AMRG Guideline 2019:1 – Post Mortem Meat Inspection - Alternative Techniques to Schedule 2 of AS 4696:2007

Preamble

Purpose

Under the *Australian standard for the hygienic production and transportation of meat and meat products for human consumption AS 4696:2007* (hereon in referred to as the Australian Meat Standard) there is provision for recognition of the equivalence of alternative techniques. This applies to all matters including the schedules and is published as a guideline to the Australian Meat Standard.

This guideline replaces Schedule 2 as published in the Australian Meat Standard. Techniques prescribed in this guideline will be applied by all State/Territory Meat Safety Regulators in administering post-mortem inspection procedures.

Application of risk-based reform to meat inspection internationally

Food safety reform of post-mortem inspection and disposition judgment is continuing internationally, largely enabled by the *Code of Hygienic Practice for Meat* (CAC 2005). The *Sanitary and Phytosanitary Agreement (SPS)* that supports regulation only of characteristics relevant to human or animal health, and specifies risk assessment as the basis for determining food safety equivalence (WTO 2017).

The application of risk assessment has resulted in many countries adopting a wider use of routine visual inspection. The approach limits palpation and incision procedures during post-mortem inspection to suspect animals identified through post-mortem visual detection of relevant abnormalities or herd health history. The need to minimise cross-contamination by inspection is also cited as a driver for moving to visual inspection (EFSA 2011; EFSA 2013 a, b).

Application of risk-based approach to post-mortem inspection

In Australia, efforts to reform post-mortem inspection have been active, dating from the 1980s to align post-mortem inspection procedures with food safety risk. In revising procedures thirty years ago, Murray (1986) advocated the following principles:

- Differentiation of active and chronic phase of infection, whereby chronic lesions are no more than a historical event and should not determine the wholesomeness of meat for human consumption;
- Incision of lymph nodes does lead to cross-contamination;
- Techniques should be reviewed and revised periodically to reflect improvements in animal health status both regionally and nationally resulting from disease eradication, new control tools and practices; and
- Recognition and or removal of lesions of limited or no public health significance should be regarded as a commercial concern for processing companies.

Key principles of post-mortem inspection

Key principles that have been applied in developing this guideline are:

- An equivalent food safety outcome is achieved;
- Science is risk-based and representative of the Australian situation, i.e. reflecting consumer exposure, animal health status, regional production and seasonal influences (as appropriate);
- Alternative post-mortem inspection techniques address meat wholesomeness;
- Alternative post-mortem inspection techniques do not affect carcase disposition judgement;
- Alternative post-mortem inspection techniques do not affect animal health (including zoonoses) and welfare surveillance.

References

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Murray, G. (1986). Ante-mortem and post-mortem meat inspection: an Australian Inspection Service perspective. *Australian Veterinary Journal*, 63(7), 211-215.

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ALTERNATIVE TECHNIQUES TO AS 4696: 2007 - SCHEDULE 2

PROCEDURES FOR POST-MORTEM INSPECTION

In this Schedule:

buffalo means any bubaline greater than 50 kgs dressed weight; and

calf means a young bovine or bubaline no greater than 50 kgs dressed weight; and

cattle means any bovine greater than 50 kgs dressed weight; and

pigs means all pigs reared at any stage in indoor and outdoor production systems and also cull breeding stock; and*incise* means to examine by observation and multiple slicing; and

palpate means to examine by observation and palpation.

Table 1. Procedure for post-mortem inspection of carcases

	Cattle & buffalo	Calves	Sheep & goats	Lambs	Pigs	Horses	Deer
All carcases	Observe internal and external surfaces of carcase (including tail, musculature, exposed bone, joints, serous membranes).						
Lymph nodes							
Superficial inguinal	Observe See note #1	Observe	Observe	Observe	Observe See note #2	Incise	Observe
Internal iliac	Observe See note #1	Observe	Observe	Observe	Observe	Observe	Observe
Lumbar	—	—	Observe	Observe	Observe	—	—
Ischiatic	—	—	Palpate	Observe	—	—	—
Precrural	—	—	Palpate	Observe	—	Palpate	—
Superficial cervical	—	—	Palpate	Observe	—	Palpate	—
Popliteal	—	—	Palpate	Observe	—	—	—
Prepectoral	—	—	—	—	—	Incise	—

Equivalent procedures

Note #1 Cattle & buffalo – Palpate the superficial inguinal and internal iliac lymph nodes in animals subject to conditional slaughter or emergency slaughter and in bulls and mature females.

Note #2 Pigs – Observe the superficial inguinal lymph nodes or, other than animals subject to conditional slaughter or emergency slaughter, an equivalent procedure is to excise and discard these nodes without inspection.

Table 2. Procedure for post-mortem inspection of viscera

	Cattle & buffalo	Calves	Sheep & goats	Lambs	Pigs	Horses	Deer
Lymph nodes							
Bronchial & mediastinal	Observe See note #1	Palpate	Observe See Note #3	Observe	Observe	Incise	Palpate
Portal	Palpate	Palpate	Observe	Observe	Observe	Palpate	Observe
Mesenteric	Observe	Observe	Observe	Observe	Observe	Observe	Observe
Lungs	Palpate, except in sheep, goats, lambs and pigs where observe. See Note #4. Additionally, bronchi opened and internal surfaces observed when saved for human consumption.						
Heart	Palpate. Incise internal musculature three to four times in cattle and buffalo	Palpate	Palpate	Palpate	Observe	Palpate	Palpate
Liver	Palpate, except in sheep, goats, lambs and pigs where observe. Incise main bile ducts transversely and observe contents, except in pigs where inspection of bile ducts not required (see Note #2 for option).						
Gastrointestinal tract	Observe, though observation of oesophagus not required in cattle, buffalo, calves or deer unless recovered for human consumption.						
Spleen	Observe	Observe	Observe	Observe	Observe	Palpate	Observe
Kidney (enucleated)	Palpate	Palpate	Observe See Note #5	Observe	Observe See Note #5	Palpate	Palpate
Other tissues and organs	Thymus, pancreas, non-gravid uterus, bladder, testicles and penis observed when recovered for human consumption.						

Equivalent procedures

Note #1 **Cattle & buffalo** – Incise bronchial and mediastinal lymph nodes in animals subject to conditional slaughter or emergency slaughter.

Note #2 **All animals** – Procedures for the incision of main bile ducts and observation of contents may not be required at a meat business by the controlling authority.

Note #3 Where lungs are kept for human consumption the bronchi and mediastinal lymph nodes will be palpated

Note #4 Where lungs are kept for human consumption in sheep and goats they will be palpated

Note #5 When kept for human consumption kidneys are to be observed enucleated, when not kept observe unenucleated.

Table 3. Procedure for post-mortem inspection of heads

	Cattle & buffalo (Note #1)	Calves (Note #1)	Sheep & goats (Note #1)	Lambs (Note #1)	Pigs (Note #1)	Horses (Note #1)	Deer (Note #1)
All carcases	Observe external surfaces. For cattle, buffalo and horses observe the oral, buccal and nasal cavities.						
Lymph nodes							
Submaxillary	Observe See note #2	—	—	—	Observe	Incise	—
Parotid	Observe See note #2	—	—	—	—	Incise	—
Retropharyngeal	Observe See note #2	—	—	—	—	Incise	—
Cervical	—	—	—	—	Observe	—	—
Masticatory muscles (internal and external)	Incise	—	—	—	—	—	—
Tongue	Palpate	—	—	—	—	Palpate	—
Gutteral pouch	—	—	—	—	—	Palpate	—
Other tissues	Tongue roots in cattle, buffalo and horses observed when recovered for human consumption						

Equivalent procedures

Note #1 **All animals** – Other than cattle, buffalo, horses and animals subject to conditional slaughter or emergency slaughter, an equivalent procedure is to remove and discard the head without inspection where tissues, including tongue, are not recovered for human consumption.

Note #2 **Cattle & buffalo** – Incise submaxillary, parotid and retropharyngeal lymph nodes in animals subject to conditional slaughter or emergency slaughter.

Table 4. Additional post-mortem inspection procedures when gross abnormalities and specific diseases are detected or suspected

Disease	Inspection procedure
Gross abnormalities	Palpation and incision may be used where appropriate to ensure that equivalent wholesomeness is achieved; this also covers gross abnormalities arising from animal health (including zoonoses) and welfare problems (refer to Clause 10.2 of the Australian Meat Standard). Palpation and incision may be used in determining if there is evidence of active systemic infection to inform carcase disposition judgment. When palpation and incision are used, these additional procedures must be followed by effective decontamination interventions of hands and associated equipment to minimise cross-contamination.
Tuberculosis in cattle and buffalo	Incise atlantal, prescapular, prepectoral, suprasternal, superficial inguinal, iliacs, ischiatic, precrural, portal and mesenteric lymph nodes. Incise popliteal lymph node where necessary to determine the extent of infection. All viscera, serous membranes, spinal cord and severed vertebral column inspected by observation, palpation and, where necessary, incision. Udders incised and observed.
Tuberculosis in pigs	Incise retropharyngeal, parotid, bronchial, mediastinal, portal, gastric, mesenteric, superficial inguinal, lumbar, precrural, prescapular and deep inguinal lymph nodes. Viscera and serous membranes inspected as above for cattle.
Tuberculosis in horses	As for cattle and buffalo.
Tuberculosis in deer	Incise submaxillary, retropharyngeal, parotid, bronchial, mediastinal, mesenteric, portal, superficial inguinal, iliac, ischiatic and suprasternal lymph nodes. Incise popliteal lymph node where necessary to determine the extent of infection. Viscera and serous membranes inspected as above for cattle.
***Cysticercus bovis* In cattle, buffalo and deer**	Incise masseter and heart muscles, tongue and diaphragm after removal of serous membranes and observe all exposed muscle surfaces.
***Cysticercus celluosae* in pigs**	As above for *C. bovis.*
Sparganosis in pigs	Observe retro-peritoneal tissues after removal of the peritoneum. Where further evidence of infestation revealed, also observe main muscle seams of the hind limbs. Incise as necessary to determine extent of infection.