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The Welfare of Poultry at Slaughter or Killing

December 2007

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This document is available on the Defra website.

Published by the Department for Environment, Food and Rural Affairs

THE WELFARE OF POULTRY AT SLAUGHTER or KILLING

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Preface

This booklet provides guidance on the humane treatment of poultry prior to and during slaughter or killing in slaughterhouses and on premises other than slaughterhouses (e.g. on farm) in order to safeguard or improve welfare conditions for birds. It applies only to England and complements the provisions of the Welfare of Animals (Slaughter or Killing) Regulations 1995 (WASK), (as amended) which implements Council Directive 93/119/EC on the protection of animals at the time of slaughter or killing. It does not replace them. Please refer to Appendix B for a full list of the legislation which applies.

Operators and staff should remain up to date with all changes in legislation and in recommended practices.

No guidance is given on the disposal of day old chicks in hatcheries. For further information on this aspect of poultry welfare, please refer to the Humane Slaughter Association (HSA) publication “Code of practice for the disposal of chicks in hatcheries” (2nd edition) (see Appendix A for contact details).

This guidance makes reference to transport regulations which came into force on 5 January 2007, but it does not fully cover the statutory requirements which apply to the transport of live birds.

Every effort should be made to minimise unnecessary stress to birds during handling, stunning and slaughter. To this end, it is important that those who are responsible for, or who carry out, these operations are aware of the correct procedures **and** also the consequences if they are not followed.

Everyone engaged in the operation of slaughterhouses must familiarise themselves with the regulatory provisions to ensure that they comply with the law. Copies of Acts of Parliament and Regulations may be obtained from The Office of Public Sector Information (OPSI) (www.opsi.gov.uk) (see Appendix A for further contact details).

Further guidance on welfare at slaughter may be sought from either Defra's Animal Welfare Core Team, an Official Veterinarian of the Meat Hygiene Service, the Humane Slaughter Association, the University of Bristol, or the local Defra Animal Health Divisional Office.

Key legislative requirements are quoted in boxes. This reflects the legislation that is in force on the date of publication of this guidance. Readers should be aware that any of the legal requirements quoted may be subject to change – confirmation should be obtained from the Animal Welfare Core Team of the Department for Environment, Food and Rural Affairs (Defra) before making the assumption that this guidance reflects an accurate and complete statement of the law currently in force (see Appendix A for address details).

We have decided not to publish this material as a formal Code of Practice at this time. This will ensure that we can consider the recommendations made in the Farm Animal Welfare Council report on the welfare at slaughter or killing of farmed white meat animals, which is expected to be published in mid 2008, before making a formal Code.

1. Introduction

1.1 The welfare of birds in a slaughterhouse can be safeguarded by using a variety of management systems. These systems must prevent birds from being caused avoidable excitement, pain or suffering. The handling, stunning and slaughter of poultry must comply with the statutory requirements of The Welfare of Animals (Slaughter and Killing) Regulations 1995 (WASK). A slaughterhouse, as defined by WASK, means any premises (approved or non-approved) used for the commercial slaughter or killing of solipeds (horses), ruminants, pigs, rabbits or birds, the flesh of which is intended for human consumption¹, including any associated facilities for moving or lairaging such animals. While this guidance applies primarily to slaughterhouses WASK also applies where birds are slaughtered or killed in a knackers yard or other premises. This guidance refers to such activities where appropriate.

1.2 All references to the responsibilities placed on slaughterhouse operators under the WASK regulations apply equally to the slaughter of birds for commercial purposes in both approved and non-approved premises.

KEY LEGISLATIVE PROVISIONS

THE WELFARE OF ANIMALS (SLAUGHTER OR KILLING) REGULATIONS 1995

Interpretation (Part 1 Regulation 2)

Regulation 2. - (1) In these Regulations, unless the context otherwise requires – "animal" includes bird;

Animal welfare legislation and codes(Part 1 Regulation 6)

Regulation 6. - (1) The occupier of a slaughterhouse or knacker's yard shall ensure that any person who is involved in any of the activities governed by these Regulations -

¹ The Poultry Meat, Farmed Game Bird Meat and Rabbit Meat (Hygiene and Inspection) (Amendment) (England) Regulations 1995 have been revoked and replaced by the three EU Hygiene Regulations (852/2004 - hygiene of foodstuffs; 853/2004 - lays down specific rules for food of animal origin; & 854/2004 - lays down specific rules for the organisation of official controls on products of animal origin intended for human consumption), also referred to as the Hygiene Package. Enforcement powers in respect of the obligations that apply in the Hygiene Regulations are provided by The Food Hygiene (England) Regulations 2006, which came into force on the 11 January 2006.

- (a) is acquainted with the provisions of the legislation, and of any welfare codes, relevant to the operations that that person carries out;
- (b) has access to a copy of any such welfare code at the slaughterhouse or knacker's yard;
- (c) has received instruction and guidance on the requirements of such legislation and any such welfare code; and
- (d) where, by virtue of paragraph 3 of Schedule 1, any such activity requires a licence, has the appropriate licence.

Codes of practice (Part 1 Regulation 7)

Regulation 7. - (1) The Ministers may from time to time, after consultation with such organisations as appear to them to represent the interests concerned -

- (a) prepare and issue codes of practice for the purpose of providing guidance in respect of these Regulations; and
- (b) revise any such code by revoking, varying, amending or adding to the provisions of the code.

(6) A failure on the part of any person to follow any guidance contained in a code issued under this regulation shall not of itself render that person liable to proceedings of any kind.

(7) If, in proceedings against any person for an offence consisting of the contravention of any provision of these Regulations, it is shown that, at any material time, he failed to follow any guidance contained in a code issued under this regulation, being guidance which was relevant to the provision concerned, that failure may be relied upon by the prosecution as tending to establish his guilt.

1.3 Procedures in slaughterhouses must be such as to ensure that birds are not caused avoidable excitement, pain or suffering at any stage of the slaughter process. Birds must either be immediately killed outright or instantly rendered unconscious and insensible until death occurs. Stunned birds must remain unconscious until death occurs through bleeding. The design, construction and maintenance of a slaughterhouse must be such as to prevent injury and minimise distress being caused to birds that are being processed.

1.4 Birds may become distressed in unfamiliar environments such as a slaughterhouse. Stressed and excited birds can become difficult to handle and may consequently injure themselves and others.

1.5 This may also lead to down-grading of the meat [see diagrams 1 and 2]. Each and every bird should be treated as an individual, sentient animal. All operations must be carried out in such a way that causes the least possible stress to birds from their arrival at the slaughterhouse until their death. Birds should be treated in a calm, unhurried and sympathetic manner and systems should be adopted to minimise handling of live birds.

Welfare Issues - Examples of injuries which lead to downgrading of meat



Diagram 1: Wing haemorrhages



Diagram 2: Red Wing Tips

1.6 The attitude of staff to welfare when handling birds can be influenced by working conditions. Slaughterhouse design and operational procedures should be considered to maximise staff comfort and reduce the physical effort required by personnel when handling poultry. Adequate covered accommodation should be provided for the birds awaiting slaughter or killing which is well-ventilated, draught-free, dry and hygienic. This will enhance the environment for both the birds and staff and will result in better bird welfare, carcase and meat quality and productivity.

KEY LEGISLATIVE PROVISIONS

THE WELFARE OF ANIMALS (SLAUGHTER OR KILLING) REGULATIONS 1995

Humane treatment of animals

Codes of practice (Part 1 Regulation 4)

Regulation 4. - (1) No person engaged in the movement, lairaging, restraint, stunning, slaughter or killing of animals shall -

- (a) cause any avoidable excitement, pain or suffering to any animal; or
 - (b) permit any animal to sustain any avoidable excitement, pain or suffering.
- (2) Without prejudice to paragraph (3) below, no person shall engage in the movement, lairaging, restraint, stunning, slaughter or killing of any animal unless he has the knowledge and skill necessary to perform those tasks humanely and efficiently in accordance with these Regulations.
- (3) Schedule 1 shall have effect in relation to the licensing of slaughtermen.

STUNNING OR KILLING OF ANIMALS OTHER THAN ANIMALS REARED FOR FUR

Paragraph 2, Schedule 5

General provision

2. The occupier of a slaughterhouse or knacker's yard and any person engaged in the stunning or killing of any animal shall ensure that any instrument, restraining equipment and other equipment, and any installation, which is used for stunning or killing is used in such a way as to facilitate rapid and effective stunning or killing in accordance with these Regulations.

Supervision and training

1.7 All staff should be aware of, and be sympathetic to, the welfare of birds. Understanding and care are needed in the handling of birds both before and at the time of slaughter and this must be backed-up by skill, efficiency and proper training. Operators of slaughterhouses should ensure that one or more plant staff members attend a training course on the welfare of poultry at slaughter. Such persons should be designated as Poultry Welfare Officers (PWOs). In consultation with the Official Veterinarian (OV) and plant operator, PWOs will assume a key role in the maintenance of high welfare standards at the premises.

1.8 In order to ensure appropriate action is taken with regard to bird welfare, a comprehensive written animal welfare policy that reflects plant operations should be in place. The animal welfare policy document should be read and understood by all slaughterhouse personnel responsible for looking after poultry awaiting slaughter and should be available at all times. All personnel who are directly involved with the handling of live birds should be

familiar with its content. The welfare policy should be incorporated as part of company procedures and should be reviewed and updated regularly.

1.9 The welfare policy should address as a minimum, the following issues:

- Why the welfare of birds is important and the legal requirements set out in WASK
- The licensing of slaughtermen
- Bird condition on arrival at the slaughterhouse
- Stocking densities of vehicles and crates
- Unloading birds from vehicles and lairaging
- Movement and handling of birds up to the point of stun
- Shackling of birds
- Stunning and stunning methods permitted under WASK
- Killing methods permitted under WASK
- Bleeding/neck cutting through to scalding
- Emergency slaughter methods and equipment
- Religious slaughter
- Emergency procedures – lairages and slaughter lines

1.10 The training of staff should be recognised as being a continuing process, which should be monitored and reviewed on a regular basis. It is a requirement under WASK that, at all times when there are live birds on the premises, a person is available who is competent, and who has authority to take whatever action may be necessary to safeguard the birds' welfare. This person could be the PWO or another individual who is sufficiently competent to undertake this role. Arrangements should be made for all staff involved in the handling of live birds up to, and including, the point of slaughter or killing to receive training appropriate for the job(s) that they will be doing.

1.11 Staff who undergo this training should be monitored to ensure that they are competent in meeting birds' welfare needs and not subjecting them to avoidable excitement, pain, or suffering. Staff should be kept up-to-date with

bird welfare issues during slaughter or killing by, for example, attending relevant courses and conferences.

Licensing²

1.12 A bird must only be stunned, slaughtered or killed in a slaughterhouse by someone who is aged 18 or over and who is licensed. The licence will state:

- the species of bird to which it applies;
- the procedures the licence holder can carry out; and
- the type of equipment that can be used for the procedure.

1.13 Anyone who has not previously held a licence and who currently holds a provisional licence can only stun and bleed birds and carry out other permitted operations whilst supervised by a fully licensed slaughterer licensed to carry out the same tasks as the trainee, or by an OV.

Anyone slaughtering birds by the Jewish method must also be licensed by the Rabbinical Commission.

1.14 There are certain circumstances where a licence is not required for the slaughter or killing of poultry:

- emergency slaughter or killing (e.g. to stop the suffering of an injured bird or a bird suffering from compromised welfare (e.g. an extended period of suspension in the event of a shackle line breaking down)). Any person undertaking emergency slaughter must be competent to undertake the procedure;
- killing a bird by means of dislocation of the neck or decapitation as a means of routine killing in a non-approved premises situated on the

² Holders of a Home Office (HO) Project Licence may carry out these procedures under the Animals (Scientific Procedures) Act 1986, if he or she is licensed to do so in a slaughterhouse that has been designated by the HO as a PODE (place other than a designated establishment) to carry out such a procedure. In this situation, a copy of any licences should be made available for the plant OV's record.

farm where the bird was reared. A licence will still be required for anyone carrying out other procedures in a non-approved premises;

- the owner of a bird who slaughters or kills it for his/her own private consumption;
- the slaughter or killing of any animal other than for a commercial purpose;
- the killing of any bird for the purpose of disease control;
- the killing of surplus chicks or embryos in hatchery waste in a macerator or, in the case of chicks, by exposure to gas mixtures or by dislocation of the neck;
- the operation of any automatic equipment used to stun, slaughter or kill any bird (for example, a gas stunning chamber or waterbath stunner) without performing any other process such as restraint, stunning, slaughter, or killing, shackling or bleeding of any bird. Such equipment should be monitored at all times to ensure that it is operating effectively and that birds are being effectively stunned or killed and that their welfare is not being compromised;
- the shackling of birds before stunning or killing; or
- a veterinary surgeon or a person acting under the direction of a veterinary surgeon.

1.15 Whatever the method of stunning, killing or slaughter used and irrespective of whether a licence is required to perform it or not, the welfare of the bird must be safeguarded at all times. The procedure employed must not bring about unnecessary excitement, suffering or pain.

KEY LEGISLATIVE PROVISIONS

THE WELFARE OF ANIMALS (SLAUGHTER OR KILLING) REGULATIONS 1995

WASK SCHEDULE 1

Operations which require a licence

3. The operations for which a licence is required are any of the following-

(a) the restraint of any animal for the purpose of stunning, slaughtering or killing that animal;

(b) the stunning of any animal;

- (c) the slaughter of any animal;
- (d) the killing of any animal;
- (f) the assessment of effective stunning, pithing or killing of any animal by any person whose duty it is to make such an assessment;
- (g) the shackling or hoisting of any stunned animal; and
- (h) the bleeding of any animal which is not dead.

Granting of provisional licences

7. - (1) An authorised veterinary surgeon shall grant a provisional licence to any applicant who –

- (a) is, in the opinion of the authorised veterinary surgeon, a fit and proper person to hold a provisional licence;
- (b) is not below the age of 18.

2. Transport and Unloading

2.1 The law requires that unloading areas must be constructed so that birds are both protected from adverse weather conditions and are provided with adequate ventilation. Birds must be unloaded from vehicles as soon as possible after arrival, avoiding unnecessary delay (see diagram 3).



Diagram 3: Birds being unloaded into a covered lairage

2.2 In some cases, live bird transport vehicles with forced ventilation systems may provide more suitable environmental conditions than the lairage. Bird welfare may therefore best be maintained by them remaining on the vehicle. The requirements on the protection of birds from adverse weather conditions and the provision of adequate ventilation, also apply if there is a delay in unloading. In cases where there is an unavoidable delay to unloading, it may be preferable to keep the vehicle moving - movement of air around and through the vehicle will help to keep the birds cool.

2.3 Operators should try to minimise delays and unnecessary stress to birds during unloading from vehicles by ensuring that the unloading area is of a sufficient size to allow birds from the largest anticipated load to be handled and lairaged easily (see diagram 4).



Diagram 4: Crates being moved onto a conveyor system

2.4 Plant operators should have a lairage management system in place for booking in loads of live birds so that the birds are dealt with in the order in which they are delivered, except where it is necessary to slaughter birds out of sequence due to welfare concerns.

2.5 A suitable management system should consider the following conditions as a minimum:

- live birds should arrive at regular, expected intervals during the working day so that there is no delay to unloading;
- birds are held in the lairage for a minimum amount of time;
- the lairage area does not become overcrowded;
- the slaughter line is run at an appropriate capacity.

2.6 Drivers of poultry vehicles should maintain regular contact with the lairage supervisor so that the arrival of bird consignments is anticipated.

2.7 Crates containing birds must be unloaded from vehicles with care in a calm unhurried manner to ensure that birds are not injured in any way. The crates should be maintained in the upright position so that the birds are not in an unsettled or excitable state when they are subsequently handled before slaughter. Forklift drivers and others involved in this process should be sufficiently skilled in the handling of live birds in crates or other modular systems to avoid excessive noise and jolting of birds held in crates.

2.8 When unloading birds in crates, staff must ensure that::

- crates are handled with care and, where possible, crates are unloaded horizontally and mechanically;
- crates are stacked far enough apart to permit adequate airflow between stacks (see paragraphs 3.14 – 3.27 on heat stress in poultry); and
- particular care is taken when moving crates with a perforated or flexible base.

2.9 Following unloading, all consignments of birds should be carefully inspected to assess their overall condition. This will involve a thorough examination of each crate to ensure that every bird is inspected for any signs of injury or distress, including heat and cold stress. It is important that this inspection process is undertaken properly to enable any unfit bird to be identified immediately to prevent any further distress. This inspection should be undertaken by the slaughterhouse operator, the PWO or any other person with sufficiently demonstrable skill and competence.

2.10 Where birds are found injured or dead and findings indicate that this may have occurred as a result of deficiencies in catching procedures or during transport, details of the incident should be recorded in the premises day book. The cause of the problem should be investigated further by the OV, the PWO or any other person with sufficient skill and competence. Feedback should be given to the appropriate person(s) so as to avoid the recurrence of similar incidents.

2.11 Slaughterhouse operators or any competent person should inspect lairaged birds at least every morning and evening, especially where slaughter is delayed. Any birds which are found to be ill or injured, or unfit for any other reason (e.g. heat exhaustion) must be immediately killed, or stunned and bled immediately using an appropriate method. Wherever possible, a killing method should be used.

2.12 For further information on emergency killing and slaughter methods, please refer to paragraphs 5.1 – 5.15 and the Humane Slaughter Association

(HSA) publication 'Poultry Welfare – Taking Responsibility', which is a training DVD aimed towards large scale handling, transport and slaughter of poultry and includes emergency slaughter within the processing plant. (see Appendix A for address details).

Summary – unloading birds from vehicles

- Birds must be unloaded from vehicles as soon as possible after arrival at a slaughterhouse; if a delay in unloading is unavoidable, ensure the birds are protected from adverse weather conditions and are provided with adequate ventilation.
- Birds must be unloaded with care.
- If birds have been subjected to high temperatures and / or high humidity during catching, transport and / or lairaging, they must be cooled by appropriate means.
- All birds must be inspected thoroughly on arrival at the slaughterhouse lairage.
- If sick or injured birds are discovered they must be killed humanely without delay.

KEY LEGISLATIVE PROVISIONS

THE WELFARE OF ANIMALS (SLAUGHTER OR KILLING) REGULATIONS 1995

SCHEDULE 2 - PART I

REQUIREMENTS FOR ALL SLAUGHTERHOUSES AND KNACKERS' YARDS

General requirements for all slaughterhouses and knackers' yards

1. The occupier of a slaughterhouse or knacker's yard shall ensure that -
 - (a) its construction, facilities, equipment and operation are such as to spare animals any avoidable excitement, pain, injury or suffering;
 - (b) it has suitable equipment and facilities available for the purpose of unloading animals from the means of transport.

WASK SCHEDULE 3 - PART IV

ADDITIONAL REQUIREMENTS FOR ANIMALS DELIVERED IN CONTAINERS

Handling of animals delivered in containers

14. In addition to the requirements in Part 1 above, the occupier of a slaughterhouse and any person engaged in the movement of any animal delivered in any container shall ensure that -

(a) any container in which any such animal is transported is handled with care and is not thrown, dropped or knocked over;

(b) where possible, the container is loaded and unloaded horizontally and mechanically;

(c) any animal delivered in a container with a perforated or flexible bottom is unloaded with particular care in order to avoid injury; and

(d) where appropriate, animals are unloaded from the containers individually.

3. Lairages

3.1 Operators of slaughterhouses must provide a suitable, covered lairage, where birds can temporarily be accommodated when they arrive (see diagram 5).



Diagram 5: Birds in a covered lairage building (with gas stun-killing equipment alongside)

A lairage must provide birds with shelter from adverse weather conditions. This means that crates containing birds must not be left in direct sunlight and must be sheltered from the prevailing wind or rain.

3.2 Birds should be slaughtered or killed as soon as possible after their arrival at the slaughterhouse so as to minimise the amount of time that birds spend in the lairage.

3.3 An experienced and competent member of staff, appropriately trained in bird welfare e.g. a PWO must be appointed to be responsible for birds in the lairage area. This person should be provided with delegated authority to be able to make immediate changes to operating procedures in the slaughterhouse to ensure satisfactory welfare at all times.

3.4 Operators should have an appropriate lairage management system in place to protect the welfare of the birds in the lairage. The lairage management system should include good lines of communication with hauliers and with farms supplying poultry to the slaughterhouse. In the event

of any delay in slaughtering birds such as those caused by line breakdowns or equipment failure, hauliers and farms should be notified to ensure that deliveries of birds do not result in a build-up of large numbers of birds in the lairage.

3.5 Personnel involved in transporting birds to the slaughterhouse and those responsible for birds in the lairage should be aware of what action to take to prevent the build up of large numbers of birds in the lairage; for example, it may be appropriate to delay catching the birds on farm.

3.6 Birds should be slaughtered in the order in which they arrive at the slaughterhouse so that no group of birds must wait for a long period of time. The only exception to this recommendation is when birds arrive at the lairage in poor condition or are ill or injured; ill and/or injured birds should be killed immediately they are identified.

3.7 Lairages should be constructed so they can be thoroughly cleansed and disinfected. Walls and floors should be durable, impermeable and easy to clean and disinfect. The lairage and the equipment in it should be kept clean and in good repair. Cleaning operations in the lairage must be carried out without splashing dirt or water on to any birds awaiting slaughter. There should be effective procedures in place for the control of vermin such as rats and mice.

3.8 Noise levels in the lairage should be minimised. Birds can become stressed and excited when they hear noises such as that caused by machinery and metal fittings or other sudden, loud or unfamiliar noises.

3.9 Lighting in all parts of the lairage should be sufficient to allow each bird to be inspected at any time. If birds are to be kept in the lairage overnight, it should be possible to switch the lighting on and off or to dim it. Reduced or blue lighting in the lairage should be used to help calm birds.

3.10 Adequate ventilation must be provided. The objective of any ventilation system is to encourage the movement of air through and around the stacked

crates, so that the warm and moist air within the crates is withdrawn and replaced by cooler drier air, so that the birds' thermal comfort is better controlled.

3.11 Slaughterhouse operators or any competent person should inspect lairaged birds at least every morning and evening, especially where slaughter is delayed. Any bird which is ill, injured or in pain must be killed without delay (see paragraphs 2.11- 2.12). This must take precedence over the slaughter of any other birds.

3.12 Slaughterhouse operators must ensure that there are procedures in place to ensure that emergency killing can be carried out at any time. Wherever possible, a killing method should be used. Lairage staff should be trained in appropriate emergency killing methods in the event that a bird must be killed on welfare grounds when no licensed slaughterman is available.

3.13 Further information on emergency killing and slaughter methods are contained in paragraphs 5.1 – 5.15 and also in the HSA publication 'Poultry Welfare – Taking Responsibility', which is a training DVD aimed towards large scale handling, transport and slaughter of poultry and includes emergency slaughter within the processing plant (see Appendix A for address details).

Avoidance of Heat Stress in Birds held in the Lairage

3.14 An increase in body temperature of only 4°C above normal body temperature (usually 39 - 41°C) can result in the death of a bird from hyperthermia (heat stress). The death of any birds held in a lairage from heat stress is unacceptable, since environmental conditions are measurable and the development of heat stress is both predictable and preventable.

3.15 To ensure that heat stress in birds is spotted at an early stage, operators should ensure that the following steps are taken:

- inspection of crates when they arrive at the lairage to check if any birds are panting, distressed or exhausted. If birds in an advanced state of

distress are found, they should be killed immediately (see paragraphs 2.9 - 2.12);

- use of relative humidity and temperature sensors throughout the lairage and within the bird crates where possible (at bird level) to monitor the environmental conditions. Corrective action must be taken if temperature and humidity are increasing;
- minimising the length of time birds are kept in the lairage by careful management of arrival schedules. In the normal course of operations, birds should remain in the lairage for no more than 1 hour, with a maximum time of 2 hours if necessary.

3.16 The stocking density of birds affects the temperature and humidity in the crates and the flow of air through them. An average broiler produces 10-15 watts of heat. Water vapour is constantly lost from the bird as it breathes. The combined effect of many birds packed into one crate is to raise significantly the local temperature and relative humidity of the air within the crate. Temperature and relative humidity within the centre of each crate is likely to be significantly higher than environmental temperature and humidity immediately outside.

3.17 Heat build-up inside poultry modules is a problem throughout the year, not just in summer and a significant temperature gradient may develop from top to bottom of a stack of crates due to rising heat. In well-ventilated lairages, a rise in temperature inside the crates containing birds occurs primarily in the first hour in which they are kept in the lairage, after which time an elevated equilibrium temperature is reached. However, conditions combining to cause birds in the crates to suffer from thermal stress (humidity, fatigue etc.) deteriorate with increasing time in lairage.



Diagram 6: A portable temperature and humidity sensor being used in the lairage

3.18 Portable or fixed humidity and temperature sensors should be used throughout the lairage and when measuring the temperature in full crates. This is to ensure that the environmental conditions maintain a satisfactory standard of bird welfare (see diagram 6). Particular care and consideration should also be given to end of lay hens, especially poorly feathered birds that are more susceptible to chilling.

3.19 Diagram 7 illustrates how the combined effects of environmental temperature and humidity interact to cause thermal stress in birds. Combinations of temperature and humidity beneath Curve (a) represent 'safe' conditions. The thermal environment should permit birds to adequately maintain an acceptable body temperature at which their welfare is not compromised.

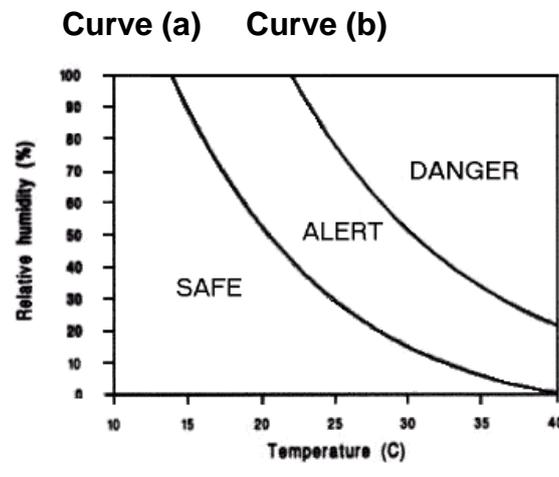


Diagram 7: Increasing temperature and relative humidity can be detrimental to bird welfare

3.20 Combinations of temperature and humidity between Curves (a) and (b) represent conditions where the ability of the birds to maintain a suitable body temperature is likely to be compromised. Their body temperature is likely to start rising with the potential for development of heat stress and poor welfare. Action should be taken at this point to improve local ventilation around the birds and return local temperature and relative humidity to the 'safe' zone.

3.21 Combinations of temperature above Curve (b) are likely to be significantly reducing the birds' ability to maintain their normal body temperature (thermoregulate). Birds will be suffering heat stress in such conditions and there will be an immediate risk of birds dying. Welfare will be very poor and immediate action must be taken to correct the local environmental conditions.

3.22 Continuously open ridge ventilation in the lairage roof may be sufficient on its own to remove stale air from the lairage, however forced ventilation may be needed in some circumstances. Adjustable wall-mounted air inlets fitted above stacked crates can provide a draught-free flow of air. Natural convection of rising heat may be enhanced by placing crates containing birds near to extraction fans, where the fans are either over each stack of crates, or at the apex of the roof. Birds should not be exposed to excessive noise and draughts from fans.

3.23 Air entry points and the route of ventilated air through the lairage should be considered with a view to preventing local effects and short-circuiting of airflow so that air passes over and around birds in crates. Fans should improve internal air mixing to avoid hot and cold spots and to extract stale air, rather than merely re-circulate hot and humid air. If controlled ventilation at bird level is provided by fans, operators should aim to achieve air change at module level with a minimum bird-level airflow of 0.1 ms.

3.24 Airflow should be increased with any rise in ambient temperature or humidity, but birds should not be exposed to undue levels of draught or noise. Radiated heat loss from the sides of a stack of crates can be improved by leaving gaps between crates and lanes of crates in the lairage. Fans, and

other equipment, used to control or measure temperatures and humidity in the lairage should be subject to high standards of routine maintenance so that their operation can be relied on when needed.

3.25 Whilst reducing air temperature, the use of water sprays or misting systems raise relative humidity levels and reduce birds' ability to lose heat by panting. Therefore, the use of misting systems to reduce air temperature is of questionable value due to the relationship between humidity and evaporative heat loss in birds. Birds will suffer severe heat stress if the air entering crates is above 20°C and has a high relative humidity. Misting systems should not be used to reduce lairage temperature as they are generally counter-productive and can induce heat stress in the birds.

3.26 The following steps should be taken to reduce the likelihood of heat stress developing in the lairage:

- in hotter weather, consider reducing the stocking density of birds in the crates when loading the birds into the crates on farms;
- stack crates far enough apart to encourage heat loss and air movement;
- install extraction fans which extract humid air and excessive heat from the crates. If possible, the fans should move air horizontally, rather than vertically, to remove hot and humid air more effectively;
- monitor the effectiveness of fans, and if necessary increase the number of fans to increase the flow of air;
- ensure an emergency back-up means of maintaining adequate ventilation is available if the original source of ventilation fails;
- reduce moisture sources in the lairage, for example by locating crate or lorry washing facilities well away from the lairage.

3.27 For further information, please refer to the publication “Guide to Alleviation of Thermal Stress in Poultry Lairage” available from the Department for Environment, Food and Rural Affairs (Defra).

Feeding and Watering Birds in Lairages

3.28 Birds transported to the slaughterhouse in crates are required to be slaughtered or killed as soon as possible. It is not required to feed or water birds if they are going to be slaughtered within 12 hours of arriving at the lairage.

3.29 If slaughter or killing is delayed, consideration must be given to whether the birds should be provided with:

- drinking water from appropriate facilities; and
- sufficient wholesome food.

3.30 The operator of the slaughterhouse should have in place documented contingency plans that can be implemented without delay in the event of a major breakdown. In deciding the most appropriate course of action the slaughterhouse operator and OV should consider what action will deliver the best welfare outcome for the birds. It is the responsibility of the slaughterhouse operator to carry out the required action and rectify the breakdown.

3.31 If practicable, feed should be provided twice daily in such a way that all birds within the crate in the lairage can access it without difficulty. Staff must make regular and frequent checks to ensure that all birds in the lairage have access to clean water.

3.32 On some occasions, major breakdowns of slaughterhouse equipment have resulted in the return of birds to their farm of origin so that they can be fed and watered. This means that the birds are transported back to their farm of origin, removed from their crates, and then re-caught and re-transported to the slaughterhouse when the problem with the slaughterhouse equipment has been resolved.

3.33 In such cases, the OV in the slaughterhouse can advise as to whether or not it is necessary to provide feed or water to lairaged birds. This advice will

be based on an assessment of the nature of the breakdown, the likely time it will take for the matter to be resolved, the lairage conditions and most importantly the welfare of the birds.

3.34 If the OV is satisfied that the birds' welfare can be satisfactorily maintained, they can remain in the lairage for a period longer than 12 hours without food rather than being returned to the farm of origin. This extension is possible only in the event of a serious breakdown at the slaughterhouse.

3.35 The slaughterhouse operator should also notify farmers and hauliers about the cessation in slaughtering activity, to ensure that no further birds are despatched to the slaughterhouse until after the problem has been resolved. The birds must be inspected frequently while in the lairage. Any bird which is found to be suffering must be killed immediately using an appropriate method (see paragraphs 5.1 – 5.15).

KEY LEGISLATIVE PROVISIONS

THE WELFARE OF ANIMALS (SLAUGHTER OR KILLING) REGULATIONS 1995

SCHEDULE 3 - PART II

REQUIREMENTS FOR ALL ANIMALS AWAITING SLAUGHTER OR KILLING

General requirements

2. The occupier of a slaughterhouse or knacker's yard and any person engaged in the movement of lairaging of animals shall ensure that-

(a) every animal is unloaded as soon as possible after its arrival and, if delay in unloading is unavoidable, it is protected from adverse weather conditions and is provided with adequate ventilation;

(b) when unloaded, every animal is protected from adverse weather conditions and is provided with adequate ventilation;

(c) if any animal has been subjected to high temperatures in humid weather, it is cooled by appropriate means;

(d) any animals which might injure each other on account of their species, sex, age or origin or for any other reason are kept and lairaged apart from each other;

(e) pending the slaughter or killing of any sick or disabled animal in the slaughterhouse or knacker's yard, it is kept apart from any animal which is not sick or disabled;

WASK SCHEDULE 3 - PART II

Inspection of animals

3. The occupier of a slaughterhouse or knacker's yard shall ensure that the condition and state of health of every animal is inspected at least every morning and evening by him or by a competent person acting on his behalf.

PART IV

Slaughter or killing of animals delivered in containers

15. The occupier of a slaughterhouse and any person engaged in the movement or handling of any animal shall ensure that-

(a) any animal which has been transported in a container is slaughtered or killed as soon as possible; and

(b) if slaughter or killing is delayed and if it is necessary -

(i) the animal has drinking water available to it from appropriate facilities at all times; and

(ii) a sufficient quantity of wholesome food is provided for the animal on its arrival at the lairage and twice daily thereafter, except that no animal need be fed within 12 hours of the time at which it is slaughtered or killed.

4. Shackling, Stunning & Slaughter

4.1 Teams placing birds into shackles must be thoroughly trained to handle the birds in such a way to avoid injuring the birds at the point of shackling. Shackle lines should be designed so as to protect bird welfare.

4.2 The working environment in which the hang-on teams operate is also important. The welfare of personnel, both in terms of environment (dust, heat and noise) and work rate (throughput, weight lifted and distance moved), must receive due consideration so as to minimise operator stress and protect the welfare of the birds.

4.3 Birds should be presented to the hang-on team in a way that minimises the amount of handling before shackling (see diagram 8). Birds are usually presented in crates, which may be of differing designs and sizes of lid providing access to the birds. Care must be exercised when birds are removed from the crates so as not to cause injuries or damage to the birds. Fractures to the bones of the leg and hip joint can be caused by rough handling, especially in older birds such as spent laying hens.

4.4 Birds should be presented at a height which is appropriate to the height of the shackle and which minimises the distance that the birds have to be lifted. Inverting birds inevitably causes them stress; staff at the hang-on point must handle each bird giving due consideration to its welfare, if possible smoothing the bodies of the birds with their hands to help settle them on the line.



Diagram 8: Birds being placed in shackles at the hang-on point

4.5 In general, good shackle line design will include the following:

- a breast comforter extending below the level of the bird's head, with which contact is maintained by every bird's breast along the entire length of the line, from the point of shackling to the point of stunning, even when the shackle line negotiates an external bend;
- a line speed which allows shackled birds time (ideally 12 seconds for chickens and 25 seconds for turkeys) to become settled in the hanging position before entering the waterbath stunner. The line speed should also be adjusted according to the number of personnel present at the shackle line so that birds can be placed on shackles with care and without undue haste;
- a route avoiding areas where personnel are moving about. However personnel must be able to gain ready access to shackled birds in case of an emergency;
- avoidance of dips or sharp turns. Instead, where a change of direction is necessary, the line should gradually curve or bend to convey the live birds to the stunner. Rapid changes in direction should be avoided as this will lead to birds becoming excited;
- no obstructions to suspended birds;
- means to avoid pre-stun shocks (see paragraphs 4.10 – 4.11 for details);
- a well designed and electrically insulated entry ramp to the waterbath stunner, which will assist in effective head submersion;
- a guide rail after the waterbath, leading to the neck cutter, to position the bird's neck to ensure an effective neck cut (see diagram 9);
- from the point of shackling to entry into the stun bath there should be reduction in noise level and light intensity;



Diagram 9: Guide rail leading to the neck cutter

4.6 Birds should be hung on by both legs. The rigid shackle (see diagram 10) should be the correct size to accommodate the shank of the leg of the species of bird being processed. The fit of the shank of the leg in the tongue of the shackle must be secure enough to make sure that there is a good electrical contact when the bird enters the waterbath stunner. The fit must not be over-tight, as research has shown that this leads to birds experiencing unnecessary pain and excitement, which is prohibited under WASK.



Diagram 10 : shackle designs for hens and broilers

4.7 Damaged, distorted or broken shackles should be removed immediately and replaced. Spraying the shackle and leg of the bird with water can help to reduce the resistance to flow of current, helping to ensure that the bird receives an adequate electric current to stun it effectively (see paragraphs 4.17 – 4.27 for details of waterbath stunning).

4.8 It is inappropriate to shackle some birds, for example, runts, birds with damaged legs etc. These birds must not be shackled, but should be killed immediately using a means of emergency slaughter (see paragraphs 5.1 – 5.15).

Shackle hanging times

4.9 The maximum length of time between a bird being shackled and being stunned **must not** exceed 3 minutes for turkeys or 2 minutes for any other bird. In the event of a line breakdown which could result in birds being shackled for more than the permitted times, birds must either be removed from the line immediately, or killed on the line using an appropriate emergency method (see paragraph 5.1 – 5.15). A reduction in the length of time between hang-on of the last bird and the entry into the waterbath stunner (ideally 12 secs for chickens, 25 secs for turkeys) will reduce the number of birds that need to be dealt with in the event of a breakdown.

Summary – shackling

- Good shackle design is integral to ensuring good bird welfare. Shackle design should ensure good electrical contact, but should not cause unnecessary pain or distress.
- Birds must be fitted securely into shackles.
- Disturbance should be reduced to a minimum.
- It is inappropriate to shackle sick or injured birds, which should be killed immediately by alternative means.
- Birds must not be shackled for more than 3 minutes in the case of turkeys, or 2 minutes in the case of any other bird, before stunning.

KEY LEGISLATIVE PROVISIONS

THE WELFARE OF ANIMALS (SLAUGHTER OR KILLING) REGULATIONS 1995

SCHEDULE 4

RESTRAINT OF ANIMALS BEFORE STUNNING, SLAUGHTER OR KILLING

6.-(1) Subject to sub-paragraph (2) below, no person shall suspend, or cause or permit to be suspended, any animal before stunning or killing.

(2) The prohibition in sub-paragraph (1) above shall not apply in the case of birds which may be suspended for stunning or killing provided that-

(a) no bird is suspended in such a manner as to cause it avoidable pain or suffering;

(b) appropriate measures are taken to ensure that, at the point of being stunned or killed, the bird is in a sufficiently relaxed state for stunning or killing to be carried out effectively and without undue delay; and

(c) no bird is suspended for more than 3 minutes in the case of a turkey or 2 minutes in other cases before being stunned or killed.

Waterbath pre-stun shocks

4.10 Pre-stun shocks are painful. They are caused when any part of a bird receives an electric shock before it is effectively stunned. In most cases, pre-stun shocks are due to the drooping of the wings or any other part of the bird such that electrified water is contacted before the birds head enters the bath and it is stunned. The pain caused by the pre-stun shock may result in the bird reacting and “flying the stunner” (flapping so violently whilst shackled that the bird lifts its head out of the path of the waterbath stunner, receiving no effective stun). **This must be avoided.**

4.11 The cause of any pre-stun shocks must be investigated and corrective action taken immediately. This could include:

- modifying line design and improving the insulation of the entry ramp to assist in effective head submersion. The design should include the incorporation of a horizontal shackle line combined with an extended entry ramp to form an extension of a breast comforter. This design holds the birds back for long enough so that the head 'flicks' into the electrified water in one swift movement (see Diagram 11);



Diagram 11: A waterbath with entry ramp

- increasing the depth of immersion (by raising the height of the waterbath) to ensure that the birds' head and neck are completely immersed in the waterbath; Dipping lines can also give very quick immersion with no pre-stun shock especially on modern high speed lines and when there is a large variation in bird size;
- proper adjustment of height of the waterbath to ensure that birds receives an adequate stun;
- incorporating a breast comforter, reducing hang-on times, reducing noise and light levels and minimising the overall length of the shackle lines will help to calm birds as they approach the water bath, thus reducing the incidence of wing flapping prior to stunning, and reducing the likelihood of pre-stun shocks;
- Overflowing electrified water should be drained at the waterbath exit.

Summary – waterbath pre-stun shocks

- When using a waterbath stunner, pre-stun shocks to birds must be avoided.
- Careful consideration of the design of the shackle line and entry ramp to the bath is essential.
- Alter water bath height appropriately when birds of a different size are processed.

Stunning and stun-kill methods

4.12 Any method of stunning must cause immediate unconsciousness and the bird must remain unconscious until its death. In large slaughterhouses, the most commonly used method to stun birds is the electric waterbath stunner.

4.13 In addition to stun-only methods, there are also stun-kill methods. A stun-kill method is one where the process results in the immediate death of the bird. Electricity or gas mixtures may be used to achieve a stun-kill.

4.14 Smaller-scale operators may use killing techniques which can be used on individual birds. Larger slaughterhouses may use these methods for casualty slaughter in the event of problems with their normal methods of slaughter or killing.

Using electricity to stun and stun-kill birds

4.15 The most commonly used method to stun birds is by electrical stunning. There are two distinct ways in which electricity is used in the slaughter and killing process:

- head-only stunning (known as ***electronarcosis***) is achieved when sufficient electrical current passes through the bird's brain to disrupt normal functioning of the brain so that the bird is rendered unconscious and insensible to pain. This can be achieved either by applying electrodes directly to the bird's head, or by passing an electric current through the whole of a bird's body in a waterbath stunner. A high frequency alternating current (AC) or direct current (DC) is usually employed to achieve this. Head only stunning with electricity produces a stun that is reversible, i.e. if nothing further is done to the bird after the stun it will regain consciousness, usually within less than one minute.
- Stun / kill is head-only stunning is followed almost immediately by death due to cardiac arrest (stopping the heart) and occurs when low

frequency (50Hz) alternating current (AC) is passed through the whole of the bird's body, affecting both the brain and the heart. This process is known as **electrocution**. Stun / kill delivers better welfare because the process kills each bird outright and there is no possible return to consciousness. However, some operators choose not to use stun / kill systems due to the level of damage (such as blood spots and bone fractures) that can be caused to the carcass, resulting in a decrease of meat quality.

4.16 Electrical stunning is commonly defined in terms of the voltage used, but although voltage is important, it is actually the **amount** of electric current (measured in amperes (amps) or milliamps) passing through the brain that is most important. The relationship between the voltage applied, the current delivered, and the bird's electrical resistance (the properties which limit current flow) is given by the formula:

$$\text{Current} = \frac{\text{Voltage}}{\text{Resistance}} \quad \text{or} \quad I = V/R$$

This means that in a fixed voltage system, the current flowing through each bird depends upon overall voltage and resistance.

KEY LEGISLATIVE PROVISIONS

THE WELFARE OF ANIMALS (SLAUGHTER OR KILLING) REGULATIONS 1995

SCHEDULE 5 - PART II

STUNNING OR KILLING OF ANIMALS OTHER THAN ANIMALS REARED FOR FUR

Stunning of animals

3. No person shall stun, or cause or permit to be stunned, any animal unless it is possible to-

- (a) bleed it without delay and in accordance with Schedule 6; or
- (b) kill it without delay and in accordance with Part III of this Schedule.

Permitted methods of stunning animals

4. No person shall stun any animal, or cause or permit any animal to be stunned, except by one of the following methods-

- (a) captive bolt;
- (b) concussion; or
- (c) electro narcosis.

PART III

Methods of killing animals

13. No person shall kill, or cause or permit to be killed, any animal except by one of the following methods-

- (a) free bullet;
- (b) electrocution;
- (c) for birds only, decapitation or dislocation of the neck; or
- (d) exposure of pigs and birds to gas mixtures in accordance with Schedule 7.

Waterbath stunning

4.17 To make sure that an effective stun is achieved in a waterbath stunner, it is essential that:

- the correct current is applied for sufficient time to ensure that an adequate period of unconsciousness results;
- the electrodes are positioned and are operating correctly;²
- there is secure contact between the bird, the shackle and the earth rubbing bar;
- the water level used in the waterbath is sufficient to completely cover the head and neck of the suspended bird.
- the combination of the chosen waveform, frequency and magnitude of the current are able to effect an adequate stun.

² In a waterbath stunner, one electrode must be placed in the bottom of the bath and run its entire length. The second electrode is the earthing bar, which is in contact with the shackle in which the individual bird is held.

If any one of these criteria is not met, the bird may not be stunned effectively.

4.18 A suitably qualified technician with experience of waterbath stunning, in consultation with the OV, should ensure that:

- the electrical stunning equipment (including any control panel) is checked every day before use to ensure that it is in proper working order. In particular:
- any defects in the stunning equipment are rectified immediately;
- the voltmeter and ammeter displays are regularly calibrated and read.

4.19 If there is any suspicion or evidence that the waterbath stunning is failing to produce either an effective stun or stun/kill in birds, the slaughter line must be stopped and the problem investigated and rectified. Spare equipment, in proper working order, should be kept available as back-up in case the equipment in regular use fails to stun birds effectively.

4.20 The total current each bird receives in a waterbath depends on the total number of birds in the waterbath and the electrical resistance of each suspended bird. The resistance of individual birds is highly variable, and depends on factors such as the age, size and species of the bird; whether the bird's plumage is wet and whether the shanks of the leg are thickened. The most important factor is the wide variation that can occur in the contact between the bird and the shackle.

4.21 Sufficient voltage must be applied across the system to ensure that, even allowing for differences in the total resistance of individual suspended birds, each bird receives the minimum current necessary to stun it effectively.

4.22 This is illustrated in diagram 12. Each of the four birds has a different resistance. The system is set to deliver a constant voltage. Using the equation $I=V/R$, it will be seen that a lower current will flow through birds with a higher resistance (NB this is a simplification; the equation is slightly more complex as the birds are connected 'in parallel'). The overall voltage applied to the system

must ensure that the lowest current that flows through any single bird is always adequate to achieve an effective stun.

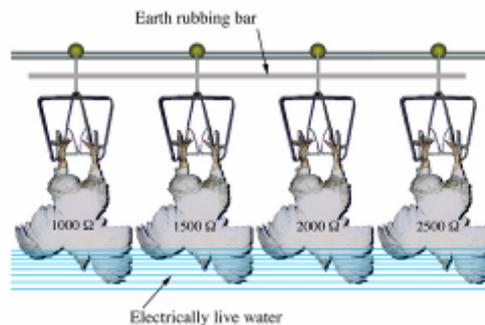


Diagram 12 : Waterbath stunner – showing possible variations in individual bird resistances

4.23 There are monitors available which can be used when setting up or testing a waterbath stunner. These devices utilise a fixed resistance equivalent to the resistance of an average bird. The device is hung on to a shackle line and passes through the waterbath stunner along with the other birds. The average current flowing through the fixed resistance is recorded while other birds are being stunned. The stunning monitor indicates whether it is likely that birds passing through the waterbath are receiving an adequate current to ensure an effective stun. AGL Consultancy Ltd produce a Monitor which can be purchased by the processor, to use on a daily basis or as required.



Diagram 12a. Poultry stun monitor

Waterbath stunners – recommended frequencies

4.24 Many waterbath stunners operate at constant voltage and deliver a variable current to the birds depending on their electrical resistance. It is possible to alter the frequency of the applied voltage, and the shape of the current waveform or wavelength. Waterbath stunners use either a low frequency AC source (in the range on 50 to 100Hz) to stun-kill birds, or a high frequency AC or pulsed DC source (for example, up to 1,500Hz) to stun birds.

4.25 If a low electrical frequency AC stunning source is used, birds should be effectively stunned with an application time of 2-4 seconds. **However, with both low and high frequency stunning, times required to achieve an effective stun will vary depending on the species and the electrical frequency used.**

Table 1 lists the minimum required currents delivered from a 50hz AC source to achieve a head only stun in a range of species.

Broiler	105 mA
Goose	130 mA
Turkey	150 mA
Duck	130 mA

Table 1: Recommended minimum electrical currents for each bird (from a 50Hz AC electrical source)

4.26 As well as providing an immediate, effective stun, use of a source of low frequency current will also result in the majority of birds experiencing cardiac arrest (stopping the heart). For example, research has shown that a waterbath stunner using a 50 Hz AC supply and providing a current of 148 mA per bird will result in a stun / kill of 99% of birds, with only 1% of birds leaving the waterbath stunned but still alive.

4.27 In the case of high frequency electrical stunning, birds should receive a stun of at least 8 seconds duration to be rendered unconscious. In general,

when electrical frequencies greater than 100 Hz are used in the waterbath, cardiac arrests are not induced in birds so the majority of birds exit the waterbath stunned but alive. It is, therefore, essential that birds are bled immediately before they can regain consciousness.

KEY LEGISLATIVE PROVISIONS

THE WELFARE OF ANIMALS (SLAUGHTER OR KILLING) REGULATIONS 1995

SCHEDULE 5 - PART II

STUNNING

Specific requirements for stunning by electronarcosis - waterbath stunners

10. No person shall use, or cause or permit to be used, a water bath stunner to stun any bird unless-

(a) the level of the water in the waterbath has been adjusted in order to ensure that there is good contact with the bird's head;

(b) the strength and duration of the current used is such that the bird is immediately rendered unconscious and remains so until it is dead;

(c) where poultry are stunned in groups in a waterbath, a voltage sufficient to produce a current strong enough to ensure that every bird is stunned is maintained; and

(d) appropriate measures are taken to ensure that the current passes efficiently, in particular that there are good electrical contacts and the shackle-to-leg contact is kept wet.

11. No person shall use, or cause or permit to be used, any waterbath stunner unless-

(a) it is adequate in size and depth for the type of bird being slaughtered;

(b) it does not overflow at the entrance, or, if an overflow is unavoidable, measures are taken to ensure that no bird receives an electrical shock before it is stunned; and

(c) the electrode which is immersed in the water extends the length of the waterbath.

SCHEDULE 4

RESTRAINT OF ANIMALS BEFORE STUNNING, SLAUGHTER OR KILLING.

8. No person shall use, or cause or permit to be used, any electrical stunning or killing equipment or any other instrument which applies an electric current to animals-

- (a) as a means of restraining any animal;
- (b) as a means of immobilising any animal; or
- (c) except in accordance with paragraph 11 of Schedule 3, as a means of making any animal move.

Recognising an effective stun

4.28 All birds leaving the waterbath stunner must be checked to ensure they have been effectively stunned or killed. If a stun is effective, and the bird is unconscious post-stun, it will show the following signs:

- no rhythmic breathing for 10-20 secs after leaving the waterbath;
- neck arched with head directed vertically;
- dilated pupils;
- absence of a corneal or 3rd eyelid response;
- no reaction to comb pinch;
- wings held close to the body;
- rigidly extended legs (not an appropriate indicator when a bird is held in a shackle); and
- constant body tremors (movement).

If the stun is ineffective, the bird may show the following signs:

- return of rhythmic breathing;
- a corneal or 3rd eyelid response;
- tension in the neck muscles;
- other voluntary muscle movements;
- vocalisation.

If the bird has received an effective stun/kill, and it is dead, the following signs will be seen:

- fixed, central, dilated pupil;

- no rhythmic breathing;
- no response to any stimuli e.g. no corneal or third eyelid response or reaction to comb pinch;
- limp carcass.

4.29 It is best to observe signs of rhythmic breathing by looking for rhythmic movements around the vent. This can more easily be assessed by following a single bird as it travels along the line rather than focussing on birds passing by a single point on the line. Any bird that exits the waterbath not having received an effective stun or stun/kill must be killed immediately using an approved method. Staff must be trained to recognise the signs of an effective stun and/or stun/kill so as to ensure that birds have been effectively stunned or are dead.

Head – only electrical stunning

4.30 In small-scale slaughter premises and for seasonal on-farm slaughter, birds are frequently stunned before bleeding using head-only electrical stunners. The handset has interchangeable or adjustable electrodes to accommodate different sized birds and is operated manually. For further information, please refer to the HSA’s “Practical Slaughter of Poultry – A Guide for the Small Producer” (see appendix A for address details).



Diagram 13 : Head only electrical stunner

4.31 The electrodes must be placed on each side of the bird’s head, spanning the brain. When switched on, an electrical current flows between the electrodes and through the brain, causing immediate unconsciousness.



Diagram 14: Head-only stunning of a broiler showing the electrode position on the bird's head.

4.32 The level of current must be sufficient to cause an effective stun. The signs of an effective stun are the same as those described in paragraph (4.28)

For effective head-only stunning, the following requirements should be met:

- The recommended levels of current are:
 - Small birds (e.g. domestic fowl) 300 - 400 mA
 - Large birds (e.g. turkeys or geese) 400 mA
- the electrodes must be correctly placed spanning the brain and not placed across the neck;
- good contact should be achieved between the electrodes and the bird's head;
- the electrodes must be clean to ensure minimum contact resistance.

4.33 Once the electrodes are in position, the appropriate current should be applied for a minimum of 7 seconds and at least until initial wing-flapping has stopped. Legs extending is also a sign that the bird has been stunned for a long enough period of time.

4.34 Should the equipment fail to produce an effective stun (see paragraph 4.28 for details), repeat the method immediately, ensuring the electrodes are clean and are being applied for the correct period of time. If the equipment appears to be at fault, kill the bird immediately using a back-up method and cease any further stunning until the equipment is repaired or replaced.

Equipment should be regularly checked and calibrated to ensure it is delivering the correct current.

4.35 Electrodes must not be applied across the neck of the bird, as this can cause painful paralysis, rather than inducing unconsciousness.

Summary – using electricity to stun and stun-kill birds

- Adequate current must flow across the brain for an adequate length of time;
- Bird resistance is variable and depends on many factors;
- Check each bird for signs of an effective stun;
- Minimise stun-to-bleed times; and
- Electrical equipment should be checked by a competent technician before stunning starts every day.

Controlled Atmosphere Stun Kill (CASK)

4.36 Birds may be killed by means of exposure to one of several gas mixtures. WASK-permitted mixtures are detailed in Schedule 7 of the Regulations (as amended in 2001). Birds must remain within the controlled atmosphere for at least 2 minutes until they are dead.



Diagram 15: Crates being loaded into a controlled atmosphere stunner

4.37 There are several welfare advantages to using a controlled atmosphere stun killing system:

- Shackling and inversion of live birds is avoided;

- there is no need for live birds to be handled at any time;
- there are no pre-stun shocks, which birds can receive when being stunned in a waterbath stunner; and all the birds are dead prior to bleeding.

The advantages in terms of bird welfare resulting from the use of a controlled atmosphere stun killing system also lead to meat quality advantages:

- there are fewer broken bones;
- less damage occurs in the breast meat; and
- further processing of the bird can be progressed more quickly (particularly with birds killed using nitrogen/argon mixtures with high nitrogen concentrations - maturation times for meat derived from these birds are cut by up to 75%).

4.38 The controlled atmosphere stun killing chamber used must have a means of visually monitoring the birds when they are inside. Windows should be positioned in the unit so that birds can be monitored upon their entry into the chamber, rather than at the exit.

4.39 Any window must permit observation of the birds, in order that any problems related to the welfare of the birds can be identified quickly, and action taken immediately to rectify them.

4.40 The controlled atmosphere stun killing chamber must contain a device which will give audible and visible warnings if the concentration of gas in the chamber moves outside of the WASK required concentrations (see diagrams 16 & 17).

4.41 Action to rectify the gas concentration must be taken immediately. If gas concentrations cannot be corrected in a timely manner, or if the operation of the chamber is disrupted for any reason, e.g. failure of the mechanical conveyor system, birds that are alive should be removed from the chamber,

paying due attention to any health and safety procedures that must be followed, and should be killed immediately by an emergency means of killing.



Diagram 16: Controlled atmosphere killing unit gas control and monitoring panel



Diagram 17: Controlled atmosphere killing unit gas mixing panel

Recognising an effective kill after using gas

4.42 On leaving the controlled atmosphere stun killing unit:

- the birds must be dead;

- there will be no corneal or third eyelid reflex;
- the pupils will be fixed, dilated and central;
- no rhythmic breathing.

4.43 The permitted gas mixtures for controlled atmosphere stun killing in the UK are:

(a) argon, nitrogen or other inert gases, or any mixture of these gases, in atmospheric air with a maximum of 2% oxygen by volume; or

(b) 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 oxygen concentration does not exceed 2% by volume.

Summary – controlled atmosphere stun killing

- The main welfare advantage of gas killing is that it involves no handling, shackling or inversion of live birds.
- Controlled atmosphere killing is only permitted for domestic fowl and turkey.
- Chickens should not be subjected to any of the gas mixtures prior to entry into the system. This could be achieved by, for example, installing an extractor at the entrance to the chamber.
- On exiting the system, all birds must be checked to ensure that they are dead.
- Any birds found to be conscious on exiting the system must be removed and humanely killed immediately.
- In case of failure, there must be a back-up slaughter method available and ready for use at all times which is capable of dealing with all birds awaiting slaughter.
- A contingency plan must be drawn up to include details of what action would be taken, if a breakdown occurred while birds were still in the system, to avoid prolonged delays.

KEY LEGISLATIVE PROVISIONS

THE WELFARE OF ANIMALS (SLAUGHTER OR KILLING) REGULATIONS 1995

SCHEDULE 7 - PART III

KILLING BIRDS BY EXPOSURE TO GAS MIXTURES

The killing of birds by exposure to gas mixtures

7.-(1) Subject to paragraphs 8 to 10 below, birds may be killed at a slaughterhouse by exposure to an anoxic gas mixture which rapidly renders birds insensible to pain or distress in a chamber provided for the purpose (hereinafter referred to as "a chamber").

(2) In this Part "gas mixture" means either -

(a) argon, nitrogen or other inert gases, or any mixture of these gases, in atmospheric air with a maximum of 2% oxygen by volume; or

(b) 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 oxygen concentration does not exceed 2% by volume.

SCHEDULE 7 - PART III

Construction of the chamber

8. The occupier of a slaughterhouse at which a chamber is used shall ensure that-

(a) the chamber and the equipment used for conveying any bird through the gas mixture are designed, constructed and maintained-

(i) so as to avoid injury to any bird; and

(ii) so that once a bird enters into the chamber it is conveyed to the point in the chamber of maximum concentration of the gas mixture within a maximum period of 10 seconds;

(b) the installation has an apparatus which maintains the required concentration by volume of oxygen or carbon dioxide, as appropriate, in the chamber;

(c) the chamber is fitted with devices which-

(i) measure the concentration by volume of oxygen or carbon dioxide in the gas mixture, as appropriate, at the point of maximum concentration;

(ii) when the chamber is in operation, display continuously the concentration by volume of oxygen or carbon dioxide, as appropriate, as a percentage of the total gas mixture at the point of maximum concentration in the chamber ; and

(iii) give clearly visible and audible warning signals-

(aa) where the gas mixture used is that mentioned at paragraph 7(2)(a) above, if the concentration by volume of oxygen rises above 5% for more than 30 seconds, and

(bb) where the gas mixture used is that mentioned at paragraph 7(2)(b) above, if the concentration by volume of carbon dioxide rises above 30%

(d) there is a means of visually monitoring birds which are in the chamber;

(e) there is a means of flushing the chamber with atmospheric air with the minimum delay; and

(f) there is a means of access to any bird in any part of the chamber with the minimum of delay.

The operation of the chamber

9. The occupier of a slaughterhouse at which a chamber is used shall ensure that-

(a) the birds are exposed to the gas

mixture for long enough to ensure that they are killed;

(b) the chamber is properly maintained; and

(c) every person engaged in the gas killing is properly instructed as to-

(i) the method of operation of the chamber;

(ii) the procedures for any necessary flushing of the chamber with atmospheric air; and

(iii) the procedures for any necessary evacuation of birds from the chamber.

10. The occupier of a slaughterhouse at which a chamber is used and any person engaged in the killing of birds by exposure to the gas mixture shall ensure that-

(a) any bird which arrives at the installation in a transport crate and which is removed from the crate before it enters the chamber is handled with care and in such a way that the bird is not caused avoidable pain or suffering;

(b) no bird enters the chamber if, as appropriate-

(i) the displayed concentration of oxygen is above 2% by volume, except that the concentration of oxygen may occasionally rise to a concentration of not more than 5% by volume for not more than 30 seconds; or

(ii) the displayed concentration of carbon dioxide is above 30% by volume;

(c) no bird is passed through or allowed to remain in the chamber at any time when the visible and audible warning signals provided for in paragraph 8(c)(iii) above have been activated or when there is any defect in the operation of the chamber; and

(d) no bird is shackled before it is dead.

Checking for effective stunning and stun-killing

4.44 A competent member of the slaughterhouse staff (with the necessary experience and training) should be ideally designated as a PWO. PWOs are responsible for bird welfare in the slaughterhouse and should carry out appropriate checks at frequent intervals each day. These checks are to make sure that birds are being effectively stunned or stun-killed, and that they are unconscious or dead after exiting the stunner. Corrective action should be taken immediately if any problems are found and the birds are not being effectively stunned.

4.45 Checks by PWOs should not be regarded as alternatives to welfare checks made by the OV. Instead, they should become part of the normal working practices of the plant. One or more staff members should attend a suitable training course, and assume responsibility for welfare in the plant generally, and training should be recognised as being a continuing process, which should be monitored and reviewed on a regular basis.

Recognising an effective stun-kill

4.46 If a stun-kill is effective and the bird is dead, it will show the following signs:

- no rhythmic breathing, evident by lack of movement around the vent;
- completely limp carcass;
- the loss of the nictitating membrane reflex; and
- dilated pupils.

Bleeding

4.47 After stunning or stun-killing, the bleeding of birds is the final stage of the slaughter process. Bleeding, also referred to as neck-cutting, may be undertaken either manually with a sharp knife or by use of an automated rotating neck cutter. The cut must sever at least one of the carotid arteries or the vessels from which they arise. More rapid bleed out is achieved if both carotid arteries are cut.

4.48 It is a legal requirement that bleeding must be undertaken without delay after any bird is stunned (or stun-killed). The time between stunning and bleeding must be as short as possible. This may be achieved for example by minimising the distance between the point of stun and point of neck cut on a shackle line. A stun to bleed interval of less than 15 seconds is recommended. Shorter stun to bleed intervals are advisable when high frequency stunning is used.

4.49 WASK requires that, where a slaughterhouse uses an automated neck-cutting device, a licensed slaughterman must be situated at the site of the neck-cutter to make sure it has effectively severed at least one of the carotid arteries of each bird. It is the responsibility of the slaughterman to ensure that the neck-cutter makes an effective cut. If the neck-cutter fails to operate for any reason, a manual cut must be made by the slaughterman to ensure a rapid bleed-out. The automatic neck cutter must be checked frequently throughout the day to ensure the settings are correct. The depth of the neck cut may need to be adjusted when processing birds of differing sizes and the blade should be sharpened regularly. Carotid arteries are tough, fibrous structures and may not be completely severed by blades that are not properly sharpened and maintained.

4.50 Although WASK permits the cutting of only one carotid artery, severance of both carotid arteries will produce more profuse bleeding leading to the rapid death of the bird. Therefore, we would encourage all slaughter of birds to be undertaken in this manner. Where high frequency current is used, in the Waterbath stunner, we would recommend both carotid arteries and both jugular veins to be cut. To achieve this cut, a sharp, clean knife should be used to cut across the front of the neck just below the head.

4.51 After the cut, no electrical stimulation nor any further dressing procedure is permitted until bleeding has stopped, and certainly not before:

- 120 seconds after neck cutting of a turkey or a goose; and
- 90 seconds after neck cutting of any other bird.

Checks must be carried out to ensure that birds are dead before further processing.

Summary – bleeding

- To allow bleeding to take place as quickly as possible, necks of birds must be cut in such a way as to sever at least one carotid artery.
- Where possible, both carotid arteries and both jugular veins should be cut.
- Once neck cutting has occurred, birds must be left for a period of time (turkeys/geese;120 seconds, all other birds; 90 seconds), in order to ensure that it is dead before further processing can take place.

KEY LEGISLATIVE PROVISIONS

THE WELFARE OF ANIMALS (SLAUGHTER OR KILLING) REGULATIONS 1995

SCHEDULE 6

BLEEDING OR PITHING OF ANIMALS

3.-(1) any person engaged in the bleeding of any animal that has been stunned shall ensure that

- (a) the bleeding is rapid, profuse and complete;
- (b) the bleeding is completed before the animal regains consciousness; and
- (c) the bleeding is carried out by severing at least one of the carotid arteries or the vessels from which they arise.

(2) After severance of at least one of the carotid arteries or the vessels from which they arise of any animal that has been stunned before bleeding, no person shall cause or permit any further dressing procedure or any electrical stimulation to be performed on the animal before the bleeding has ended and in any event not before the expiry of -

(a) in the case of a turkey or goose, a period of not less than 2 minutes;

(b) in the case of any other bird, a period of not less than 90 seconds;

4.-(2) Where one person is responsible for the stunning and bleeding of birds or rabbits, those operations must be carried out by him consecutively in respect of one bird or rabbit before being so carried out by him in respect of another bird or rabbit.

Manual back up of automatic machinery

5.-(1) The occupier of a slaughterhouse shall ensure that no bird is slaughtered by means of automatic neck cutters unless, whenever the neck cutters are operated, a person is present who is able to ascertain whether or not the neck cutters have effectively severed at least one of the carotid arteries or the vessels from which they arise.

(2) In the event of the machinery not being effective in severing at least one of the carotid arteries or the vessels from which they arise, the occupier of the slaughterhouse in which the neck cutters are situated shall ensure that the bird is slaughtered or killed immediately.

5. Small scale slaughter of birds and emergency slaughter methods

5.1 In addition to the methods already described in this guidance, there are a number of other permitted killing methods. These can be used for routine killing in both large and small-scale slaughterhouses, or on-farm. They can also be used to kill birds for disease control purposes or in any emergency situation, for example when a bird is found to be suffering and needs to be killed immediately, or when a bird has been ineffectively stunned.

5.2 In large-scale slaughterhouses, the stunning and/or killing of birds are likely to be automated using the methods already described in this guidance. Smaller slaughterhouses may not process birds on a scale which warrants the use of these methods and may rely on other methods which require birds to be stunned or killed individually. Whilst methods that deal with birds on an individual basis may not be appropriate for routine use in facilities which process several thousand birds an hour, under certain circumstances large-scale facilities may have to resort to using them. For example, where a bird is discovered in the lairage to be injured and in pain, or if a bird exits a stunning or killing device still alive, it must be killed immediately to save it from further suffering.

5.3 There are several different methods which can be employed to kill or slaughter birds individually. For further information on this topic, please see “The Practical Slaughter of Poultry – A Guide for the Small Producer” (2nd edition). Copies are available from the HSA (see appendix A for address details).

Other recommended methods of killing for emergency slaughter or disease control purposes

Neck dislocation

5.4 Neck dislocation without prior stunning is a legal method of killing poultry. However, it does not consistently concuss the brain and, therefore, does not always cause immediate insensibility.

5.5 Therefore, neck dislocation should only be employed in emergencies, or in the killing of small numbers of birds, when alternative methods are not available. When it is employed, it must only be carried out by staff who are trained and competent at neck dislocation and who are confident that they can carry out the task humanely.

5.6 If neck dislocation is to be carried out, careful consideration should be given to the size and species of the bird to be killed. Dislocation of the neck on some large birds is likely to be technically and physically demanding. If a bird is killed by neck dislocation, check for the following signs:

- a gap in the vertebrae of the neck;
- loss of the nictitating membrane and corneal reflex;
- absence of rhythmic breathing.

5.7 No attempt should be made to kill a bird by crushing its neck, e.g. with pliers. Crushing the neck is neither quick nor humane and it does not have the same effect as dislocation of the neck.

Mechanical killing

5.8 The mechanical killing of poultry involves the delivery of a percussive blow to the head of a bird, causing immediate unconsciousness and death. The 2003 amendment to WASK permits the use of pneumatic or cartridge operated percussive devices to kill birds for disease control purposes or for emergency welfare. Percussive devices can only be used for routine slaughter in slaughterhouses by a licenced slaughterman and where it is followed by a permitted killing method, such as dislocation of the neck or decapitation. An example of a device that can deliver such a blow is the Accles & Shelvoke Ltd “CASH” killer (see diagram 18).

5.9 The device is simple to use and individuals can become competent in its operation and maintenance in a short space of time.



Diagram 18 : AIR POWERED CASH POULTRY KILLER – Manufactured by Accles & Shelvoke Limited

The CASH killer is available in two different models:

- i) a single shot device that is powered by means of a cartridge of appropriate size.
- ii) a device can also be powered by compressed air. Several devices can be run from a single central compressor. The required air pressure to kill different species of birds has been ascertained.

Knocker Head Type	Different Species of Bird	Required Air Pressure
Flat	Chickens	110psi
Convex	Chickens	120psi
	Turkeys (adults) Turkey (poults)	135psi 60psi
	Geese	135psi
	Ducks	130psi

Table 2: Required air pressures for different species of bird

5.10 It is likely that a spring-operated device will also become available in the near future. This device may be more economic to obtain and use, and will not require air or cartridges to power its operation.

5.11 Percussive killers deliver significant benefits in terms of animal welfare to birds compared with neck dislocation or decapitation. It is recommended

that all emergency killing undertaken in a slaughterhouse should be performed with this device.

5.12 For effective operation of the CASH killer, two points must be considered:

i) repeated use of the cartridge powered device will cause it to heat up significantly. It should be given sufficient resting time to allow it to cool.

ii) it is essential that the device is adequately cleaned and maintained on a regular basis, ideally at the end of every day it is used. Documentary evidence of maintenance should be maintained and records should be available for inspection by the slaughterhouse operator and the OV on request. The HSA produces excellent guidance on how to maintain stunning and killing equipment. The HSA publications which would be most relevant on how to maintain captive bolt devices for poultry would be “Practical Slaughter of Poultry – A Guide for the Small Producer” and “Poultry Slaughter – Taking Responsibility” DVD training package.

5.13 When operated to the manufacturer's instructions, this instrument will cause the immediate death of a bird. It can be used in the emergency killing of poultry or for disease control purposes. Different percussive heads are required for killing broiler chickens and other species; a flat head is appropriate for broilers, whereas a head with a convex profile is used for killing turkeys, ducks and geese.

Decapitation

5.14 Decapitation involves severing the head from the neck and is permitted without prior stunning. However it is not recommended on welfare grounds, as brain activity and therefore consciousness may continue for up to 2 minutes after decapitation. It should be used only in emergency situations, when alternative methods are not available. The operator should be skilled in the procedure, be able to adequately restrain the bird, and to use a sharp knife to rapidly and effectively remove the head using a single firm cut.

Stunning methods

Head – only electrical stunning

5.15 The welfare of any bird that needs to be killed by neck dislocation or decapitation can be improved by prior stunning. This may be achieved by application of head only electrical stunning tongs. The killing procedure will also be less demanding when undertaken on a stunned bird.

Summary – small scale slaughter of birds and emergency slaughter methods

- Mechanical killing using a percussion killer is the preferred killing method only for disease control purposes and emergency welfare killing.
- Neck dislocation and decapitation can be difficult to achieve effectively, especially in larger birds, and can be aesthetically displeasing.
- For routine slaughter or killing, the use of the percussive device must be followed by a currently permitted method of slaughter or killing.

6. Religious slaughter

6.1 In general, birds must be stunned before slaughter. However the Directive (and consequently WASK) makes an exemption from this requirement for slaughter by a religious method carried out by Jews and Muslims. Although the Government would prefer and would encourage that all animals are stunned before both religious and other slaughter (where this is not incompatible with religious beliefs), it recognises the needs of religious communities and accepts the importance which they attach to the right to slaughter animals for food in accordance with their beliefs.

6.2 When animals are slaughtered, the process must be humane and comply with the Regulations governing animal welfare at slaughter. When, for reasons of religion, animals are not stunned before slaughter, the operation must be carried out without causing unnecessary suffering, and in compliance with specific controls. The religious slaughter of birds can only take place in slaughterhouses as defined in WASK.

6.3 The cut made during slaughter by a religious method must sever both carotid arteries. The oesophagus (gullet) and trachea (windpipe) may also be severed. The cut must be made by means of rapid, uninterrupted movements of the knife, which must be inspected regularly throughout the slaughtering process to ensure that it is undamaged and large enough and sharp enough for the purpose.

6.4 Birds must not be further processed, or electrical stimulation applied, after the neck cut has been made until the bird is unconscious. In any event, a period of not less than 120 seconds in the case of a turkey or a goose, and not less than 90 seconds in the case of any other bird, must elapse after the cut before further processing can take place.

6.5 Well maintained equipment in good working order for emergency slaughter must be kept immediately available for use, in case the incision is

not made efficiently and the bird is suffering pain or distress as a result, or for any other emergency.

KEY LEGISLATIVE PROVISIONS

THE WELFARE OF ANIMALS (SLAUGHTER OR KILLING) REGULATIONS 1995

SCHEDULE 12 - PART I

Slaughter by a religious method

2. In this Schedule references to slaughter by a religious method are references to slaughter without the infliction of unnecessary suffering-

(a) by the Jewish method for the food of Jews by a Jew who holds a licence in accordance with Schedule 1 (which relates to the licensing of slaughtermen) and who is duly licensed-

(i) in England and Wales by the Rabbinical Commission referred to in Part IV of this Schedule; or

(ii) in Scotland by the Chief Rabbi; or

(b) by the Muslim method for the food of Muslims by a Muslim who holds a licence in accordance with Schedule 1.

PART III

PROVISIONS RELATING TO THE SLAUGHTER OF BIRDS BY A RELIGIOUS METHOD

Slaughter of birds by a religious method

9. Any person who slaughters by a religious method any bird which has not been stunned before slaughter shall ensure that-

(a) each bird is slaughtered by the severance, by rapid and uninterrupted movements of a knife, of its carotid arteries; and

(b) the knife to be used for the slaughtering of the birds is undamaged and of sufficient size and sharpness to enable each bird to be slaughtered in the manner described in sub-paragraph (a) above.

Handling birds after slaughter by a religious method

10. The occupier of a slaughterhouse in which birds are slaughtered by a religious method and any person engaged in the slaughter of any bird by a religious method

shall ensure that, where the bird has not been stunned before bleeding, no further dressing procedure or any electrical stimulation is performed on the bird before it is unconscious and in any event not before the expiry of-

(a) in the case of a turkey or goose, a period of not less than 2 minutes; and

(b) in the case of any other bird, a period of not less than 90 seconds, after it has been slaughtered in the manner described in paragraph 9 above.

Appendix A – Useful addresses

AGL Consultancy Ltd

Maple House
50A Canada Road
Cobham
Surrey
KT11 2BA
Tel +44 (0) 1932 868245
Fax +44 (0) 1932 868245
Internet address: <http://aglconsultancy.com>
Email:- aglconsultancy@tiscali.co.uk

The Department for Environment, Food and Rural Affairs (Defra)

Animal Welfare Core Team
1A Page Street
London
SW1P 4PQ
Telephone no: 020 7904 6567
Internet address: <http://www.defra.gov.uk/animalh/welfare/default.htm>
Email:- aw-slaughter@defra.gsi.gov.uk

The Humane Slaughter Association (HSA)

The Old School
Brewhouse Hill
Wheathampstead
Herts
AL4 8AN
Telephone no: 01582 831919
Internet address: <http://www.hsa.org.uk/>
Email: info@hsa.org.uk

Meat Hygiene Service (MHS)

Foss House
Kings Pool
1-2 Peasholme Green
York
YO1 7PX
Telephone no: 01904 455501
internet address : <http://www.food.gov.uk/foodindustry/meat/mhservice/>

Food Standards Agency (FSA)

Aviation House
125 Kingsway
London
WC2B 6NH
Telephone no: 020 7276 6800
internet address: <http://www.food.gov.uk/>

Health and Safety Executive (HSE)

Rose Court
2 Southwark Bridge

London
SE1 9HS
Telephone no: 0845 345 0055
Internet address: <http://www.hse.gov.uk/>

Meat and Livestock Commission (MLC)

P O Box 44
Winterhill House
Snowdon Drive
Milton Keynes
MK6 1AX
Telephone no: 01908 677577
internet address: <http://www.mlc.org.uk/>

University of Bristol (Division of Farm Animal Science)

Department of Clinical Veterinary Science
Churchill Building
Langford
Bristol
BS40 5DU
Telephone no: 0117 9289295
Internet address: <http://www.vetschool.bris.ac.uk/>
<http://www.awtraining.com/> providers of the AWO/PWO Courses.

Meat Training Council (MTC)

PO Box 141
Winterhill House
Snowdon Drive
Milton Keynes
MK6 1YY
Telephone no: 01908 231062
Internet address: <http://www.meattraining.org.uk/>

The Office of Public Sector Information

Admiralty Arch
North Side
The Mall
London
SW1A 2WH
Telephone no: 01603 621000
Internet address: www.opsi.gov.uk

Accles & Shelvoke Ltd

Selco Way
First Avenue
Minworth Industrial Estate
Minworth
Sutton Coldfield
West Midlands
B76 1BA
Tel: +44 121 313 4567
Internet address : <http://www.acclesandshelvoke.co.uk/>

Animal Health Corporate Headquarters

C11 Government Buildings

Whittington Road

Worcester

WR5 2LQ

Telephone: 01905 767111

Internet address : <http://www.defra.gov.uk/animalhealth/index.htm>

Email: corporate.centre@animalhealth.gsi.gov.uk

Animal Health Divisional Offices (AHDOs)

England: North

Cumbria

Animal Health Divisional Office Carlisle
Hadrian House,
Wavell Drive,
Rosehill Industrial Estate,
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CA1 2TB

Tel: 01228 591999

Night line: 01228 591999

Fax: 01228 591900

Email: AH.Carlisle@animalhealth.gsi.gov.uk

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South Yorkshire,
West Yorkshire

Animal Health Divisional Office,
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Otley Road,
Leeds
LS16 5PZ

Tel: 0113 230 0100

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Email: AH.Leeds@animalhealth.gsi.gov.uk

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Lincolnshire,
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2 Searby Road,
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Night line: 07623 937316

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Fax 0191 229 5413

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Barton Hall,
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East Sussex,
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Fulham,
Harrow,
Hillingdon,
Hounslow,
Kensington and Chelsea,
Kent,
Kingston-Upon-Thames,
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Richmond-Upon-Thames,
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Appendix B – Legislation list

- The Welfare of Animals (Slaughter or Killing) Regulations 1995
Statutory Instrument 1995 No. 731
- The Welfare of Animals (Slaughter or Killing) (Amendment) Regulations 1999
Statutory Instrument 1999 No. 400
- The Welfare of Animals (Slaughter or Killing) (Amendment) (England) Regulations 2001
Statutory Instrument 2001 No. 3830
- The Welfare of Animals (Slaughter or Killing) (Amendment) (England) Regulations 2003
Statutory Instrument 2003 No. 3272
- The Welfare of Animals (Slaughter or Killing) (Amendment) (England) Regulations 2006
Statutory Instrument 2006 No. 1200
- The Welfare of Animals (Slaughter or Killing) (Amendment) (England) Regulations 2007
Statutory Instrument 2007 No. 402
- The Welfare of Animals (Transport) (England) Order 2006
Statutory Instrument 2006 No. 3260

Appendix C – Further information

- “Guide to Alleviation of Thermal Stress in Poultry Lairage”. Copies are available from the Department for Environment, Food and Rural Affairs (Defra) (see appendix A for address details).
- “The Practical Slaughter of Poultry – A Guide for the Small Producer” (2nd edition). Copies are available from the Humane Slaughter Association (see appendix A for address details).
- “Code of Practice for the Disposal of Chicks in Hatcheries” (2nd edition). Copies are available from the Humane Slaughter Association (see appendix A for address details).
- Poultry Welfare – Taking Responsibility. Copies are available from the Humane Slaughter Association

Other relevant publications by the Humane Slaughter Association:

- Best Practice Guidelines for the Welfare of Broilers and Hens in Processing Plants.
- Best Practice Guidelines for the Welfare of Turkeys in Processing Plants.