A *Listeria monocytogenes* positive test result

Introduction

In July 2014, the revised microbiological limits for *Listeria monocytogenes* were introduced into the Australia New Zealand Food Standards Code (the Code) Standard 1.6.1, 'Microbiological Limits in Foods'.

The NSW Food Authority applies the revised limits as follows:

- Where a business **can demonstrate** that the ready-to-eat (RTE) product **will not support** the growth of *L. monocytogenes*, the 'not exceeding 100 cfu per gram' limit applies.

  For this product, you need to ask the laboratory to perform a *L. monocytogenes* enumeration or quantification test. If the result is greater than 100 cfu/g, you must notify the NSW Food Authority.

  If you asked the laboratory for the wrong test, for example a presence/absence or qualitative test and you receive:

  — a 'Detected' or 'Present' result, you need to ask the laboratory to perform another test for *L. monocytogenes* enumeration or quantification. The result from the enumeration or quantification test will determine whether the product complies with the Regulation or not. If the result is greater than 100 cfu/g, you must notify the NSW Food Authority.

  — a 'Not Detected' or 'Absent' result, you do not need to conduct further testing. The product complies with the Regulation.

- Where a business **cannot demonstrate** that the RTE product **will not support** the growth of *L. monocytogenes*, the 'not detected in 25 grams' limit applies.

  For this product, you need to ask the laboratory to perform a *L. monocytogenes* presence/absence or qualitative test.

  If you receive a 'Detected' or 'Present' result, you must notify the NSW Food Authority.

- Where a RTE product **will support** the growth of *L. monocytogenes*, the 'not detected in 25 grams' limit applies.

  For this product, you need to ask the laboratory to perform a *L. monocytogenes* presence/absence or qualitative test.

  If you receive a 'Detected' or 'Present' result, you must notify the NSW Food Authority.

Food in which growth of *Listeria monocytogenes* will not occur

Standard 1.6.1 includes defined physical and chemical criteria for RTE foods that will not support the growth of *L. monocytogenes*:

a. the food has a pH less than 4.4 regardless of water activity; or

b. the food has a water activity less than 0.92 regardless of pH; or

c. the food has a pH less than 5.0 in combination with a water activity of less than 0.94; or

d. the food has a refrigerated shelf life no greater than 5 days; or

e. the food is frozen (including foods consumed frozen and those intended to be thawed immediately before consumption).

Businesses will be required to provide evidence of any of the above to demonstrate that the RTE food does not support the growth of *L. monocytogenes*. This can include:

- Laboratory analysis for pH and water activity – the laboratory analysis would need to be reconfirmed should the product formulation or processing change. Further, it would be expected that the analysis be repeated at least yearly.
- Product specification – verification that the product has a refrigerated shelf life of no greater than 5 days or is a frozen food.

If none of the above applies, the Standard 1.6.1 of the Code also allows RTE products where the growth of *L. monocytogenes* is limited as being regarded as not supporting the growth of the microorganism. This includes:

- Where the level of *L. monocytogenes* will not increase by greater than 0.5 log cfu/g over the food's stated shelf life.
- Where the product does not receive a listericidal process, the level of *L. monocytogenes* does not exceed 100 cfu/g within the expected shelf life.

Where businesses intend to use limited growth rate, the business will be required to provide evidence that the food meets the above criteria.

Further information on how this can be achieved can be found in the FSANZ publication '*Guidance on the application of microbiological criteria for Listeria monocytogenes in RTE food*', which can be found on their website [foodstandards.gov.au].

Positive pathogen detection notification

It is a legal requirement for licensed businesses to notify the NSW Food Authority about a confirmed positive pathogen detection.

Notification should be given orally within 24 hours of receiving the laboratory result on 1300 552 406 and in writing within 7 days using the Notify a pathogen detection form [formsfa.bfs.dpi.nsw.gov.au/forms/23640].

When the laboratory advises that a presumptive positive result has been recorded, there is usually a 24-hour delay before the result is confirmed. Businesses should use this time to plan a product recall or withdrawal, in the event that a positive pathogen detection result is confirmed.

What to do if the laboratory finds *L. monocytogenes* above the limit permitted in your product?

You need to answer the following questions:

Where is the product?

- If it hasn't been distributed or sold, put any deliveries on hold.
- If it has been distributed or sold, you should review your food recall plan, as a recall is likely to be needed. Refer to your food recall plan or the FSANZ Recall Protocol to determine who you should contact and when they must be informed.

Between 2019 and 2023, 24% of recalls in Australia were due to microbial contamination. In this category, the leading cause was food contaminated with *L. monocytogenes* (36%).

Where possible, a product being tested should not be released into the marketplace if an adverse result could lead to a recall.

How do you define a 'batch'?

- Is it just one product, or is it a 24-hour full day's production?
- Do other products have to be put on hold or included in the recall?

Note: The *NSW Food Safety Scheme Manual* defines a batch as product made using the same process and/or packaged under the same conditions within a 24-hour period. Products must undergo the same process steps and have the same general characteristics (for example additives, pH and water activity).

Were there any warning signs?

- What was the trend with the environmental sampling? (repeated detection of *Listeria* species in environmental samples indicates a problem)
- Were there any changes to the manufacturing area? For example, renovation, flood.
- Were there any staff changes? For example, new cleaners with new cleaning chemicals.

Does the factory have equipment with a history of harbouring *Listeria*?

For example:

- conveyors (angles, rollers, carriage tracks)
- slicers, dicers, mincers
- rubber seals around doors
- insulation material
- packaging equipment, hand tools
- air conditioning units
- packing tables
- drains, floors, walls
- ice making machines.

Do you have the following conditions that allow *Listeria* to grow?

- Areas where the combination of water, food particles and temperature support the growth of bacteria?
- There is condensate in the production areas
- Equipment that is difficult to clean or cleaned infrequently?
- Equipment which *Listeria* can stick to? For example, a door seal (sometimes there is no obvious food source for *Listeria* to develop)
- Lower temperatures in the production area mean fewer competitors.

Are there any equipment problems?

- Scratched or porous food contact surfaces?
- Poor water drainage from food contact surfaces?
- Seams or small gaps in equipment that cannot be cleaned properly
- Pierced or hollow components where food particles or water can accumulate?

Do you need to do some intensive environmental testing?

- Take several samples after production, but before cleaning and sanitation. Run equipment with moving parts, watch carefully for any debris, turn off the machine and then swab it (contamination on equipment is often invisible until the equipment is operating)
- Sample high-risk equipment and areas
- Sample large areas using sponge or cloth swabs
- Sample equipment as it is being disassembled (cotton-tipped, medical swab sticks are good for sampling hard-to-reach places), carefully document where each sample was taken from.

Consider where *Listeria* is being spread around the production area. For example:

- when and how product is being moved
- when people enter an area or move to a ‘clean zone’
- when carried by water – either liquid or aerosols (bacteria are spread by high pressure cleaners)
- by equipment with moving parts.

For assistance, refer to Appendix 3 and Appendix 4 of the *NSW Food Safety Schemes Manual* [foodauthority.nsw.gov.au/industry/food-safety-schemes-manual].

Listeria Clearance Program

Following confirmation of a positive result for *L. monocytogenes* in your product, a clearance program must be implemented. Please refer to Appendix 1 of the *NSW Food Safety Schemes Manual* for more information.

For dairy businesses:

- Refer to Section 4 of the *Dairy Pathogen Manual* published by Dairy Food Safety Victoria (2016): Undertaking a clearance program.
- An extract of the section can be found in Appendix 7 of *Food Safety Program for small dairy processors* [foodauthority.nsw.gov.au/sites/default/files/2021-11/FI3772110FoodSafetyProgramForSmallDairyProcessors.pdf].

Note: the same requirement may be required for export registered facilities.

More information

FSANZ Food Industry Recall Protocol. foodstandards.gov.au/food-recalls/firp

Guidance for the control of *Listeria monocytogenes* in RTE foods: Part 1 . mpi.govt.nz/dmsdocument/16300-guidance-for-the-control-of-listeria-monocytogenes-in-ready-to-eat-foods-part-1-listeria-management-and-glossary

Guidance on the application of microbiological criteria for *Listeria monocytogenes* in RTE food. foodstandards.gov.au/sites/default/files/publications/Documents/Guidance%20on%20the%20application%20of%20limits%20for%20Listeria%20monocytogenes%20FINAL.pdf

NSW Food Safety Schemes Manual and Appendices foodauthority.nsw.gov.au/industry/food-safety-schemes-manual

- Visit foodauthority.nsw.gov.au
- Email food.contact@dpird.nsw.gov.au
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