



Standardisation of Hazard Analysis and Critical Control Point (HACCP)

MPI Technical Paper No: 2012/30

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ISBN No: 978-0-478-40437-1 (online)

ISSN No: 2253-3923 (online)

8 August 2012

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Abbreviations

Abbreviation	Full name
CCP	Critical control Point
GOP	Good Operating Practice
HACCP	Hazard analysis and Critical Control Point
MPI	Ministry for Primary Industries
RMP	Risk Management Programme

Introduction

The Ministry for Primary Industries (MPI) has standardised its approach to the application of Hazard Analysis and Critical Control Point (HACCP) to promote consistency in:

- future HACCP guidance material issued by MPI; and
- assessing HACCP applied by any food sector or business.

Purpose

The purpose of this document is to outline:

- how MPI will apply the Codex HACCP principles in a technically sound manner; and
- MPI's additional expectations for HACCP application in the New Zealand context.

MPI accepts flexibility in the way a HACCP application is documented and recorded so that it can be easily understood by the expected reader.

A Standardised Approach to HACCP

COMPETENCY AND KNOWLEDGE

MPI expects that persons who use this document will be competent in HACCP and familiar with:

- this document;
- the Codex HACCP Guidelines¹;
- relevant legislation, including regulatory limits;
- any operator-defined limits common to that sector;
- any other relevant documents such as the Risk Management Programme (RMP) Manual; and
- the products, processes and good operating practices (GOP) that are usual for the sector.

DEFINING THE SCOPE OF THE HACCP APPLICATION

MPI expects the scope of the HACCP application to be clearly defined, with justification as to which products, processes and practices (such as re-work) are included. More than one HACCP application may be necessary to cover the range of operations that are typical for the food business. Alternatively similar products can be grouped into one application if they are made with the same process and similar hazards are being addressed.

HAZARD IDENTIFICATION AND ANALYSIS

MPI expects hazard identification² and analysis to be documented. It must be applied to the direct process and inputs³. Hazards from other sources such as personnel and pests are expected to already be covered by GOP prior to applying HACCP principles.

Only hazards that are reasonably likely to occur and their control measures (where available) will be identified. For consistency, these should align with the MPI hazard database⁴.

¹ Refer to Recommended International Code of Practice Principles of Food Hygiene (CAC/RCP 1-1969, Rev. 4-2003) www.codexalimentarius.net/download/standards/23/cxp_001e.pdf

² Care should be taken to ensure the hazard is identified, and not just the source of the hazard.

³ This does not prevent food businesses applying HACCP principles to a wider scope if they wish, provided they do it fully.

⁴ The MPI public website contains a link to the Hazard Database. Refer to <http://www.foodsafety.govt.nz/index.htm>

“Reasonably likely to occur” means that the particular hazard is known to occur in the food in New Zealand, or has a known association with food/ ingredients imported into New Zealand.

Information may be sourced from scientific reports, industry/company results, Codes of Practice and from information from MPI. Care should be taken when considering information from overseas to ensure that it is relevant in the New Zealand context.

The level of specificity needs to be appropriate to enable identification of an effective control⁵. A generic grouping of hazards for example, into biological, chemical or physical, will not give enough information about the type of hazard and the necessary control measure. Hazard groupings such as sporeformers, enteric pathogens and psychrotrophs are appropriate if the control measure is similar for the group, e.g. the growth of enteric pathogens is controlled by reducing water activity to <0.86.

Specific hazard details are required when:

- the control measures are specific, e.g. parasite kill time and temperature; or
- a specific hazard is the problem, e.g. *Campylobacter jejuni*, *Clostridium botulinum* type A, *Listeria monocytogenes*.

Justification for the inclusion of a hazard must be documented (e.g. based on scientific literature, Codes of Practice, industry reports and experience, etc.) unless already justified in the hazard database. In this case, the hazard database must be referenced.

CRITICAL CONTROL POINT DETERMINATION

MPI expects Critical Control Point (CCP) determination to be documented for each hazard at each process step including the rationale for selection of any CCPs. Criteria for CCP determination must include at least the following:

- **a control measure**, or measures, for the hazard at that step; and
- control at that step is essential to eliminate the hazard, or reduce it to an **acceptable level**.

NB: The exact wording and the questions used may vary, provided the above intent is captured.

⁵ The hazard database can assist with this determination.

Tools such as a decision tree or table may be used to determine when a CCP is necessary. An example of a decision table that has been developed by MPI can be seen in Table 1.

MPI may mandate control measures at a particular process step, e.g. for pasteurisation for milk and milk products. This step may be a CCP if MPI states that it is, or if the step meets the criteria above.

What is an acceptable level?

The acceptable level is defined by a regulatory limit⁶ or an Operator-defined limit⁷ for the particular hazard.

What is essential?

A control measure is essential if:

- it substantially contributes to the elimination of a food safety hazard, or its reduction to an acceptable level;
- without it, an unacceptable level of hazard is likely in the final product; and
- loss of control results in a risk to human health (considering the intended use and customer).

How many CCPs should there be?

There may be no CCPs, or there may be one or more CCPs depending on the hazard, control measures available and the process.

A CCP is not necessary to control a particular hazard if the regulatory limit has already been achieved through the application of GOP.

One or more CCPs in combination may be necessary to achieve the acceptable level of hazard control, e.g. seaming and retorting in canning/thermisation and storage in cheese-making.

This may also be shown as a number of controls that by themselves may not be considered CCPs but together lead to one CCP (as in hurdle technology).

A single CCP may control more than one hazard.

What if a hazard cannot be controlled?

If a hazard is not controlled to a known level at the end of the process, then it may be managed later in the food chain or additional controls may be necessary within the process. If

⁶ Examples include:

- 12 D reduction of *Clostridium botulinum* in low acid canned foods;
- 100cfu/gm *Listeria monocytogenes* in ready- to-eat food;
- pasteurisation at 72°C for 15 seconds.

⁷ Any Operator-defined limits must be agreed by MPI. An example is no greater than 2mm ferrous metal in final product.

MPI requires the food business to control this hazard to an acceptable level, i.e. mandates controls, then modifications must be made to the product/process to ensure that level of control is achieved.

Where no mandatory requirements exist for the hazard and the food business also considers it is not essential to control this hazard then the hazard should be classified as ‘uncontrolled’ within the HACCP application. In this instance, it may be appropriate to highlight the possibility for control in another part of the food chain, e.g. *Toxoplasma gondii* in raw meat is controlled by freezing or cooking.

The following table shows an acceptable way of documenting the CCP determination.

Table 1: Example of a CCP Decision table

1	2	3	4	5
Process Step	Inputs	Hazard (with justification)	Q1. Is there a Regulatory limit or Operator-defined limit? Yes: Go to Q2. No: Step is not a CCP. Consider need for other control measures in GOP.	Q2. Is a control measure(s) essential to achieve the limit from Q1? Yes: Step is a CCP. No: Step is not a CCP. Consider need for other control measures in GOP.

The columns in the table are further described below:

Column 1 – document each process step.

Column 2 – identify the inputs associated with each process step.

Column 3 – identify and justify each specific hazard that is reasonably likely to:

- be introduced by the inputs at that step;
- be introduced or transferred as a consequence of applying the process step itself (e.g. metal from mincers);
- be carried over from the previous step; NB: To reduce repetition, any hazards that are unlikely to be affected in this step (e.g. chemical residues and parasites) do not need to be carried over in the table until the step where the hazard is controlled, or at the end of the process to show the hazard is ‘uncontrolled’ (see column 4 and 5).
- be affected by the process step (e.g. growth of micro-organisms).

Column 4 and 5 - work through each of the questions systematically, using one row per hazard at each step.

Where a hazard has been eliminated at a particular step, it does not need to be carried forward in the table.

If at the end of the process there is still no control measure for a specific hazard, the hazard must be shown as still present (i.e. ‘uncontrolled’). The application of the HACCP principles then ceases for that hazard.

ESTABLISHING CRITICAL LIMITS

MPI expects critical limit(s) to be established and documented for each CCP. This includes the rationale for selection of the critical limits and the validation of these limits. The purpose of critical limits is to distinguish acceptability from unacceptability. When critical limits are exceeded, corrective action must be initiated.

Critical limits must be:

- measurable, appropriate and achievable by the business;
- parameters that can be monitored.

Critical limits could be regulatory limits, e.g. a process parameter such as mandated time/temperature requirements, or Operator-defined limits.

Critical limits will be either a:

- product requirement, e.g. pH or water activity, or
- process parameter, e.g. time, temperature parameters applicable to the CCP.

Critical limits need to be validated. Refer to the validation section of the RMP manual or other MPI guidance material.

CCP MONITORING

MPI expects CCP monitoring procedures to be documented. This will include how monitoring is to be done, when, where and by whom. Records will need to be kept. The frequency of CCP monitoring should ensure that the CCP is under control. This is to be achieved using a statistically valid sampling programme where possible. MPI will consider the options for CCP monitoring on a case by case basis. Justification for the different monitoring options needs to be documented.

Specific considerations for a sector

Practicality and cost to industry will be considered by MPI in justifying any CCP monitoring option.

CCP monitoring to a level that is statistically valid may not be practical or cost effective for a proposed CCP in a particular food sector. In this situation, the process step cannot be considered a CCP. Instead, good operating practice should be reviewed to be satisfied that the hazard is adequately controlled.

If MPI is not satisfied that GOP provides adequate control, then a change in food sector practices will have to be worked through with that sector to a point where they can effectively operate the process step as a CCP.

CCP CORRECTIVE ACTION

MPI expects corrective action procedures to be documented for likely problems at each CCP. The procedures must cover how corrective action is to be done, when, where and by whom. Records will need to be kept.

If critical limits are not met, there is a critical food safety issue. Therefore corrective actions must focus on:

- restoration of control,
- disposition of non-conforming product/food or inputs, and
- prevention of reoccurrence (including escalating response if preventative action fails).

OPERATOR VERIFICATION – HACCP

MPI expects Operator HACCP verification procedures to be documented. The procedures must cover how Operator verification will be done, when, where and by whom. CCP monitoring and CCP corrective action need to be checked, including associated records. The procedures must also include provision for a review of the HACCP application:

- at least annually;
- when a food safety issue occurs; and
- when changes are made to the product and/or process.

HACCP verification records will need to be kept.

HACCP DOCUMENTATION AND RECORDKEEPING

Documentation

The general provisions for documentation will apply (refer to RMP Manual for guidance).

MPI expects the application of HACCP to be documented and stored/maintained appropriately.

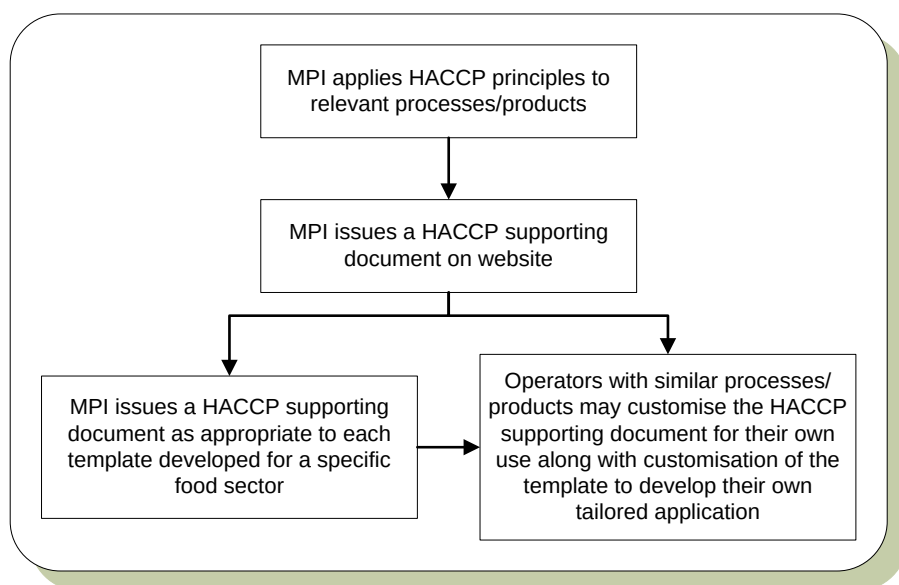
Records

The general provisions for record keeping will apply. MPI expects records to be kept for CCP monitoring, CCP corrective action and Operator verification of HACCP.

USE OF HACCP

MPI expects HACCP to be applied as appropriate to each sector. Figure 1 demonstrates how MPI may provide a HACCP supporting document for a template developed for a specific food sector instead of expecting food business Operators within that sector to do their own HACCP application.

Figure 1: Process for a HACCP supporting document



The language used for the “HACCP” content of any template will be agreed with food businesses or sectors where appropriate. Technical information is likely to be simplified and different words may be used for “hazard” or “CCP” or “critical limit”. The resulting template is likely to reference technical information that is available on MPI’s website.

The associated business records for CCP monitoring, CCP corrective action and operator verification of HACCP can also be flexible and suitable for the food business. Examples will be discussed and agreed by MPI and the food sector or business where appropriate.