

AMPC Summary – Food safety and quality assurance for SMEs (Project Report Reference: 2016.1029)

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No matter the size of the business, red meat processing companies are required to comply with legislation, standards and regulations imposed by Government.

This summary booklet is designed to assist small to medium sized businesses meet the Quality Assurance requirements set out in the AS 4696:2007 *Australian Standard for the hygienic production and transportation of meat and meat products for human consumption*.

This summary booklet also supports the information that is contained in the AMPC Snapshot which is attached to this document.

Overview of food safety and quality assurance

What is food safety?

A wholesome meat product is one that is produced in a safe and hygienic manner, disease free and is free of contamination. We can say we have produced a wholesome product when it:

- is not likely to cause food-borne disease or intoxication when properly stored, handled and prepared for their intended use
- does not contain residues in excess of established limits
- is free of obvious contamination
- is free of defects that are generally recognised as objectionable to consumers
- is produced and transported under adequate hygiene and temperature controls
- does not contain additives other than those permitted under the *Food Standards Code*
- has not been treated with a substance contrary to a law of the Commonwealth or a law of the state or territory in which the treatment takes place

An important food safety aspect of all meat products is food quality. All our customers expect that a meat product produced for human consumption will not make them sick or give them a disease. All processing plants must process meat in accordance with the AS 4696:2007 *Australian Standard for the hygienic production and transportation of meat and meat products for human consumption*. If meat processors do not follow this standard they are not producing a wholesome product.

What is quality assurance?

Quality assurance systems are put in place to try and stop problems happening throughout the processing chain by having:

- specifications for carcasses or livestock; a wholesome product cannot be produced from a raw material which is not suitable
- detailed instructions for each worker in the processing areas; if each worker knows what to do in their job, problems can be prevented in the first place
- checks on the final product
- adequate documentation to verify each of the above points.

If we control these four steps we can make sure that the product meets the specifications.

All meat processors in Australia must have a quality assurance system based on HACCP.

What is HACCP?

HACCP stands for:

- Hazard
- Analysis and
- Critical
- Control
- Points.

HACCP is a system of identifying food safety hazards and establishing ways of controlling these hazards.

A HACCP plan is prepared to deal with the food safety issues at processing plants.

The HACCP plan identifies:

- the food safety hazards
- the ways the hazards will be controlled in the process; these preventative measures will be included in work instructions or task descriptions for each workstation
- the critical control points
- the monitoring programs to be used to check the hazards are being controlled
- the corrective actions that will be taken if the product is not meeting the specification.

HACCP plans are now required for all meat processors in Australia.

How do we manage food safety and quality assurance at a processing plant?

Through quality assurance systems processing plants ensure that they produce a safe food product

which meets a set of specifications at all times.

The quality assurance system will help do this by:

- putting in procedures that help stop problems happening in the first place
- checking the product.

As well as controlling how the product is produced, the system has to control the standard of the inputs, the hygiene of the plant and the storage of meat products.

Therefore in a quality assurance system we also need:

- the specifications for the raw materials
- procedures for plant cleaning and maintenance
- procedures for your personal hygiene
- planning by management
- procedures and standards for how we store raw materials and finished product.

What are the main elements of a quality assurance system?

The work undertaken in meat processing plants is controlled and detailed in the quality assurance manual. The most important element of the Quality Assurance manual is the:

- HACCP Plan including risk assessments and support programs
- Standard Operating Procedures (SOPs)
- work instructions or task descriptions.

Standard Operating Procedures (SOPs)

Standard Operating Procedures (SOPs) describe what must be done and by whom, how, when, where it shall be done; what materials, equipment shall be used; and how it will be controlled and recorded. Procedures are written to control a process e.g. how often calibration of testing equipment like scales and thermometers, is required and documented. SOPs do not describe a single process such as how to calibrate a thermometer – this task should be written as a work instruction that is referenced in the procedure.

Procedures need to be written to a standard format. The International Organisation for Standards (ISO) does not prescribe the format to be used. However, the following section headings have evolved over the years to be widely accepted universally as the unofficial standard for the presentation of procedures. These headings are:

- purpose

- scope
- references
- definitions
- responsibilities
- procedure – description – actions
- documentation/records/appendix.

SOPs provide instructions about:

- personal hygiene
- cleaning and sanitation
- waste disposal
- water supply
- pest and vermin control
- chemicals including additives.

When you follow the procedures for these activities you create a clean and healthy environment to process meat.

Plants can also have SOPs to cover:

- maintenance, including preventative maintenance
- livestock, including animal care and animal welfare
- slaughter
- boning
- refrigeration
- product traceability and recall
- management review
- internal audit
- training
- calibration.

As an employee in a meat processing plant you must know standard operating procedures (SOPs) for your area. Failure to follow SOPs can jeopardise the safety of the product.

Work instructions or task descriptions

Work instructions or task descriptions are specific and clear instructions for performing each job or task in the plant. Work instructions are designed to prevent problems in processing meat.

Workplace instructions:

- describe the tasks to be performed
- identify the order, if necessary, in which operations are to be performed
- detail what should be done if errors occur
- highlight the most important part of the task, if any
- define the standard the job has to be done to.

Failure to follow work instructions can represent a real workplace health and food safety hazard. By following work instructions or task descriptions each worker makes a contribution to the quality of the product.

When work instructions are being developed they should:

- be developed with the assistance of the people doing the job
- comply with suppliers operating instructions of specialized equipment
- be the best way of doing the job
- be written in workplace language.

Regulatory requirements

All processing plants must process meat in accordance with the AS 4696:2007 *Australian Standard for the hygienic production and transportation of meat and meat products for human consumption*. If meat processors do not follow this standard they are not producing a product fit for human consumption. Compliance with these standards have to be monitored.

Regulatory requirements cover a broad range of responsibilities across all aspects of meat processing. The breadth of these requirements is demonstrated in the following table, which lists the areas of operation covered by legislative requirements in relation to food safety and quality assurance.

Areas where food safety and quality assurance have regulatory requirements	
Livestock receipt and handling	Boning

Areas where food safety and quality assurance have regulatory requirements	
Ante-mortem inspection Reject animal procedures Emergency slaughter procedures Condemn animal procedures Slaughter floor	Product temperature Room temperature Time/temperature parameters Meat assessment procedures Personal hygiene Carton room hygiene
Humane slaughter Sanitary dressing – hide removal, evisceration bung removal Post mortem inspection procedures and disposition Sterilisation/water temperatures Personal equipment and hygiene Condemn carcase procedures Waste removal	Chilling Hygiene of chillers Temperature measuring devices Time/temperature control and measurement Storage temperature monitoring devices (thermographs) Thawing/tempering procedures Product time/temperature parameters Microbiological testing
Offal room Time/temperature parameters Offal reinspection	Water test program review Micro surface testing Pathogen reduction program <i>Salmonella</i> testing – specific country requirement
Load out Product temperature Product descriptions Inspection/monitoring procedures	Quality System Standard operating procedures HACCP for each production area:
Hygiene and sanitation Cleaning and sanitation program Contact surface swabbing Pre-operational hygiene Chemical approval/use (cleaning chemicals, branding inks, lubricants) Chemical storage/pesticides Packing material receipt and storage Wrapping material receipt and storage Consumable material receipt and storage Food additive receipt and storage Personal hygiene practices	<ul style="list-style-type: none"> • slaughter floor • offal room • boning room • refrigeration Work instructions Process monitoring results SOP monitoring Controls/corrective actions HACCP verification Product monitoring facilities

Areas where food safety and quality assurance have regulatory requirements	
Personal equipment/cleaning/storage	Product monitoring results
Protective gear use/storage	Trend analysis
Handwash facilities/use	Internal audit
Amenities/dining room/canteen	Management review
Locker hygiene	Staff training.
Pest control program/reports	
Maintenance program/equipment	
Floor drainage	
Waste/effluent disposal	
Bulk carton storage	
Pallet/rack use and storage	

What do I need to do to meet the regulatory requirements?

The AS 4696:2007 *Australian Standard for the hygienic production and transportation of meat and meat products for human consumption* is the basis for all food safety legislation in Australia, both export and domestic.

This standard applies to production and hygiene quality control of meat from animals processed for human consumption at all registered establishments in Australia, including boning rooms and other further processing plants producing chilled or frozen fresh meat, but excluding meat retail premises.

It is important to note that the standard is not prescriptive and that it mainly describes the outcomes required, leaving it up to the company to work out how it will achieve the outcomes.

The workplace quality management system will contain the hygiene and sanitation requirements specific to the workplace. These requirements should be found in the 'Approved Arrangement' based on HACCP and supporting programs like SOPs.

In general, Good Hygiene Practices (GHPs) based on previous experience and industry norms are expected to apply.

The key to the whole standard is that the meat must be wholesome. The definition of wholesome in the standard is:

'When used in relation to meat and meat products means that the meat and meat products may be passed for human consumption on the basis that they:

- (a) *are not likely to cause food borne disease or intoxication when properly stored, handled and*

prepared for their intended use; and

(b) do not contain residues in excess of established limits; and

(c) are free of obvious contamination; and

(d) are free of defects that are generally recognised as objectionable to consumers; and

(e) have been produced and transported under adequate hygiene and temperature controls; and

(f) do not contain additives other than those permitted under the Food Standards Code; and

(g) have not been irradiated contrary to the Food Standards Code; and

(h) have not been treated with a substance contrary to a law of the Commonwealth or a law of the State or Territory in which the treatment takes place

The AS 4696:2007 *Australian Standard for the hygienic production and transportation of meat and meat products for human consumption* – is divided into 8 parts and three schedules. Appendix 1 outlines the required outcomes for the various sections in the Standard.

Monitoring

Compliance with these standards must be monitored.

Monitoring is the checking we do to make sure the product and the processing is up to standard. The product is checked to ensure it is meeting specifications. Workers are monitored to check they are following the SOPs and work instructions.

Monitoring is done on a sample not of the whole production.

The monitoring of products is done against set standards that must be achieved in the sample being inspected. This standard is laid down in the Department of Agriculture Meat Hygiene Assessment Program. The Approved Quality Limits (AQLs) or criteria tell the monitors when a sample is unacceptable because it has too many defects.

Each type of defect is weighted. The less serious defects have a low weighting while serious defects have a high weighting. This means there only needs to be a few serious defects and the sample is unacceptable. The production run has to be reworked at enormous expense and effort. Some defects are considered so serious like excreta and ingesta that one defect found on the sample makes the whole run immediately unacceptable.

What resources and training are currently available?

The following list of resources can be used to access further information and training materials on food safety and Quality assurance.

Training and assessment support materials:

- AMPCOR203 *Comply with Quality assurance and HACCP requirements*

- *AMPCOR402 Facilitate Quality assurance process*
- *AMPCOR404 Facilitate hygiene and sanitation performance*
- *AMPA2047 Inspect hindquarter and remove contamination*
- *AMPA2048 Inspect forequarter and remove contamination*
- *AMPX413 Manage and maintain a food safety plan*
- *AMPX420 Participate in the ongoing development and implementation of a HACCP and Quality assurance*

Training and assessment support materials for these units are available from MINTRAC www.mintrac.com.au .

Other supporting resources

- Agriculture and Resource Management Council of Australia and New Zealand, AS 4696:2007 *Australian Standard for the hygienic production and transportation of meat and meat products for human consumption*, CSIRO publishing, Collingwood, Vic.
- MINTRAC core CDS
- Zero tolerance flip charts beef/sheep/goats, available from MINTRAC
- Training kit – Food Safety Auditing kit, available from MINTRAC
- Training kit – Meat Safety Inspection kit, available from MINTRAC
- Training kit – Meat Hygiene Assessment kit, available from MINTRAC
- Training CD – Meat Inspection and Quality assurance Exam Generator, available from MINTRAC
- *Meat Safety Quality and Veterinary Public Health*, by Eddie Andriessen – Penny Farthing Publishing, or ordered through MINTRAC
- Case study – Risk Management case study for processors, AMPC Case Study 15
- CSIRO Meat Updates, available from CSIRO:
 - Sources of contamination on beef carcasses during dressing
 - Antimicrobial resistance and residues
 - Very fast chilling
 - Effect of slaughter method on animal welfare and meat quality.

Training

MINTRAC offers a range of professional development training throughout the year. Quality assurance and meat micro workshops are often scheduled and are also available on request. All products and professional development training can be accessed through the website www.mintrac.com.au

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Appendix 1.

The Australian Standard is divided into the following sections. Only the required outcomes are stated. For further information refer to the Standard itself.

PART 1 INTRODUCTION

1 PRELIMINARY

This is largely a list of definitions. The list of definitions has been expanded and should be read carefully to fully understand the meaning of various parts of the standard.

Note: Meat Inspector has changed to Meat Safety Inspector.

2 APPLICATION

This describes the scope of the standard. It includes all aspects of meat production from the animal through slaughter and boning to further production of smallgoods etc but not retail.

PART 2 WHOLESOMENESS AND OPERATIONAL HYGIENE

3 MANAGEMENT OF WHOLESOMENESS

Outcome required

Management and production practices and the implementation of HACCP ensure the production of meat and meat products that are wholesome.

This part introduces the concept of an approved arrangement. It also removes the requirement to have a QA system based on ISO 9001, although the documentation requirements are still similar.

4 OPERATIONAL HYGIENE

Outcome required

Operational hygiene process controls ensure the production of meat and meat products that are wholesome.

5 CROSS CONTAMINATION

Outcome required

Meat and meat products are not contaminated.

PART 3 SLAUGHTER AND DRESSING OF ANIMALS

6 THE SUPPLY AND ADMISSION OF ANIMALS FOR SLAUGHTER

Outcome required

Animals are sourced from holdings where the management of animals ensures that the wholesomeness of meat and meat products derived from the animals is not jeopardised.

Animals affected by a disease or other abnormality, do not contaminate other animals or jeopardise the wholesomeness of meat and meat products.

7 ANIMAL WELFARE

Outcome required

The minimisation of the risk of injury, pain and suffering and the least practical disturbance to animals.

The main guideline for this element is *The Australian Livestock Processing Industry Animal Welfare Certification System (AAWCS)*, as well as the *Model Code of Practice for the Welfare of animals – Livestock at Slaughtering Establishments*.

8 ANTE-MORTEM INSPECTION AND DISPOSITION

Outcome required

Only animals fit for slaughter for the purpose of producing meat and meat products for human consumption are slaughtered.

9 SLAUGHTER AND DRESSING

Outcome required

Slaughter and dressing is to be done in a way that:

- (a) reduces the risk of contamination of carcasses and carcass parts to a level that ensures the wholesomeness of meat and meat products is not jeopardised
- (b) ensures an accurate post-mortem disposition can be applied to carcasses and carcass parts.

10 POST-MORTEM INSPECTION AND DISPOSITION

Outcome required

Unwholesome meat is excluded from the human food chain and disposed of separately.

PART 4 PROCESSING

11 CHILLING AND FREEZING

Outcome required

The chilling and freezing of meat maintains and does not jeopardize its wholesomeness.

12 THAWING, TEMPERING, BONING AND OTHER PROCESSING OF RAW MEAT

Outcome required

The thawing, tempering, boning and other processing of raw meat does not jeopardize its wholesomeness.

13 FURTHER PROCESSING

Outcome required

The further processing of meat and meat products ensures and does not jeopardize their wholesomeness.

PART 5 PACKAGING, STORAGE AND HANDLING

14 PACKAGING

Outcome required

During packaging the wholesomeness of meat and meat products is not jeopardized.

15 STORAGE AND HANDLING

Outcome required

During storage and handling meat and meat products are not contaminated and their wholesomeness is not jeopardized.

PART 6 IDENTIFICATION, TRACEABILITY, INTEGRITY AND RECORD KEEPING

16 IDENTIFICATION, TRACEABILITY AND INTEGRITY

Outcome required

Meat and meat products are accurately identified.

Meat and meat products that should be recalled can be recalled.

17 ANIMAL FOOD AND PHARMACEUTICAL MATERIAL

Outcome required

Animal food is identified as animal food and segregated from other meat and meat products.

Pharmaceutical material is identified as pharmaceutical material and segregated from other meat and meat products. Animal food and pharmaceutical material that should be recalled can be recalled.

18 RECORD KEEPING

Outcome required

Documents are kept to enable it to be ascertained whether:

- (a) meat and meat products are wholesome; and
- (b) the matters specified in this Standard are met.

PART 7 PREMISES, EQUIPMENT AND ESSENTIAL SERVICES

19 PREMISES AND EQUIPMENT

Outcome required

Premises and equipment facilitate the production of meat and products that are wholesome and do not jeopardise their wholesomeness.

Premises & equipment minimize risk of injury, pain & suffering & causes the least practicable disturbance to animals.

20 HYGIENE AND SANITATION FACILITIES

Outcome required

The provision of hygiene and sanitation facilities that enable the hygienic production of meat and meat products.

21 ESSENTIAL SERVICES

Outcome required

The essential services provided:

- (a) enable operations to be carried out effectively; and
- (b) maintain and do not jeopardize the wholesomeness of meat and meat products.

PART 8 TRANSPORTATION OF MEAT AND MEAT PRODUCTS

Note: These requirements do not apply to the transport of animal, but only to the transport of meat. Animal transport is covered by “Truck Care”, the industry based quality assurance system, designed to ensure that animals are carried humanely and cleanly to abattoirs. Requirements are detailed in the model codes of practice for animal welfare. Reference should also be made to the *Model Code of Practice for the Welfare of Animals: Land Transport*.

22 MANAGEMENT OF WHOLESOMENESS

Outcome required

Management and handling practices ensure that the wholesomeness of meat and meat products is maintained during transport.

23 OPERATIONAL HYGIENE

Outcome required

Operational hygiene process controls result in the transportation of meat and meat products that are wholesome.

24 WHOLESOMENESS AND IDENTIFICATION DURING TRANSPORT

Outcome required

During transport:

- (a) The wholesomeness of meat and meat products is maintained and not jeopardized; and
- (b) The identification of meat and meat products is retained.

25 MEAT TRANSPORT VEHICLES AND EQUIPMENT

Outcome required

Meat transport vehicles and equipment facilitate and do not jeopardise the wholesomeness of meat and meat products.

THE SCHEDULES

These are three schedules in this standard:

- Schedule 1 Personal hygiene
- Schedule 2 Procedures for Post mortem Inspection
- Schedule 3 Ante-mortem and post- mortem dispositions.

Personal hygiene is so important in meat processing that it was decided to spell it out in more detail in this schedule.