



Module 16

Livestock: Slaughter and Killing Animals for Disease Control Purposes

Student Activities

Questions

1. Briefly describe four welfare 'costs' for animals that are undergoing the processes around slaughter.

(4 marks)

Any four of the following:

- anxiety
- fear
- pain
- discomfort
- dehydration
- relative starvation
- mixing with unfamiliar individuals
- fighting
- cold and heat stress
- travel sickness
- fatigue
- bullying and separation from the mother (calves) during transport and at markets
- The animal's life will be ended, and some philosophies raise the issue of 'quantity of life'

2. Describe two issues that reduce the enforcement of legislation which aims to protect animals during slaughter.**(4 marks)**

- Limited resources – the slaughter plant may not have the manpower or knowledge to provide adequately skilled and professional personnel to oversee slaughter. Alternatively, the local authority or policing organisation may not have the manpower, time or will to monitor it.
- Limited training of slaughterhouse personnel – the techniques for best practice slaughter are widely described and may be laid down in local legislation, but if the staff are not trained in these techniques, they will be unaware of the ways in which they could show improved levels of professional skill.
- There may be a lack of willingness by local authorities to consider slaughter as an area where animal welfare ‘matters’ as the animals have only a ‘short time to live’.
- Responsibility for enforcement may be spread between government departments, reducing co-ordination.
- Variable enforcement, with local or regional differences in accepted practices – this could mean that producers know that it is possible to ‘get away’ with something in one region, but that it may be prevented in another.
- The enforcement body may share interests with those policed, or the industry is policed ‘internally’ – e.g. the body responsible for the protection of welfare at slaughter plants is also responsible for carcass inspection or management of other parts of the process, and is not impartial in its link with the processor or slaughterhouse.
- Limited local authority powers – affecting access, stop and search, seizure and detention.
- Poorly designed legislation – this makes it difficult for the courts to interpret the law if a prosecution is made.

3. Briefly describe two possible experiences that may negatively affect an animal’s welfare when placed in lairage.**(4 marks)**

Any two of the list below (2 marks per answer)

- Animals may be mixed with unfamiliar animals, resulting in fighting.
- Animals may have food withheld and not be provided with bedding, water, shade, or the opportunity to carry out ‘coping’ behaviours such as escape or hiding to enable them to deal with possible bullying or high stocking densities.
- Many animals, particularly poultry, pigs and cattle are subject to spraying with water to ensure they are clean, to cool them, and to provide them with distraction during lairage; they can find this distressing.

- The use of goads to move animals, particularly to the final slaughter pen or mechanised slaughter line, has great potential to cause fear, distress and trauma.

4. Briefly describe the sort of stunning and killing systems that require poultry to be shackled, along with four potential welfare problems of such systems.

(5 marks)

‘Shackling’ of poultry is used in many automated slaughter systems where birds are killed by automated ‘water bath’ electrical stunning. Electrical stunning is achieved as the head of each bird passes through a trough containing water, through which electrical current is passed. In water bath stunning, the potential welfare problems include:

- Pre-stun shocks – birds may receive shocks from wet surfaces before the water bath. These shocks will not stun the bird but will be very painful.
- Ineffective stunning – poor contact with the water bath (due to small birds not making good contact with the water), poorly designed water baths and/or poor regulation of voltage/current leaving birds inadequately stunned.
- Poor bleed out – due to inadequate cutting of the blood vessels in the neck by automated equipment.
- Overlong suspension – birds may be suspended by the legs for very long periods if they are transported by, for example, bicycle. Foot, leg, joint and meat quality issues are also closely associated with shackle suspension.

5. Briefly describe the two separate processes of ‘stunning’ and ‘killing’.

(4 marks)

Each answer is worth 2 marks and the key phrases are underlined:

A stunned animal is in a temporary state of unconsciousness from which it can potentially recover consciousness. This applies to almost all stunning systems, where insensibility protects the animal from the potential pain and distress of the killing method, but the killing method must be applied without delay to ensure there is no potential for the return of sensibility.

Killing is the cessation of life by causing the collapse of vital functions. Of the killing methods used after stunning, exsanguination (the loss of an irrecoverable volume of blood) is the most common and it is achieved by severing the major vessels in the neck (carotid arteries and jugular veins), which causes rapid loss of blood volume and collapse of brain and respiratory function. (If students describe other methods of killing accurately then a mark can be awarded).

6. Carbon dioxide (CO₂) and argon are used in the gas stunning/killing method. Briefly describe the overall process and identify the benefits of using argon and CO₂ as well as the particular problems associated with the use of CO₂.

(4 marks)

- Gas stunning is a stun/kill method that not only initially stuns the animal, but also subsequently causes irreversible changes that result in death
- For poultry and pigs, placing the animals in high concentrations of CO₂ or argon gas induces a stunned state followed rapidly by death from anoxia.
- Argon is not detectable (inert, and hence not sensed by the animal) and induces death by anoxia. Because argon cannot accumulate in this atmosphere, the animal does not experience 'panic' sensations.
- At high concentrations, CO₂ acts as an anaesthetic gas, but there is a period of time before the induction of this stunned state during which the animal may find the sensory aspects of the gas (acidic, cold) aversive.

7. Briefly describe two 'meat quality' issues stemming from pre-slaughter stress.

(5 marks)

- 'Dark firm dry' (DFD) beef
- results from pre-slaughter stress, which depletes muscle glycogen stores that are needed to produce the pH of normal meat.
- If glycogen is used up pre-slaughter, the pH changes required to cause the normal post mortem setting of meat do not occur and 'dark cutting' beef results.
- 'Pale soft exudative' (PSE) pork
- caused by severe, short-term stress just prior to slaughter, which affects the rate of glycolysis and changes the pH of the meat

In-class activity

Discussion

Allow 35 minutes for this activity.

This discussion focuses on the role of legislation in relation to slaughter in the UK and in your local context.

Note: There are unlikely to be 'definitive' answers, but the questions are raised as focal points for discussion with students and colleagues to help identify and explore local issues.

To read: *The Welfare of Animals (Slaughter or Killing) Regulations 1995*, UK.

This can be accessed at www.legislation.hmso.gov.uk/si/si1995/Uksi_19950731_en_1.htm

The above is given as an example piece of legislation from a country where close supervision of slaughter is a legal requirement, and where the person undertaking the stunning and slaughter of animals in a slaughterhouse must be trained.

Particular attention should be paid to the following four sections (titles are hyperlinks):

Humane treatment of animals

4. *(1) No person engaged in the movement, lairage, 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.*

Stunning of animals

3. *No person shall stun, or cause or permit to be stunned, any animal unless it is possible to*
 - (a) Bleed or pith 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) Electronarcosis.*

Specific requirements for stunning by electronarcosis – electrodes

8. *No person shall use, or cause or permit to be used, electrodes to stun any animal unless*
 - (a) The electrodes are so placed that they span the brain, enabling the current to pass through it;*
 - (b) Appropriate measures are taken to ensure that there is good electrical contact; and*
 - (c) The strength and duration of the current used is such that the animal is immediately rendered unconscious and remains so until it is dead.*

Once students have had a chance to familiarise themselves with the above material, break the class into small groups. Each group should then use the following prompts to begin a discussion around slaughter legislation. (If students are based in the UK, the discussion should focus on a different country).

1. Discuss your interpretation of the meaning of each of the above sections of legislation. For each section, discuss how these requirements (in the UK) compare with your local situation.
2. Discuss the potential problems and benefits you could predict if some of these requirements were suggested in your region by local government, or by a retailer wishing to purchase meat produced in your country.
3. Discuss the practicalities that would be involved in implementing some of these requirements if they were suggested in your region by local government, or by a retailer wishing to purchase meat produced in your country.

After a period of discussion, elect a spokesperson for each group and present each of the topics as a five-minute talk, followed by an opportunity for questions and discussion.