



Listeria Risk Management Strategy 2013-2014

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Requests for further copies should be directed to:

Publications Logistics Officer
Ministry for Primary Industries
PO Box 2526
WELLINGTON 6140

Email: brand@mpi.govt.nz
Telephone: 0800 00 83 33
Facsimile: 04-894 0300

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1 Executive Summary

The Ministry for Primary Industries (MPI) strategy 2030 associated with growing and protecting New Zealand includes in its focus the protection from biological risk. In this regard, MPI's core business¹ includes effective operation of food safety systems, and refers to management of rates of foodborne illness to agreed levels. This includes priority pathogens such as *Listeria monocytogenes*.

MPI will contribute by providing an effective food regulatory programme covering food produced and consumed in New Zealand as well as imports and exports of food products. MPI recognises the human health burden associated with listeriosis and the contribution that food makes to this burden. With this in mind, MPI has set an indicator performance target for 2013-2014 of no change to the reported annual incidence of foodborne listeriosis.

This document provides the MPI risk management strategy and associated work programme for *Listeria monocytogenes* (*Listeria*) for 2013-2014.

¹ MPI Statement of Intent 2013 – 2018 located at www.mpi.govt.nz

2 Introduction

The Ministry for Primary Industries (MPI) strategy 2030 associated with growing and protecting New Zealand includes in its focus the protection from biological risk, by protecting and enhancing the integrity and reputation of New Zealand's primary products including food. MPI's core business² includes effective operation of food safety systems, and refers to management of rates of foodborne illness to agreed levels. This includes priority pathogens such as *Listeria monocytogenes*.

MPI will contribute by providing an effective food regulatory programme covering food produced and consumed in New Zealand as well as imports and exports of food products. MPI recognises that the burden of cases of human listeriosis in New Zealand is significant, and the contribution that food makes to this health burden. With this in mind, MPI has set an indicator performance target for 2013-2014 of no change to the reported annual incidence of foodborne listeriosis already achieved over the past five years (2008 – 2012).

While MPI is not seeking to achieve a decrease in the incidence of listeriosis, the status quo will not be maintained without positive intervention. This is because there are an increasing number of at-risk consumers due to an aging population and an increase in the availability and variety of ready-to-eat foods; both factors having the potential to increase infection rates. In addition, it is not known if current risk management controls applied by industry are adequate or the most effective means. Therefore, a *Listeria monocytogenes* management strategy is essential to prevent an increase in cases of human foodborne illness.

The *Listeria monocytogenes* risk management strategy will:

- Ensure that risk management options for the control of *L. monocytogenes* are effective and applied consistently across all food businesses.
- Take account of international developments in *L. monocytogenes* risk management through involvement in international fora and collaborations.

² MPI Statement of Intent 2013 – 2018 located at www.mpi.govt.nz

- Provide enhanced and effective information to all stakeholders for reducing the potential for *L. monocytogenes* contamination of food and exposure of consumers.
- Document a process that will monitor and review progress of the strategy.
- Identify and prioritise research needed to inform and support the *L. monocytogenes* risk management options applied or proposed.

3 Goal

MPI's overall performance target in relation to foodborne illness is: "A continual improvement in rates of food-borne disease through the effective risk management of priority pathogens".

MPI has an indicator performance target relating to *Listeria monocytogenes* (*Listeria*) risk management as "no change to the incidence of foodborne human listeriosis over the period 2013-2014".

4 Objectives

The objectives of the *Listeria monocytogenes* risk management strategy are as follows:

1. To achieve no increase in foodborne human listeriosis cases over 2013-2014 compared to the last five years.
2. To engage with industry, other stakeholders and consumers in order to ensure that any outcomes developed are practical, feasible and cost effective.
3. To effectively communicate the strategy and outcomes to all stakeholders (including consumers).
4. To make well informed risk management decisions on appropriate control measures and their implementation.
5. To design and implement an ongoing monitoring and review programme to assess the effectiveness of risk management decisions.

5 Background

5.1 HUMAN LISTERIOSIS

Listeriosis is an illness caused by the bacteria *Listeria monocytogenes*, commonly referred to as *Listeria* or *L. monocytogenes*. Other species of the *Listeria* genus are rarely associated with human illness.

There are two forms of listeriosis: non-invasive and invasive. Non-invasive listeriosis is typically characterised by diarrhoea, fever and muscle pain and is similar to other foodborne illnesses. However, invasive listeriosis initially presents with mild flu-like symptoms which may progress to septicaemia, meningitis, encephalitis or death. This form of illness typically affects those with an impaired immune function. The ability of the bacteria to invade the foetus during pregnancy is of major concern as this may result in spontaneous abortion or stillbirth and typically occurs in the absence of recognisable maternal symptoms.

Within Europe there has been an increase in the observed cases of listeriosis in particular in people over 60 years of age. It is possible that this pattern may be repeated in New Zealand due to a change in the population demographics as people live longer. In addition, there has been a greater demand for convenience foods, typically those where there may be a greater risk for the presence of *L. monocytogenes* due to the extended shelf-life, chilled storage and the application of only minimal processing.

Listeriosis is a notifiable disease in New Zealand; and given the severity of invasive listeriosis, under reporting is unlikely. The incidence of reported listeriosis in New Zealand is similar to that seen in other comparable countries and has averaged 0.5 per 100,000 population over recent years. While the incidence of serious illness is low, the severity of the illness is high.

Cases of non-invasive listeriosis are unlikely to be diagnosed except when an outbreak occurs as the symptoms are similar to other foodborne illnesses and laboratory testing for the bacteria in faeces is not routine. However any strategy that is designed to reduce the incidence of invasive listeriosis could be expected to lead also to decreases in non-invasive cases which would be reflected in a general decrease in gastro-intestinal illness.

5.2 FOOD AS A SOURCE OF LISTERIOSIS

Food is considered the major source of *L. monocytogenes* infections in New Zealand with an estimated 84.9% of reported listeriosis cases likely to be foodborne³.

Listeriosis is typically associated with the consumption of chilled, long shelf-life, ready-to-eat (RTE) foods that do not undergo a listericidal processing step or where there is a risk of post-processing contamination. Typical foods include smoked fish, pâté, cooked meats, smallgoods, unpasteurised milk and dairy products. Therefore, the joint Australia and New Zealand Food Standards Code has established microbiological limits for certain high risk foods that have been associated with past outbreaks and food incidents. This does not cover the full range of RTE foods now available to the New Zealand consumer.

In 1992 there was an outbreak of listeriosis in New Zealand linked with the consumption of contaminated seafood and there has been a cluster of illnesses associated with the consumption of cooked meats. *L. monocytogenes* has been detected more recently in cooked meats, seafood products and mixed pasta salads.

For non-invasive listeriosis to occur in the general population, ingestion of foods with levels of contamination greater than 10⁵ cfu/g appears to be required. The illness is usually evident within two days of consuming contaminated food. By contrast, in vulnerable consumers, the invasive form can occur after ingestion of as few as 100-1000 cells and the symptoms of illness may not be seen for as long as 90 days, but usually around 30 days. This makes linking the illness to a particular food difficult.

The FAO/WHO risk assessment⁴ concluded that a concentration of *L. monocytogenes* not exceeding 100 cfu/g in food at the point of consumption presented a low risk to the general population. *Listeria species* including *L. monocytogenes* are ubiquitous environmental bacteria and can be isolated from raw ingredients and unprocessed foods, from food premises and equipment and from domestic kitchens including refrigerators. Food can be contaminated at any point in the food supply chain i.e. from farm to fork. *L. monocytogenes* are more

³ Expert elicitation reported in Cressey, P. and Lake, R. (ESR) 2005. Ranking Food Safety Risks. Development of NZFSA Policy 2004-2005.

⁴ FAO/WHO 2004. Risk Assessment of *Listeria monocytogenes* in Ready-to-Eat Foods. Technical Report. Microbiological Risk Assessment Series No: 5

resistant than other non-sporing bacteria to a wide variety of environmental stresses as they can grow under refrigeration temperatures, under acidified conditions (to pH 4.2) and at low oxygen levels. For these reasons there is a particular challenge in reducing numbers present in, or eliminating them from foods.

The most effective risk management control is the application of a listericidal processing step that will inactivate all *L. monocytogenes* present; the most commonly used is heat treatment e.g. pasteurisation and cooking. However not all foods are heat processed and as RTE foods are intended to be eaten without further processing; the most important risk management approaches for preventing illness are considered to be those that:

- reduce the amount and opportunity for contamination of food with *L. monocytogenes*;
- minimise the potential for microbial growth to occur in the food; and
- communicate to at-risk consumers the need to avoid foods that have the greater potential to be contaminated

The application of Good Operating Practices (GOP) and Hazard Analysis and Critical Control Point (HACCP) can prevent the initial contamination or post-processing contamination of RTE foods. Follow up investigations after recent food incidents involving *L. monocytogenes* contamination of food have however indicated that appropriate risk management controls may not have been identified or may not always be implemented correctly.

The strategy will focus on the risk management controls that are practical and feasible whilst being cost effective. The nature of the risk management controls applied may vary between the different sectors of the food industry and individual food businesses.

5.3 COMPREHENSIVE RESEARCH

Risk profiles currently available on the MPI website include:

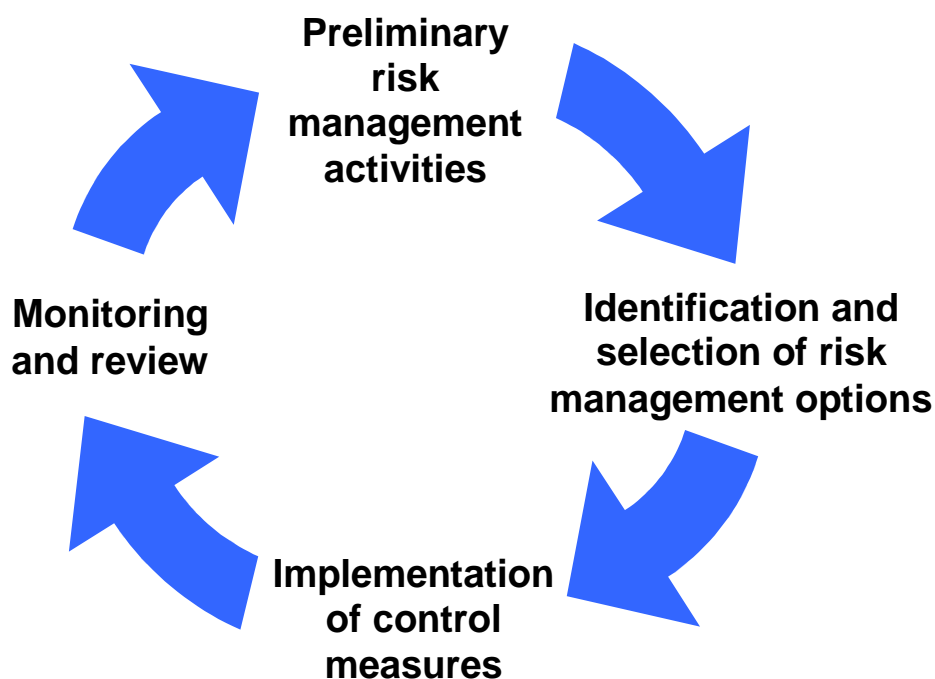
- *Listeria monocytogenes* in ice cream;
- *Listeria monocytogenes* in low moisture cheeses;
- *Listeria monocytogenes* in processed ready-to-eat meats;
- *Listeria monocytogenes* in ready-to-eat salads;
- *Listeria monocytogenes* in soft cheeses.

Other research that has been completed 2010 – 2013 can be found under the work programme, section 6.

5.4 RISK MANAGEMENT FRAMEWORK

The risk management framework (RMF) provides a systematic process whereby knowledge on risk and evaluation of other factors relevant to control of hazards are used to choose and implement regulatory standards or other measures. The components involved in applying a RMF are shown in Figure 1. Effective risk management incorporates appropriate risk communication and stakeholder representation at all steps.

Figure 1: Risk Management Framework



5.5 *LISTERIA* RISK MANAGEMENT STRATEGY WORKING GROUP AND ITS RELATIONSHIP TO THE PATHOGEN MANAGEMENT GROUP

MPI has an overarching Pathogen Management Group reporting to the Standards Branch Senior Business Leadership Team (SBLT) with advice on:

- what pathogens MPI should focus on;
- the significance of any emerging pathogens;
- recommendations for change.

The *Listeria* risk management strategy working group is a sub-set of the Pathogen Management Group, tasked with achieving the objectives specifically relating to *Listeria*. The working group represents business groups within the Standards Branch of MPI.

5.6 STAKEHOLDERS

MPI works closely with a variety of stakeholders in New Zealand in order to ensure understanding of the comprehensive risk management strategy and to share and obtain feedback on results from the work programme on an ongoing basis.

Stakeholders include:

- Industry, e.g. food businesses from primary production to retail;
- Consumers;
- Industry associations, e.g. those covering growers, processors, retail and food service;
- Government agencies such as the Ministry of Health;
- FSANZ;
- Science organisations, e.g. Crown Research Institutes, Universities.

5.7 KEY ACHIEVEMENTS

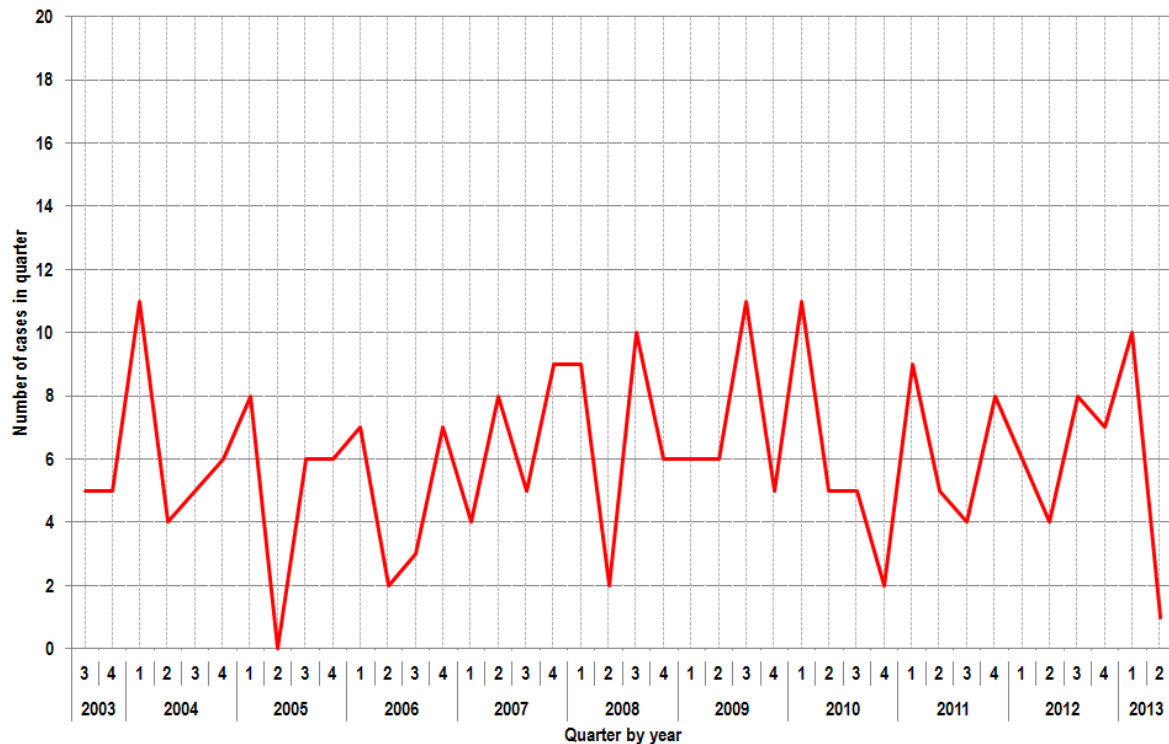
5.7.1 Foodborne illness

- Achievement of no increase in the estimated human foodborne cases of listeriosis 2008- 2012;
- Progress within Monitoring and Review as per the following graph:

a. Surveillance – human cases of listeriosis

Figure 2 shows quarterly results as at 30 June 2013, for reported cases of human listeriosis in New Zealand.

Figure 2: Reported Cases of Human Listeriosis in New Zealand (to 30 June 2013)



5.7.2 *Listeria* guidance material

Guidance material on the MPI website⁵ provides information on the characteristics of *Listeria*, the sources, the consequences of food contamination and how it may enter the processing environment. It also provides guidance material on the management and control of *Listeria* including specific good operating practices, microbiological testing and responses when *L. monocytogenes* is detected in the product or processing area.

The guidance material for the control of *Listeria monocytogenes* in ready-to-eat foods is available in three parts:

- Part 1: *Listeria* Management and Glossary;

⁵ <http://www.foodsafety.govt.nz/science-risk/programmes/hazard-risk-management/listeria.htm>

- Part 2: Good Operating Practices;
- Part 3: Microbiological testing for verification of the control of *Listeria monocytogenes*.

5.8 STRATEGY UPDATE

The Strategy update process occurs as necessary and takes into account all aspects of implementation of the RMF and progress to-date. This includes consideration of any other relevant sources of information. The update process guides the choice of further scientific work and the future direction of the Strategy.

This updated Strategy document describes the MPI *Listeria* risk management strategy for 2013 – 2014, and specifically, spells out the work programme aligned to the RMF that will be achieved over this period.

Details are found in section 6 of this Strategy.

6 Work programme

This work programme is based on application of the RMF and includes the following parts:

- Preliminary Risk Management Activities;
- Risk Management Options;
- Implementation of Control Measures;
- Monitoring and Review;
- Risk Communication; and
- International Collaboration.

For each part, a short overview is given and the key objectives where applicable, are set out.

6.1 PRELIMINARY RISK MANAGEMENT ACTIVITIES

6.1.1 Completed work 2010 – 2013

- Determination of short shelf-life with respect to the growth of *L. monocytogenes*.
- RTE smoked fish survey (August 2011).
- Model validation for *L. monocytogenes* in RTE Foods.

6.1.2 Current work programme 2013 – 2014

- LAS scheme – MPN or cfu test;
- Surveys:
 - Seed sprouts;
 - Fresh cut fruit salads.

6.2 RISK MANAGEMENT OPTIONS

6.2.1 Completed work 2010 – 2013

- Development of *L. monocytogenes* microbiological criteria for each risk categorisation.

- Guidance for Food Service.
- Guidance for vulnerable populations.
- Guidance on the “basics” and “vulnerable populations” incorporated into the Health and Residential care template.
- Guidance documents for food operators covering management, good operating practices and verification by microbiological testing.
- Guidelines for recall for *Listeria*.
- Guidelines for establishing shelf life.

6.2.2 Current work programme 2013 – 2014

- Human consumption specifications (APA) development.
- FSANZ work – 1.6.1.
- Food sector-specific guidance material .

6.3 IMPLEMENTATION

6.3.1 Completed work 2010 – 2013

- Secondary poultry processors audit.
- Audit of processors of RTE red meat.

6.3.2 Current work programme 2013 – 2014

- Workshops 2013-2014 for food business operators and others (e.g. RMP evaluators).
- Integration of guidance into food sectors .

6.4 MONITORING AND REVIEW

6.4.1 Completed work 2010 – 2013

- Human health surveillance data.

6.4.2 Current work programme 2013 – 2014

- Human health surveillance data.

- Review of published guidance material.

6.5 RISK COMMUNICATION

- Website.
- Government agencies (MOH).
- Industry.
- Consumers.

6.6 INTERNATIONAL COLLABORATION

6.6.1 Completed work 2010 – 2013

- Paper aligning Codex approach for control of *L. monocytogenes* in RTE foods.

6.6.2 Current work 2013 – 2014

- FSANZ review of 1.6.1 – *L. monocytogenes* criteria.