A guide to the implementation and auditing of HACCP

SCARM Report 60

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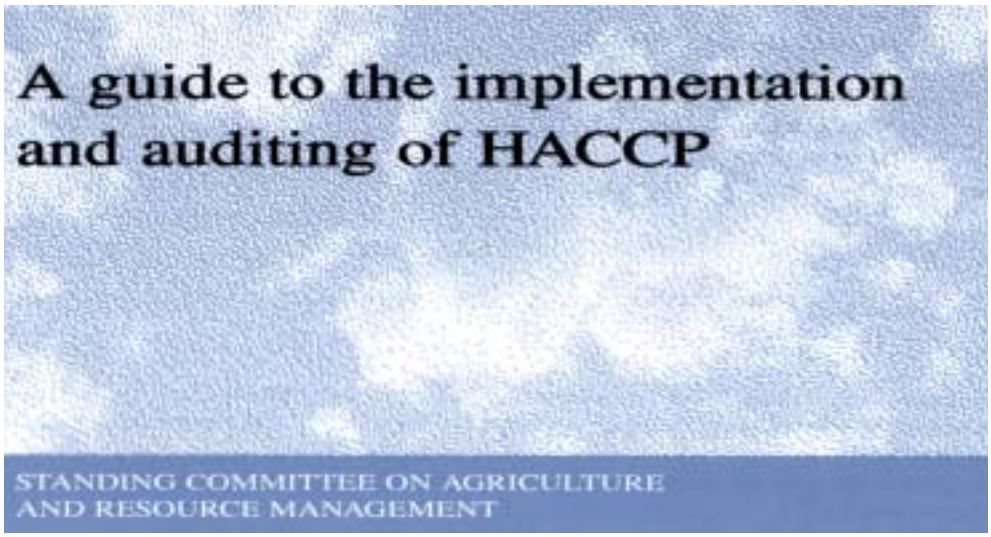

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A Guide to the Implementation and Auditing of HACCP

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AGRICULTURE AND RESOURCE MANAGEMENT COUNCIL OF AUSTRALIA AND NEW ZEALAND

The Agriculture and Resource Management Council of Australia and New Zealand (ARMCANZ) consists of the Australian Federal, State/Territory and New Zealand Ministers responsible for agriculture, soil, water (both rural and urban) and rural adjustment policy issues.

The objective of the Council is to develop integrated and sustainable agricultural and land and water management policies, strategies and practices for the benefit of the community.

The Council is supported by a permanent Standing Committee, the Standing Committee on Agriculture and Resource Management (SCARM). Membership of Standing Committee comprises relevant Departmental Heads/CEOs of Commonwealth/State/Territory and New Zealand agencies as well as representatives of the CSIRO and the Bureau of Meteorology.

PREFACE

Most people in the meat industry are now by now aware of the formulation of national minimum mandatory standards for the meat industry. The Agricultural Resource Management Council of Australia and New Zealand (ARMCANZ) together with Standards Australia have to date endorsed the following Standards.

Australian Standard for Construction of Premises Processing Meat for Human Consumption (SCARM Report Number 53). AS 4460—1997.

Australian Standard for Hygienic Production of Meat for Human Consumption – Second Edition (SCARM Report Number 54). AS 4461—1997.

Australian Standard for Construction of Premises Processing Animals for Human Consumption (SCARM Report Number 55). AS 4462—1997.

Australian Standard for Transportation of Meat for Human Consumption (SCARM Report Number 56). AS 4463—1997.

Australian Standard for Hygienic Production of Game Meat for Human Consumption (SCARM Report Number 57). AS 4464—1997.

Australian Standard for Hygienic Production of Poultry Meat for Human Consumption (SCARM Number 58). AS 4455—1997.

Australian Standard for Hygienic Production of Rabbit Meat for Human Consumption (SCARM Report Number 59). AS 4466—1997.

Additional Standards dealing with crocodile meat, emu and ostriches, sausages casings and pet food will be finalised progressively and published during the next 12 months.

In addition to developing these Standards, ARMCANZ Ministers decided that all meat processing establishments in Australia would be required to have Hazard Analysis Critical Control Point (HACCP)-based systems.

This Guide has been developed to assist meat, poultry, game and pet food processors to develop company HACCP programs and to understand the perspective of auditors who are required to assess implementation and compliance.

The Guide is an overview of HACCP implementation and auditing only. For advice and more detailed guidelines, contact the relevant State meat authority or, in the case of export plants, AQIS. Specialist advice in carrying out training for HACCP implementation in meat processing operations should also be sought.

The information in this Guide has been adapted, in part, from the following sources:

Hazard Analysis and Critical Control Point (HACCP) System and Guidelines for its Application. Codex Alimentarius Commission, 1996: Annex 1 to Appendix II — ALINORM 97/13A.

Training Considerations for the Application of the HACCP System to Food Processing and Manufacturing. World Health Organisation, 1993.

In addition, the assistance of meat authorities at the Commonwealth and State level is gratefully acknowledged, as is the support of the Meat Industry Council, the Food Quality Program of the Department of Industry, Science and Tourism and the Food Safety Key Program of the Meat Research Corporation.

1 STEPS FOR DEVELOPING AND IMPLEMENTING HACCP PLANS

1	Assemble the HACCP team and define the scope of the HACCP Plan	
2	Describe the product and its distribution method	
3	Describe the intended use of the product	
4	Construct a detailed flow diagram of the process	
5	Conduct on-site verification of flow diagram	
6	List all potential hazards associated with each step, conduct a hazard analysis and consider any control measures to control hazards	**PRINCIPLE 1**
7	Determine Critical Control Points	**PRINCIPLE 2**
8	Establish Critical Limits for each CCP — as per the Australian Standard where applicable	**PRINCIPLE 3**
9	Establish a monitoring system for each CCP	**PRINCIPLE 4**
10	Establish corrective action plans for CCP deviations that may occur	**PRINCIPLE 5**
11	Establish verification procedures	**PRINCIPLE 6**
12	Establish record keeping and documentation	**PRINCIPLE 7**
13	Determine what training is needed for all staff including employees, supervisors and QA people so all understand what HACCP means to the premises and to them. Make sure people understand what the different terms used in the Australian Standard mean eg, hazard analysis, critical control point, verification, quality assurance etc., so that people are talking a common language.	
14	Start monitoring the CCPs using forms and evaluate the usefulness of the forms for improving the product and process control and providing trend analysis of the procedures.	
15	Gather information on tests associated with microbiological standards contained in the ARMCANZ requirements as a complement to verification activities identified in Step 11.	

Note: Steps 1–12 above reflect the Codex format for the application of the 7 Principles of HACCP to develop a HACCP Plan for the nominated product. Steps 13–15 reflect the broad activities required to implement the HACCP Plan into a working system for control of food safety.

2 What Your HACCP Documentation Should Contain

Your HACCP documentation needs to contain all the material which an auditor will want to see to establish that the development and operation of your HACCP system has followed the steps above, and applies the seven principles. The documentation that the auditor will need to see includes:

- Amendment Register (See Attachment B for an example)
- HACCP Team Member Register
- Product Description/intended Use
- Process Flow-Chart
- Factory Floor Plan
- Hazard Analysis Table
- HACCP Audit Table
- CCP Work Instructions
- CCP Monitoring Forms
- Additional Monitoring Requirements (as per Acceptable Quality Levels in the Australian Standards)
- Supporting HACCP Programs and Monitoring Schedules
  - — Hygiene and Sanitation Procedures (as per Australian Standards)
  - — Personal Hygiene and General Work Instructions (See Attachment E)
  - — Cleaning and Approved Chemical Schedules
  - — Calibration Schedules and Monitoring Forms (temperature gauges, scales, etc.)
  - — Pest Control Program Schedule
  - — Training
  - — Product Identification — Recall Procedure

3 WHAT AUDITORS WILL BE LOOKING FOR

Attachment G gives a general list of questions which an auditor will need to answer when auditing a HACCP system. More detailed questions could well be asked by an auditor on particular aspects of your HACCP system and its application.

Auditors will be primarily looking to see that systems conform to the Codex requirements (Codex Alimentarius Commission, 1996: Annex 1 to Appendix II — ALINORM 97/13A) in the application of the Principles and the following of the development steps. They will be looking to see documentation which shows this compliance.

Systems must show operation of procedures for:

- *control of non-conforming product*
- *corrective action*
- *preventive action*

Hazard tables do not need to use terminology which is too complicated — the message is to keep it simple. Remember that the easier to follow a system is, the quicker and ultimately less expensive the audits will be.

SELECTING CCPS

Your documentation needs to show how your Critical Control Points (CCPs) were identified. This should be through the Hazard Analysis (Step 6 and 7 below) and may include the use of the Codex decision tree (see Attachment A).

Hazard analysis is an important part of the CCP selection process — the Hazard Analysis Chart (Step 6 below) provides a framework to document the hazards, and can be used in conjunction with the decision tree to identify CCPs.

What is an acceptable number of CCPs? There is some agreement that four CCPs are adequate on a slaughter floor: stun/stick, hide/skin removal, evisceration and final product. This fits well with using carcass Acceptable Quality Levels (AQLs) as process control — inspections can be done at stick (process check), after evisceration (to check hide/skin removal and evisceration) and after the final wash (to check efficacy of trim/wash functions). However, the number of CCPs you choose will depend on your own analysis of your operation.

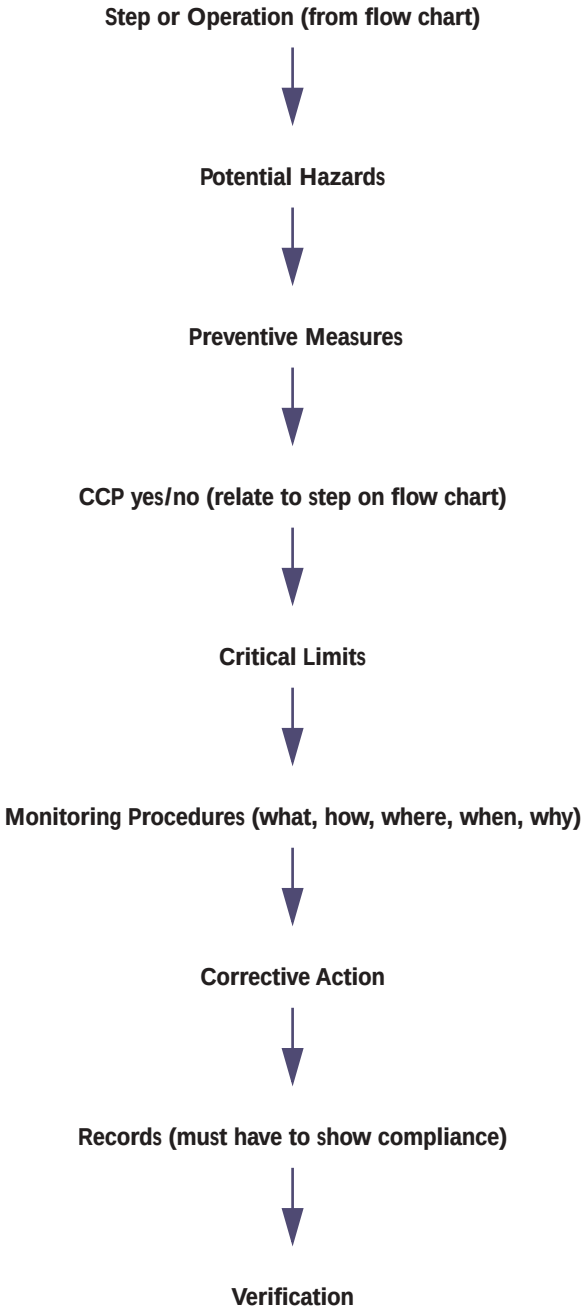
For slaughtering processes, carcass AQLs can be used very effectively to pinpoint which process areas may require correction, even if carried out remotely from the process step being controlled.

Critical operations (i.e. risky operations) can be combined into single CCPs. This allows multiple process steps (e.g. those involved in hide removal) to be combined into a single CCP at the end of hide removal (and monitored for example by a carcass AQL following evisceration). Refer also to Steps 8 to 12 below.

The process, and not just the outcome, has to be monitored. Work Instructions therefore need to have a narrative describing that part of the process covered by the Work Instruction, so an auditor can observe the process and see if the Work Instruction is being followed.

HAZARD AUDIT TABLE

The content of the Hazard Audit Table should follow the Codex example (shown at Steps 8 to 12). Presentation of material in the table needs to follow the logic flow:



AQIS REQUIREMENTS OF EXPORT PLANTS

AQIS will apply the requirements of the Export Meat Orders, as a system known to be equivalent in outcome to the Australian Standards. AQIS will also apply any importing country requirements for particular markets, including the US FSIS "mega-reg" requirements. AQIS will check the verification of your system, therefore documentation must exist to show how this verification is achieved.

AQIS will be looking to see that material presented in plans demonstrates that principles are applied and steps are followed as in the Codex requirements

SCOPE OF PROGRAM AUDITS

Most jurisdictions are moving towards regular partial audits of HACCP programs with six monthly or annual full audits. Check with your State Authority or with AQIS to find out details for your operation.

STEP 1: HACCP TEAM

TYPE OF PEOPLE - (General Manager, QA Manager, Inspector, Foreman and an Understudy (i.e. a motivated worker)

SIZE OF TEAM - Try and keep to a maximum of five, but a minimum of three (obviously, small operators will be limited in the number of people available and outside assistance may be required). HACCP implementation training for your team should be provided.

HACCP Team Members should have a good knowledge of the product and process. They should have sufficient expertise to be able to:

- *identify potential hazards*
- *assign levels of severity and risk (likelihood of occurrence)*
- *identify critical control points, recommend control measures, critical limits and procedures for monitoring and verification*
- *recommend appropriate corrective actions when deviations occur*
- *recommend or conduct investigations and/or research related to the HACCP plan (if information is not available).*

DETERMINATION OF SCOPE - The HACCP Team needs to define the boundaries of the HACCP Plan, both from a starting and finishing perspective, and from an inclusions perspective (does the HACCP Plan include quality aspects as defined by the finished product specification, or is it restricted to food safety — biological, chemical, physical hazards?). The scope needs to be documented.

While you may include other requirements (e.g. AUS-MEAT) in your overall documentation, the priority of your HACCP program is food safety.

STEPS 2 AND 3: PRODUCT DESCRIPTION & INTENDED USE

Ace Carton Meat Wholesale (Example)

Product Description	Boxed Meat
Composition	Vacuum packed primals packed in new cartons
Method of Preservation	Chilled @ 0–4°C
Packaging — Primary	Vacuum bags
Packaging — Secondary	New cardboard cartons
Storage Conditions	Held @ 0–2°C
Distribution Method	Refrigerated Van @ 0–4°C
Shelf Life	6 weeks @ 0–4°C
Customer Requirements	Delivery @ 1°C in clean cartons
Sensitive Customer	No — intended for general consumption
Final Customer Preparation	Intended to be cooked

It is important to identify the product which is the subject of the HACCP program, in order to determine the hazards that may occur, and to aid in establishing critical limits.

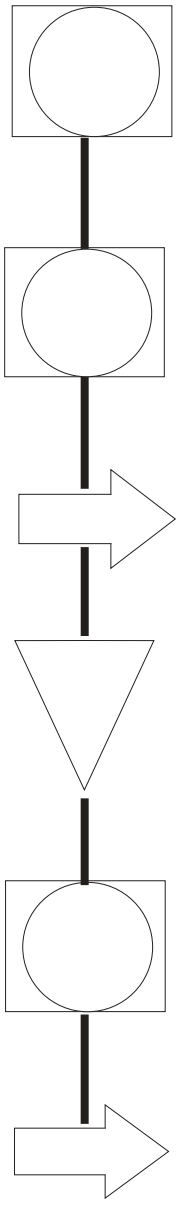
This basic information provides a clue to the obvious hazards which may occur in the above product:

1. Correct temperature control to restrict the growth of bacteria, which in turn effect the shelf life and customer expectations.
2. The type of the primary packaging is a factor in controlling bacterial growth, but may point to other potential hazards such as pathogens that are able to grow under anaerobic (vacuum) conditions.
3. The distribution method — there is little point in controlling the product at all stages during production and storage unless it is delivered to the customer in the same condition.
4. Customer preparation — your customers may have specific requirements such as time for delivery, temperature requirements, maximum quantities etc.
5. Sensitive population — in the food industry the sensitive population is generally accepted as the young, the elderly, pregnant women, immuno-compromised and the infirm. Operators supplying hospitals, nursing homes and institutions should be aware of this when setting critical limits.
6. Final customer preparation reinforces the importance of pre-pack handling: ready-to-eat meat products require special attention to minimise cross-contamination.

STEPS 4 AND 5: FLOW-CHARTING

The symbols in the example below are internationally recognised for process flow charting. However, alternate flow charting presentations are perfectly acceptable. Flow charting is done to ensure you have included all process steps.

FLOW CHART (Example: Ace Cartoned Meat)



STEP ONE Receive and Inspect Product

The cartoned meat is received into the premises and is inspected to ensure the cartons are not damaged, the meat is at 5 degrees or below and the supplier meets specifications e.g. State Meat Authority or Export registered, Kosher etc. This would be a CCP as meat over temperature or from an unapproved source could be a hazard.

STEP TWO: Weigh Product

The cartons are checked for correct number and weights, this does not constitute a CCP as it is a commercial aspect and has no bearing on the safety of the product.

STEP THREE: Transfer the Cartons to the Chiller

The cartons are then removed to the chiller for storage. This would be a Control Point as it should be done as soon as possible. However if there was a delay it is unlikely to unduly effect the product, but it makes sense to set a maximum delay time, or temperature rise at this Control Point to minimise risk.

STEP FOUR: Storage of Cartons in Chiller

The storage of the product in this situation is a CCP and procedures are to be in place to monitor the temperature of the chiller and the product and to ensure rotation of stock. Procedures should also be in place to identify stock which does not comply with specifications

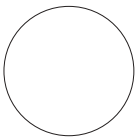
STEP FIVE: Load Out/Inspect

The cartons are sorted into orders and prepared for loading, weights/ numbers and temperatures are checked. Checking temperatures at this point verifies procedures on the premises are correct. It also places the onus for maintaining the product temperature on the driver of the vehicle.

STEP SIX: Delivery of Cartons to Client

The inclusion of this operation in the HACCP program is only required if the delivery vehicles are owned and operated by the company operating the cold store otherwise it becomes part of the cartage contractor's program. The hazard involved is outgrowth of pathogens due to poor temperature control.

EXPLANATION OF FLOW PROCESS CHART SYMBOLS



Operation

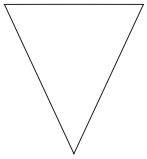
This symbol represents any kind of operation or group of operations which results in an intentional CHANGE in the form or arrangement of the material which brings it nearer to completion.

Inspection

This symbol represents an inspection or decision. Material is examined for identification or is verified.

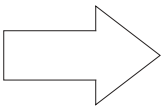
Delay

This symbol represents a delay to material when conditions do not permit the immediate performance of the next planned step. This does not include any planned change to its physical or chemical characteristics.



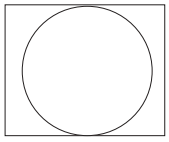
Storage

A storage where material is kept in an unchanged form and protected against unauthorised removal.



Transport

A transportation occurs when a material is moved from one place to another, EXCEPT when such movements are part of an operation, or are caused by an operator at a workstation during an operation or inspection.



Combined Activity

When it is desired to show activities performed either concurrently or by the same operator at the same work station, the symbols for these activities are combined as shown for a combined operation and inspection by the circle within the square.

STEPS 6 AND 7: LIST POTENTIAL HAZARDS, CONDUCT A HAZARD ANALYSIS, IDENTIFY THE CCPS

Ace Cartoned Meat Wholesale

This table is one way to present the information from your hazard analysis, which your auditor will want to see. The decision tree approach presented in Attachment A can assist in identifying CCPs. Where both the likelihood and significance of the hazard are high, the process step is a CCP (see Steps 8 to 12). The same Hazard Analysis approach can be used for analysis of quality issues for conformance with the finished product specification.

HAZARD ANALYSIS: Cartoned Meat

STEP	INPUT[1]	HAZARDS[2]	SIGNIFICANCE[3]			CONTROL MEASURE[4]
			SEVERITY	RISK	SIGNIFICANT	
1. Receival & Inspection	Chilled Meat Load-in Area Cartons	M = Pathogen growth C = Chemical residues PM = Dust & dirt PM = Dirty - leaking	H H L L	H H L L	H H L L	Maintain temp 0–5°C Source from an approved supplier Cleaning procedure Inspect load
2. Weigh Product	Scales	Q = Inaccurate weight	H	L	L	Calibrate scales (not a safety CCP)
3. Transfer Product	Walls/door/ seals	M = bacterial x-contamination	H	L	L	Cleaning procedure (not CCP)
4. Storage	Chiller	M = Bacterial growth M = X-contamination	H H	H L	H L	Maintain temperature Rotate stock Cleaning procedure
5. Loadout	Load-out Area	M = Bacterial growth PM = Dust & dirt	H L	L L	L L	Cleaning procedure Cleaning procedure

KEY: M = Microbiol Hazard P = Physical Hazard C = Chemical Hazard PM = combined Physical/Microbiol Hazard Q = Quality Hazard (not a food safety CCP)

1, 2, 3, 4 Refer to the Hazard Anaylsis Chart — Explanatory Notes

HAZARD ANALYSIS CHART — EXPLANATORY NOTES

For each step in your FLOW PROCESS CHART the following questions should be asked in the preparation of your HAZARD ANALYSIS CHART. The development of this information is vital to the development of an effective HACCP plan needed to control the identified hazards — poor hazard analysis results in a poor HACCP plan.

1. WHAT EXISTS AT THIS STEP AND WHAT INPUTS HAVE I INTRODUCED INTO THE PROCESS WHICH COULD CAUSE A HAZARD?

   In the above example at Step 1, the existing element is the physical structure of the load-in facilities and what has been introduced is the consignment of carton meat.

2. WHAT TYPE OF HAZARD IS PRESENTED BY THE INTRODUCTION OF THESE INPUTS?

   Hazards need to be classified into three categories, BIOLOGICAL (including bacterial pathogens, viruses), PHYSICAL or CHEMICAL and assessed systematically. In this example, the meat could be physically contaminated by the structure of the premises (dust and dirt), chemical hazards in the form of residues, e.g. pesticides, could pose a hazard, and the presence and the outgrowth of bacteria is constantly present.

3. WHAT IS THE SEVERITY OF THE HAZARD IN QUESTION AND WHAT IS THE POSSIBILITY THAT IT WILL OCCUR AT THIS STEP? (WHAT IS THE SIGNIFICANCE OF THE IDENTIFIED HAZARD TO THE PRODUCT?)

   These two questions are critical to the outcome of the Hazard Analysis. The severity aspect of an identified hazard relates to its capacity to cause harm to the consumer. In the case of pathogens such as *E. coli* 0157, the severity is high. Chemical residues exceeding established Maximum Residue Limits (MRL) similarly have a high level of severity. Pieces of carton liners (Physical Hazard) may be assessed to be a low-to-medium severity. The risk aspect of an identified hazard relates to the probability or likelihood of the hazard occurring at the step, taking into account the premises' specific conditions. Answers to these critical questions require sound understanding of the product and its processes by the HACCP team (refer Attachment B).

4. WHAT CONTROL MEASURES NEED TO BE TAKEN TO PREVENT, REDUCE OR ELIMINATE THE HAZARD?

   Control measures (also known as preventive measures) will depend on the type of hazard and obviously their significance, however in the above example the control measures centre around sourcing the product from approved suppliers, keeping it at the correct temperature and maintaining the premises to an acceptable standard of hygiene. In some cases, there will be more than one control measure for an identified hazard, and conversely, more than one hazard may be controlled by a specified control measure. In certain instances, control measures may not be required due to the absence of any significant hazards at that step.

5. WILL A SUBSEQUENT STEP IN YOUR PROCESS ELIMINATE OR REDUCE THE HAZARD TO AN ACCEPTABLE LEVEL?

   If a subsequent step in your process eliminates or reduces a hazard, then a CCP at the original hazard point is not required e.g. a cooking or sterilisation step to eliminate bacteria. The number of CCPs required for control can thus be minimised.

STEPS 8 –12: HACCP AUDIT TABLE

STEP[1]	HAZARD[2]	CONTROL MEASURES[3]	CCP[4]	CRITICAL LIMIT[5]	MONITORING[6]	CORRECTIVE ACTION[7]	RECORDS[8]
1. Receival	Pathogen outgrowth	Maintain correct temperature	CCP	Not to exceed 5°C	*what*: Product (Deep Muscle)	REJECT: temperature above 7°C	Record temp, number cartons and supplier on Receival Monitoring Form
(Chilled Product)					*how*: Temp Gauge (refer Test Method 01)	ACCEPT: Temp below 5°C	
					where: At receival dock	RETAIN: Temp between 5°– 7°C Isolate product and chill to below 5°C within 4 hours	
					who: Receival Clerk	ADVISE: Supplier of temp violation	
1. Receival	Excess Chemical Residue	Source from an approved (licensed) supplier	CCP	Supplier to be licensed (Yes/No)	*what*: Suppliers delivery note and approved (licensed) list	REJECT: Product	Delivery Note
(Product Origin)					*how*: Observation (visual)	ADVISE: State Meat Authority of unlicensed premise	
					where: At receival dock		
					when: Before unloading each load		
					who: Receival Clerk		

1, 2, 3, 4, 5, 6, 7, 8 Refer to the HACCP Audit Table — Explanatory Notes

NB. A separate schedule of Verification Activities needs to be developed to ensure that the HACCP Plan is effective, the CCPs are appropriate, and that the Critical Limits for each CCP adequately maintain control against the identified hazard. (See Explanatory Notes for additional detail). Alternatively, verification activity can be shown as an additional column in this table. This table will be the primary information source for auditors, and may be also referred to as HACCP Table or HACCP Program Summary.

HACCP AUDIT TABLE — EXPLANATORY NOTES

For each column in your HACCP Audit Table, the following information should be included, and the following layout should be adopted for consistency of interpretation.

1. **Step Number and Name**

   Each process step identified in the Process Flow Chart needs to be transferred to the HACCP Audit Table, whether it is a CCP, CP, or —, and numbered and named in the same sequence as the Flow Chart. This is to ensure that all aspects of the process are visible and controlled, not just the CCPs. In addition to the complete audit table, it is acceptable to produce a separate abridged HACCP Audit Table with only the CCPs entered, which may simplify the audit process.

2. **Hazard Description**

   This column summarises the significant hazards identified in the Hazard Analysis process, at each step in the process. It needs to be noted that for each significant hazard there will be at least one Control Measure. Each Control Measure needs to be separated because there will be different monitoring requirements (see the following Explanatory Notes), and therefore each hazard at a step needs to be separated on the HACCP Audit Table.

3. **Control Measures**

   The Control Measure(s) developed for each hazard identified in the Hazard Analysis Chart is transferred to this column. As noted above, each Control Measure needs to be separated in the HACCP Audit Table for monitoring purpose.

4. **CCP**

   The importance of each control measure is indicated in this column. A Critical Control Point ("CCP") is a "must do" control measure, determined by the high significance rating from the Hazard Analysis Chart. A Control Point ("CP") is where the significance of the hazard is not rated as high, but it makes good sense to have a control measure in place. Where there is no control measure indicated (because there are no significant hazards at the step), then a "—" (dash) may be placed in this column.

5. **Critical Limits**

   The Critical Limit(s) for each Control Measure represents the boundaries of control, and therefore the boundaries for food safety. Where a Control Measure has more than one Critical Limit, each Critical Limit must be separated in the HACCP Audit Table, to ensure correct monitoring. For example, if the Control Measure is "effective chlorination" of wash water to control pathogens, then up to 4 Critical Limits may be defined to ensure control is in place: concentration of free residual chlorine (in parts per million), minimum contact time (in minutes), pH range of the water (in pH units), and maximum temperature (in degrees C). Each of these limits is monitored in a different manner. It must be remembered that each Critical Limit must be directly related to the Control Measure — if not, then either the control measure needs to be reconsidered, or the critical limit redetermined.

6. **Monitoring**

Monitoring of Critical Limits by either observation and/or tests determines whether the process at that step is in control or out of control. There are five key aspects that need to be defined to ensure control of each Critical Limit.

(i) What? This defines the target of our Control Measure. It should be clearly defined to eliminate any confusion. If the control measure is "maintain correct (meat) temperature range" at the point of receival to minimise outgrowth of pathogens, and the Critical Limit is less than 5°C, then is it the air temperature of the truck, carton surface temperature or the product core temperature that is the target of the Control Measure? Let's define it as "product (deep muscle)".

(ii) How? This defines the method by which the what? is going to be measured. In this example, it is using a "Temperature Gauge" in accordance with an identified procedure. In some cases, the How? may be "visual' (inspection steps, monitoring of staff).

(iii) Where? This defines the location for undertaking the How? and What? When measuring temperature of chiller this needs to be specific: air intake to the condensers, at the door, or a series of identified points in that room?

(iv) When? This defines the timing and/or frequency of the How? and What? The target for HACCP is 100% (continuously) if this can be achieved, but if not, then defined times.

(v) Who? The allocation of responsibility for undertaking the monitoring must be clear, and understood by that designated person when implementing the Monitoring function of the HACCP Plan.

7. **Corrective Action**

There are three key aspects that need to occur when the Monitoring function detects a situation outside the Critical Limits:

(i) Disposition of the affected product — what to do with the product when it has been detected to be "out of control" and therefore: there is a risk that the hazard identified in column 2 of the HACCP Audit Table may have occurred. For example "REJECT: temperature above 7°C".

(ii) Correction of the Process — this addresses the activity that needs to occur to prevent the process failure from occurring again.

(iii) Documentation of the Event — records need to be kept (most practically on the monitoring form) that describe the outcome of the corrective action, particularly at CCPs. This is for review purposes, and to prove that the appropriate corrective action relating to the product has been taken.

8. **Records**

This column describes the name of the form used to collect the data resulting from the Monitoring activities. In certain instances, it may make sense to include who completes the form (particularly if this is not the who? indicated in the Monitoring column), and where the completed records are to be found. Wherever a CCP has been identified in the HACCP Audit Table, there must be records available to demonstrate that control has been maintained (either the product met the critical

limits, or appropriate corrective action was taken). It is up to the HACCP Team to determine whether records need to be maintained for CPs.

9. **Verification**

Verification is a program separate from monitoring to ensure that the HACCP Plan is achieving the food safety performance expected: not that there simply is a flow chart and a HACCP Audit Table. It is the company's responsibility to develop a schedule of activities that evaluate the following:

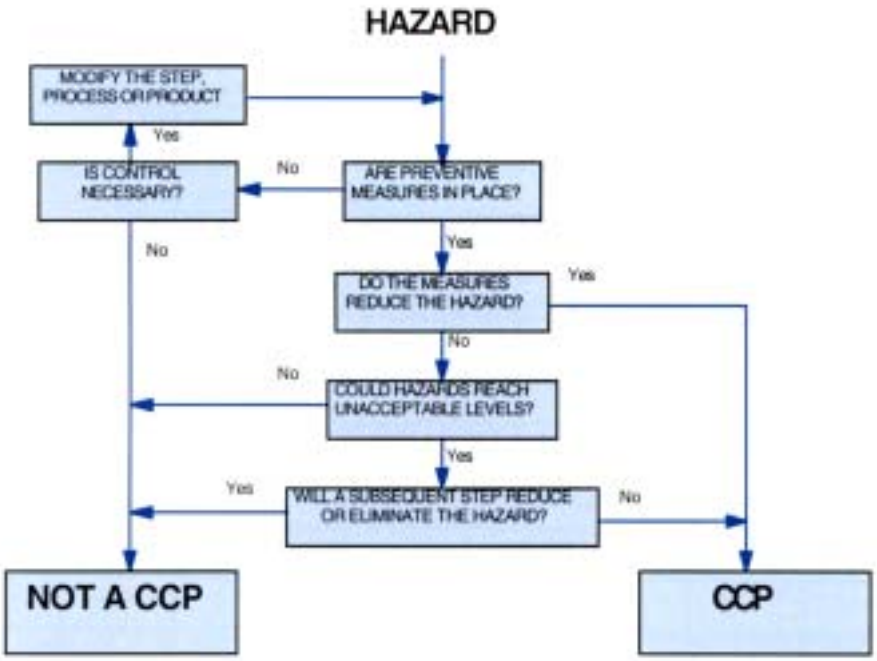
- the adequacy of the overall HACCP Plan,
- that the CCPs are appropriate (not just that they have been identified), and
- that the Critical Limits are appropriate for the control measures.

It will be the responsibility of auditing agencies to ensure that verification activities are being undertaken.

ATTACHMENT A

CCP DECISION TREE

The decision tree below provides a method for determining whether a hazard identified at a process step requires a Critical Control Point to be established at that step.



Note however that the Codex document (Alinorm 97/13A) specifically says of decision trees that they are “not specific to all food operations, e.g. slaughter, and therefore should be used in conjunction with professional judgement, and modified in some cases”.

ATTACHMENT B

HACCP MANUAL AMENDMENT REGISTER

CODE NUMBER	DATE	SUBJECT	SUBSECTION OR PAGE NUMBER	APPROVAL	COMMENTS

Explanatory Notes: Document and data control is basically about making sure that any document used (internal: such as procedures and work instructions, and external: such as statutory regulations, Standards, codes and specifications) is the latest approved issue. The same principle is required for control of forms which are used for general of records the result of some monitoring activity as defined in the HACCP Plan.

ATTACHMENT C

CCP WORK INSTRUCTION (Example)

Where a CCP has been identified in a HACCP Plan, the question needs to be asked: "Do I need to have a Work Instruction prepared to ensure that the control measures will be correctly undertaken?" In most instances, the answer will be "Yes".

Receival Clerk

- Take delivery of all incoming stock.
- When delivery truck arrives take random temperatures of load:
  - — All product above 7°C is to be rejected. On rejection of product the number of cartons, delivery docket and the supplier is to be recorded in the Works Diary.
  - — Product at or below 5°C is to be checked for weights and transferred to the cool room without delay. Receival temperatures are to be recorded on the "Receival Temperature Monitoring Sheet".
  - — Product found to be above 5°C but below 7°C is to be isolated in the coolroom and reduced to 5°C as soon as possible. Details of the load are to be recorded on a "Receival Temperature Monitoring Sheet" or a Works Diary.
  - — All violations of the temperature requirements are to be drawn to the attention of the manager.
- All loads are to be observed for the existence of Government stamps or license numbers to ensure the product has been prepared in licensed premises.
  - — Product which cannot be confirmed as originating from licensed premises is to be rejected. The details of the rejected product are to be recorded in "Receival Temperature Monitoring Sheet" or a Work Diary and drawn to the attention of the manager.
- All loads are to be examined to ensure the cartons are in a clean and sound condition and do not pose a potential threat to the wholesomeness of the product.
  - — Cartons which are not acceptable for further delivery but pose no threat to the product are to be isolated in the coolroom and identified for broken orders. Details of these cartons are to be recorded in the "Receival Temperature Monitoring Sheet" or a Works Diary and reported to the Manager.
  - — Cartons delivered in a grossly contaminated or unsound state are not to be accepted. Details of the rejected loads together with the name of the supplier are to be recorded in the "Receival Temperature Monitoring Sheet" or Works Diary.
- At the commencement of each shift, the scales are to be checked by weighing a "Known" 25 kilo weight and recording the results in the "Scales Calibration Monitoring Sheet" or Works Diary.
- Operating temperature of the coolroom as indicated by the external temperature gauge is to be recorded in the "Chiller Temperature Monitoring Sheet" or Works Diary at the commencement of each shift and at four-hourly intervals thereafter.

ATTACHMENT D

CCP MONITORING FORMS (example)

When it is impossible to monitor the *Critical Limit* at a CCP on a continuous basis, it is necessary to establish a monitoring schedule that will be reliable enough to indicate that the hazard is under control.

For further information regarding the monitoring schedule, please refer to the Acceptable Quality Limits (AQLs) as contained in the *Australian Standard for the Hygienic Production of Meat for Human Consumption.*

RECEIVAL TEMPERATURE MONITORING SHEET

DATE	TIME	CARRIER (VAN REGISTRATION)	PRODUCT DESCRIPTION	TEMPERATURE SAMPLE RESULT	CORRECTIVE ACTION	RECEIVED BY (SIGNATURE)

ATTACHMENT E

SUPPORTING HACCP PROGRAMS & SCHEDULES THAT NEED TO BE DOCUMENTED

GENERAL AND PERSONAL HYGIENE INSTRUCTIONS FOR ALL EMPLOYEES (EXAMPLE)

1. **Protective clothing:** Start each shift with clean company-provided protective clothing (including boots) which completely covers your street clothes, and put it on without getting it dirty from the floor.
2. **Hand washing:** Always wash your hands after the toilet and every time you enter (or re-enter) your work area, and any time your hands touch anything unclean while working on product.
3. **Gloves:** Where your job involves gloves, start each shift with company cleaned (or new) mesh or rubber gloves. Always rinse your gloves in a steriliser or special sanitiser bath before going on breaks, and do not take gloves out of work area until end of shift.
4. **Aprons:** Where your job involves wearing an apron, start each day with a new disposable or a clean apron. Rinse off your apron at breaks and leave in your work area (or get a new disposable apron).
5. **Knives, pouches, chains and steels:** During breaks, this equipment must be hung up in the work area if knives are not being sharpened. Sanitation of equipment during breaks will vary for different jobs. See your supervisor or *Work Instruction* for any special details.
6. **Hair covering:** Always wear company-provided cap or disposable hat in your work area, and tuck long hair under the cap or wear a hairnet as well as the cap.
7. **Bandages, jewellery, watches, etc.:** If you have a sore or cut on a hand or exposed arm that needs a bandage, go to the first aid officer and let them put on a special waterproof bandage. Jewellery, watches, etc. generally must not be worn, but if rings are difficult to remove, a glove can be worn on that hand.
8. **Boot washing:** Boots must always be washed on entry to your work area, either by hand sprays, mechanical washer or by wading through a sanitiser bath.
9. **Locker hygiene:** Keep your locker free of dirty protective clothing, food scraps, or anything else that will attract pests.

APPROVED CHEMICAL LIST

List all chemicals and indicate evidence of their approval status.

For each chemical indicate what it's to be used for. As part of the Work Instruction for the cleaners, describe the dilution and application methods. This applies especially to dangerous toxic chemicals which could contaminate the product and be detected as a residue.

Pest Control

Indicate the system of feedback from production/cleaning staff observations to the pest controller.

Explain the methods to be used for pest problems which occur during production, e.g. fly control.

Give details of the contractor's (or works) program and chemicals used, including diagrams of bait stations.

Include an example of the reports produced and indicate who will take action when problems are discovered.

Calibration Control

Records must be kept on the dates of calibration of equipment, such as scales, thermographs, automatic chlorine controller/recorders, all thermometers (portable and fixed) etc.

— Where calibration is not by an approved laboratory, such as NATA-accredited, the method of calibration must be described.

— Describe the frequency of routine recalibration for key units of equipment and their back-up units.

— It is recommended that the methodology and frequency of calibrating thermometers described in the CSIRO Meat Research newsletter No. 91/2 be followed.

Identify the staff positions responsible for ensuring that each key piece of test equipment is giving accurate results.

Training

Records must be kept of training activities identifying the training description, the date undertaken, and signed off by the trainee with the corresponding date. A register or matrix of employees, and the training requirements for the business, should be developed and maintained.

Product Identification

Clear guidelines/procedures need to be established to ensure that all product is correctly labelled (product description, packer ID, packed-on date/use-by date (as dictated by customer and regulatory requirements), batch coding if required, and any other information as prescribed.

Work-in-progress needs to be clearly identified with appropriate coding that allows traceability back to production records.

Isolated/detained/quarantined/held-out product must be clearly identified, with a procedure developed to ensure that such product is not unwittingly returned into the main production stream.

These aspects are essential for product traceability and control.

ATTACHMENT F

GLOSSARY OF DEFINITIONS

The following definitions have been taken from the Codex Alimentarius Commission Alinorm 97/13A: Annex 1 to Appendix 2. It should be noted that these definitions are in the final stages of adoption by Codex.

AQL	Acceptable Quality Level of a sample lot measured by inspection and tested against predetermined objective criteria (see Critical Limits).
Control (verb)	To take all necessary actions to ensure and maintain compliance with criteria established in the HACCP Plan.
Control (noun)	The state wherein correct procedures are being followed and criteria are being met.
Control Measures	Actions and activities that can be used to prevent or eliminate a food safety hazard or reduce it to an acceptable level.
Corrective Actions	Actions to be taken when the results of monitoring at the CCP indicate a loss of control.
CCP	See Critical Contol Point
Critical Control Point	A step at which control can be applied and is essential to prevent or eliminate a food safety hazard or reduce it to an acceptable level.
Critical Limit	A criterion which separates acceptability from unacceptability.
HACCP	A system which identifies, evaluates and controls hazards that are significant for food safety.
HACCP Plan	A document prepared in accordance with the principles of HACCP to ensure control of hazards that are significant for food safety in the segment of the food chain under consideration.
Hazard	A biological, chemical or physical agent or factor with the potential to cause an adverse health effect.
Hazard Analysis	The process of collecting and evaluating information on hazards and conditions to decide which hazards and conditions are significant for food safety and therefore should be addressed in the HACCP plan.
Monitor	The act of conducting a planned sequence of observations or measurements of control parameters to assess whether a CCP is under control.
Step	A point, procedure, operation or stage in the food chain, including raw materials, from primary production to final consumption.
Verification	The application of methods, procedures and tests, in addition to those used in monitoring, to determine compliance with the HACCP plan, and/or whether the HACCP plan needs modification.

ATTACHMENT G

HACCP PLAN AUDIT CHECKLIST

Date of Audit	**Audit File No:**
Company being audited	
Address	
Reviewer	
Phone **Fax**	
Contact	
Products	
Company Representatives	
No. of Employees	
Technical Resources	

REQUIREMENTS	RESULTS/COMMENTS
HACCP TEAM	
Has a HACCP Coordinator been appointed?	
Has a HACCP Team been selected?	
What are the skills and experience of the team and are they appropriate?	
Are external resources being used to augment knowledge of skills? (details)	
Has a product description/product specification been prepared for each product?	
– composition	
– packaging (inner/outer)	
– method of preservation	
– distribution conditions	
Has the intended use been specified?	
– consumers (general, specific)	
– sensitive populations (aged, children, sick, allergenic)	
Has a flow diagram been prepared for each product?	
Is the flow diagram complete?	
– all unit operations included?	
– major inputs identified?	
Has the flow diagram been verified? When?	
PRINCIPLE 1 - HAZARD ANALYSIS	
Have all reasonable biological, chemical or physical hazards been identified at each step?	
Have the hazards been assessed for significance?	
Have control measures been developed and implemented for the control of those hazards?	

Requirements	Results/Comments
Principle 2 - Critical Control Points	
Have the Critical Control Points for each significant hazard been identified and transferred to the Hazard Audit Table?	
Are they essential for the control of the nominated hazard?	
Have Work Instructions been completed for each Critical Control Point?	
Principle 3 - Critical Limits	
Have critical limits been established for each preventative measure?	
Is the relationship between the hazard and the critical limit correct?	
How were the limits determined?	
– experimental evidence?	
– published results?	
Principle 4 - Monitoring procedures	
Do the monitoring procedures specify what, when, how, where and who?	
Is the frequency of monitoring sufficient to provide a high level of assurance that the process is under control?	
Are monitoring records kept and reviewed by the appropriate personnel?	
Have examples of monitoring forms been provided in the manual?	
Principle 5 - Corrective Action	
Have corrective actions been developed for each critical control point?	
Do the corrective actions ensure that the CCP is brought under control?	
Do the corrective actions cover product, process and prevention of recurrence?	

REQUIREMENTS	RESULTS/COMMENTS
PRINCIPLE 6 - VERIFICATION PROCEDURES	
Have verification procedures been put in place to demonstrate that the HACCP program is effective?	
Have the critical limits been validated?	
Do the verification activities demonstrate that the CCPs are under control?	
Do verification activities demonstrate that the HACCP program is effective?	
PRINCIPLE 7 - RECORD KEEPING	
Have records been maintained for all monitoring procedures?	
Have all critical limits been adhered to?	
Have records been maintained for all corrective actions?	
Have records been maintained of all HACCP verification activities?	
DOCUMENTATION	
Is there a Quality Manual?	
Quality Policy?	
Procedures, work instruction forms and specifications identified?	
Are all referenced documents controlled?	
GOOD MANUFACTURING PRACTICE (GMP)	
Has a GMP policy been defined?	
Is there a system for auditing the GMP?	
Is corrective action taken in response to Good Manufacturing Practice nonconformance?	
Is GMP being practised?	
CLEANING PROCEDURES	
Have cleaning procedures been developed?	

REQUIREMENTS	RESULTS/COMMENTS
Have verification procedures for effective cleaning been developed and implemented?	
Is corrective action documented?	
PEST CONTROL	
Have pest control procedures been developed and documented?	
Is there a verification procedure for effective pest control?	
Does the procedure include corrective action?	
TRAINING	
Are there records of training?	
Are training needs reviewed on a regular basis?	
Is there a training plan to provide identified training needs?	
CALIBRATION	
Has the calibration status of measuring equipment been identified?	
Are there documented procedures for calibration?	
Are there procedures for reviewing material produced while equipment was out of calibration?	
PRODUCT IDENTIFICATION	
Have procedures for product identification been developed and documented?	
Is "heldout" product identified?	
Overall Comments:	
Audited by	**Date**
Accepted by	**Date**