in all cases.

This is particularly important when methods of stunning are employed which are only temporary in nature. When head-only electrical stunning is used, the maximum stun-to-stick interval shall be 20 seconds. This interval may be extended depending on the species and/or the use of supplementary techniques which prolong the period of unconsciousness before death. Such techniques shall be substantiated as not prejudicing the welfare of the animal.

In the case of sheep and goats a stun-stick interval of a maximum of 25 seconds for head-only stunning is acceptable.

3.5 Slaughter (Bleeding)

Normally all animals shall be slaughtered by bleeding as soon as possible after stunning, and in accordance with the maximum times already mentioned. With forms of stunning which produce immediate and permanent insensibility that inevitably result in death, permission may be given by the Chief Meat Veterinary Officer for bleeding to be waived.

Such forms of stunning would include that induced by a penetrating captive bolt and by head-to-body electrical stunning.

There are two basic methods of bleeding an animal. One is a transverse incision of the ventral surface of the neck which severs all soft tissues below the spinal column, including the jugular veins and common carotid arteries. In this method, which is used in halal slaughter, it is important to ensure that both common carotid arteries are severed. If only one of these arteries is severed, the onset of cerebral hypoxia (lack of oxygen) and subsequent insensibility can be prolonged by three times compared to when both arteries are severed. In cattle, particularly calves, the severed ends of the carotid arteries may become occluded (blocked) and the onset of insensibility considerably delayed. Such animals must be detected and stunned with a captive bolt.

The other common method of bleeding, usually employed in non-religious slaughter, is severance of the anterior vena cava and bicarotid arterial trunk between the first two ribs. These large vessels give rise to the jugular veins and carotid arteries. This method of slaughter is achieved by running a knife down one jugular furrow of the neck and then into the opening of the chest between the first two ribs. A successful incision is denoted by an obvious gush of blood, both venous and arterial.

3.6 Control of the Process

3.6.1 *Quality management programme*

To ensure that the welfare of animals during slaughter is maintained and that the process operates at maximum effectiveness, a quality management programme shall be implemented and maintained.

Such a programme shall be based on written specifications of the process which are monitored. The programme shall include information on action which will be taken if

the process does not operate according to specification. The quality management programme shall be approved and periodically monitored as specified by the Chief Meat Veterinary Officer of MAF.

Specification shall cover the equipment used, its operation and the effects to be monitored. The quality management programme shall also be specified in terms of criteria to be checked, the frequency of inspection and by whom, and action to be taken if faults occur.

3.6.2 *Stunning*

Specifications of equipment will often be those supplied by the manufacturers, and providing these are adequate, it is important that modifications are not made. It is also important that maintenance of such equipment is carried out in a manner which ensures that it continues to operate according to specification. It may be necessary to check the performance by physical means.

Examples which illustrate the foregoing points are:

- The modification of the current control of an electrical stunner by an electrician.
- Failure to properly clean a captive bolt pistol on a regular daily basis, which can result in a significant drop in performance.
- A captive bolt pistol which has eventually become so worn that it must be discarded. The kinetic energy of the bolt on discharge shall be evaluated on a periodic basis.

Even when a stunning apparatus is properly installed and maintained, it can still be ineffective if operated incorrectly. Specifications on operation shall include the way in which it should be applied to the animal, and physical aspects of its actual operation. In the case of electrical stunners, this shall include specified currents and duration of application, while for captive bolt pistols this should include specified charges to be used for different classes of stock.

In addition to specifications of how the apparatus should be applied to animals, operators shall be trained to carry out the procedure correctly.

3.6.3 *Bleeding*

The method of slaughter (bleeding) must be specified and the efficiency of the operator monitored. If a transverse incision of the neck is employed, severance of both carotid arteries is the objective. This must be achieved within predetermined levels of tolerance. Maximum intervals between stunning and bleeding shall be specified and closely followed.

3.6.4 *Animal reactions*

Although it is impossible to judge the state of insensibility of an animal after stunning according to objective scientific criteria, certain stereotypic reactions are associated with a successful stun, and should be assessed on a periodic basis. The stunners and

slaughtermen should be trained to recognise the signs associated with both an effective and an ineffective stun. Quality control personnel should examine samples of post-stun animals in detail and in accordance with Appendix II.

All methods of stunning referred to in this document typically result in seizures in most species (with the exception of red deer). If the initial tonic spasms do not occur, the effectiveness of the procedure must be questioned.

If head-to-body electrical stunning is utilised, an effective heart beat should not be detected. If head-only electrical stunning is employed, animals which are not slaughtered will usually show signs of the return of consciousness within about 60 seconds of being stunned (in deer, signs of recovery may not occur for 90 seconds).

Precise details for a specific system should be determined after consultation between the company concerned and MAF.

Appendix I: Sites for Percussive Stunning

I.1 Cattle

3 pictures

I.2 Sheep

Note that in horned breeds, the site of penetration is behind the horns, not the usual frontal position.

4 pictures

I.3 Goats

3 pictures

I.4 Deer

3 pictures

I.5 Pigs

Note that in very large (chopper) sows and boars, a standard captive bolt pistol may be unable to effectively penetrate the skull.

Appendix II: Signs of a Successful Stun

I.1 Percussive Stun (Penetrating and Non-Penetrating)

1. Immediate collapse
2. Tonic immobility for 10-15 seconds
3. Immediate loss of respiratory movement
4. Immediate loss of corneal reflex
5. Gradual onset of pupillary dilation
6. Slow decline in and cessation of cardiac activity

I.2 Head-Only Electrical Stun

Epileptiform seizure characterised by:

1. Tonic immobility with either extension or rigid flexion of the front legs, upward rotation of the eyes, closure of the eyes, cessation of respiration and normal reflexes. This phase persists for 15-25 seconds.
2. Clonic convulsions with unco-ordinated kicking or paddling movements, return of respiration and some reflexes. Possible vocalisation in calves. This phase persists for 20-40 seconds.
3. If the animal is not slaughtered, signs of the phase of recovery as exhibited by voluntary head raising should not occur before 40 seconds after the stun.

Note: In red deer after head-only electrical stunning, the initial phase of the epileptiform seizure, characterised by tonic immobility and rigid muscle spasm, is present for a very short duration. However, obvious rotation of the eyes and vocalisation often occurs at this stage.

Violent kicking movements of all four legs usually occurs for 30-45 seconds.

Fallow deer show similar signs to other animals following head-only electrical stunning.

I.3 Head-to-Body Electrical Stun

1. The first two phases of an epileptiform fit as described for head-only electrical stunning should occur. However, the degree of clonic convulsions in the second phase is often reduced.
2. Normal cardiac activity will immediately cease. In smaller animals such as sheep, goats and calves, this can be detected by digital palpation of the lower anterior chest wall. In cattle, pigs and deer, such manual detection of whether

or not the heart is beating is more difficult. In these species, a lack of cardiac activity can be assessed by a lack of pulsatile blood flow from the severed arteries.

Note: Respiratory movement and corneal reflexes may recur after the tonic phase in sheep in the presence of an effective stun.