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## **Meat inspection protocols**

### **The holistic approach**

These opinions emphasise that meat inspection is not just about food safety although this is an important aspect of its purpose. Following upon the bovine spongiform encephalopathy (BSE) crisis in 1996, the increase in incidence of food poisoning and deaths due to verotoxigenic *E. coli* associated with beef, particularly minced/ground beef, and the resultant loss in consumer confidence in the safety of foods of animal origin, many countries saw fit to transfer responsibility for meat inspection from agricultural to health departments. This inevitably resulted in a change in the focus of priorities from the other purposes of meat inspection, that is, meat quality, animal health, animal welfare and protection of the environment, to concentrate on the appropriateness of the current controls for food safety.

### **Integrated Food Safety Assurance**

#### ***Farm to fork***

The realisation that food safety was the responsibility of everyone in the food chain, from farm to consumer, and not just the processor, grew from a number of food safety incidents where investigations highlighted that the contamination incident occurred beyond the controls present within the processing establishment. The importance of the role of the primary producer, the farmer, in the safety and quality of all foods of animal origin has come to the fore. Feed contamination incidents in Europe, such as with dioxin or arsenic, emphasise the important role that the integrity of feed plays in food safety, particularly when unusual raw materials are used in an effort to produce least cost rations. Globalisation presents its own unique challenges for food safety with raw materials being sourced worldwide, remote from the user and the possibility of personal audit of the material's integrity at point of origin. Globalisation also results in the rapid dispersal of completed food products to widely distributed markets with technology permitting improved 'shelf life' for fresh or frozen product.

#### ***Ante-mortem inspection***

The purpose of ante-mortem inspection is to ensure that only clean, healthy residue and stress-free animals are presented for slaughter.

### ***Ante-mortem inspection procedure in the slaughter establishment***

Animals must undergo veterinary ante-mortem inspection on the day of their arrival at the slaughter-house or before the beginning of daily slaughtering. The inspection must be repeated immediately before slaughter if the animal has been in the lairage over-night. The operator of the slaughterhouse must facilitate operations for performing ante-mortem health inspections and in particular any handling which is considered necessary.

In summary, the inspection must determine:

1. Whether the animals are suffering from a disease which is communicable to man and to animals or whether they show symptoms or are in a general condition such as to indicate that such a disease may occur.
2. Whether they show symptoms of disease or of a disorder of their general condition which is likely to make their meat unfit for human consumption; attention must also be paid to any signs that the animals have had any substances with pharmacological effects administered to them or have consumed any other substances which may make their meat harmful to human health.
3. Whether they are tired, agitated or injured.
4. Whether they are sufficiently clean to enter the normal slaughter protocol.

### **Following inspection, the veterinarian may make one of the following five decisions:**

1. Animals may progress for normal slaughter.
2. Animals should not enter the plant or should be condemned ante-mortem. In this group, they will be dead, moribund, emaciated or excessively dirty animals and those showing evidence of a septicaemia or other conditions which would result in the meat being unfit for human consumption.
3. Animals should be slaughtered but may need a special detailed post-mortem examination, or may need to be slaughtered in a special area or at a different time from other animals, owing perhaps to a localised infection or suspicion of a more generalised condition. Animals suspected of being treated with illegal drugs for the purposes of growth promotion, or of having residues of therapeutic substances, may be included in this group. Emergency on-farm slaughtered cases will require particular attention.
4. Stock should be segregated for slaughter under special conditions, for example, dirty stock at a slow line speed.
5. Slaughter may be delayed, for example, for excessively fatigued or excited animals or those requiring treatment.

### ***Practical ante-mortem procedure***

Livestock in the lairage should be inspected at rest and while in motion. Both sides of the animal should be observed. In practice, this is simple to carry out while the animals are being unloaded, but their excited state during this procedure may mask some conditions such as mild lamenesses, making a second check necessary. In the case of sick or suspect diseased animals and those in poor condition, the species, class, age, condition, colour or markings and identification number are recorded. The general behaviour of the animals, whether fatigued or excited, their level of nutrition, cleanliness, obvious signs of disease and any abnormalities should be observed and recorded. In addition to the segregation of diseased and suspect stock, females in oestrus, aggressive animals and horned stock should be isolated. If *unacceptably dirty animals*, that is, ones which, in the opinion of the veterinarian, cannot be dressed at normal line speed without an unacceptable risk of carcase contamination, have been allowed by factory management to enter the lairage, they must be segregated and detained until their condition becomes more acceptable, or they can be dressed at a line speed which decreases the risk of contamination.

Animals showing evidence of localised conditions such as injuries, fractures, abscesses and benign tumours (e.g. papillomata) or conditions which will show up lesions on post-mortem inspection need to be segregated and given a detailed clinical examination. Such animals may pass forward with the normal kill if the condition proves to be a minor one, slaughtered at the end of the day's kill or slaughtered separately and given a thorough post-mortem examination.

### ***Emergency slaughter animals***

An exception to the general rule that only live animals be accepted into the slaughterhouse for human consumption permits the emergency slaughter of livestock elsewhere.

An *accident* is defined as 'a specific, identifiable, unexpected, unusual and unintended external action which occurs in a particular time and place, without apparent or deliberate cause but with marked effects or alternatively as an unforeseen or unexpected event especially one causing loss or damage'. Examples of accidents may include fractured limbs; road traffic accidents; serious lacerations or injuries from, for example, feed shear grabs; 'bulling injuries' and 'doing the splits'; serious haemorrhage; obturator paralysis assessed immediately post calving; or clearly identifiable spinal injury from an accident.

### ***Emergency slaughter: The decision on farm***

The veterinarian may decide on one of the three options:

1. The animal is fit to be transported alive to the slaughterhouse for human consumption accompanied by complete food chain information.
2. The animal may be slaughtered on farm, or elsewhere outside the slaughterhouse, and the carcass transported to the slaughterhouse, accompanied by complete food chain information supplemented by a veterinary declaration.
3. The animal may be slaughtered and disposed of as animal by-product, remembering that currently within the EU, bovines over 48 months must be sampled and tested for BSE.

### **Post-mortem inspection**

Routine post-mortem examination of a carcass should be carried out as soon as possible after the completion of dressing in order to detect any abnormalities so that products only conditionally fit for human consumption are not passed as food.

Post-mortem inspection should provide necessary information for the scientific evaluation of pathological lesions pertinent to the wholesomeness of meat. Professional and technical knowledge must be fully utilized by:

1. viewing, incision, palpation and olfaction techniques.
2. classifying the lesions into one of two major categories - acute or chronic.
3. establishing whether the condition is localized or generalized, and the extent of systemic changes in other organs or tissues.
4. determine the significance of primary and systemic pathological lesions and their relevance to major organs and systems, particularly the liver, kidneys, heart, spleen and lymphatic system.
5. coordinating all the components of antemortem and post-mortem findings to make a final diagnosis.
6. submitting the samples to the laboratory for diagnostic support, if abattoir has holding and refrigeration facilities for carcasses under detention.