

FOOD SAFETY SCHEMES MANUAL



Department of
Primary Industries
Food Authority



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Introduction

The NSW Food Authority (the Food Authority) has prepared the NSW Food Safety Schemes Manual (the Manual) to specify certain requirements for the following Food Safety Schemes under the Food Regulation 2015:

- Dairy food safety scheme
- Meat food safety scheme
- Plant products food safety scheme
- Seafood safety scheme
- Vulnerable persons food safety scheme
- Egg food safety scheme

The Manual applies to all food businesses licensed under these schemes. The requirements referred to in the Food Regulation 2015, detailed within this document, must be complied with.

Frequency of testing

The frequency specified in this Manual is detailed in the number of batches produced by the food business. The definition of a batch is listed on page 3 of this document.

Where testing can be done

Every food and water analysis specified in this Manual must be carried out in a laboratory approved by the National Association of Testing Authorities (NATA) or approved by the Food Authority, for the particular type of analysis to be undertaken. A list of NATA accredited laboratories can be found on the NATA website at www.nata.asn.au and a list of laboratories approved by the Food Authority can be found on the Food Authority's website www.foodauthority.nsw.gov.au.

Testing requirements for other analysis (e.g. environmental and antibiotic testing) are provided in the relevant section.

Reporting of failures

The Food Authority must be notified if any sample analysed fails to meet the standard set out in this Manual:

- verbally within 24 hours after the licence holder becomes aware of the results of the analysis (e.g. by phone), and
- in writing within 7 days after becoming aware of the result of analysis (e.g. by fax, email, letter).

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Definitions

Batch: Product produced in a 24-hour production period

Listericidal process: A process that reduces *Listeria monocytogenes* microorganisms to a safe level

Non-reticulated water: any water supply not piped into a business by either a water utility or local council. It includes rainwater, ground water (e.g. bore water) and surface water.

Ready-to-eat (RTE) food: a food product that is in a form that does not require additional preparation prior to consumption.

Water activity: the unbound water present in a food that can be used by microorganisms for growth

Acronyms

cfu Colony forming units

MAP Modified atmosphere packaging

RTE Ready-to-eat

UCFM Uncooked comminuted fermented meat



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Chapter 1 – Dairy food safety scheme

Sampling and analyses

Licensed dairy businesses must comply with the sampling and analyses provisions of the *Dairy food safety scheme* of the Food Regulation 2015. These requirements are outlined in Table 1.

Table 1: Analyses of dairy products and water

Product to be tested	Test to be conducted	Limit	Frequency
Unpasteurised milk for further processing, i.e. pasteurisation	Antimicrobial drug residues ¹	As per Food Standards Code (FSC) 1.4.2	Every tanker load of milk from farm on arrival at the processing facility
Unpasteurised goat milk for human consumption	<i>Campylobacter</i>	Not detected in 25 mL	Every 20 batches
	<i>E. coli</i>	Not exceeding 3/mL	Every 20 batches
	<i>L. monocytogenes</i> ²	Not detected in 25 mL	Every 20 batches
	<i>Salmonella</i>	Not detected in 25 mL	Every 20 batches
Pasteurised liquid milk products	<i>E. coli</i> ³	Not exceeding 1 /mL	Every 10 batches
	<i>L. monocytogenes</i> ²	Not detected in 25 mL	Every 10 batches
Pasteurised cream products	<i>E. coli</i>	Not exceeding 1 /mL	Every 20 batches
	<i>L. monocytogenes</i> ²	Not detected in 25 mL	Every 20 batches
Cheese	<i>E. coli</i>	Not exceeding 10 /g	Every 20 batches

¹ Testing can be undertaken in-house using approved methods, but not necessarily in a NATA-accredited laboratory.

² The Food Authority has assumed these products will support the growth of *L. monocytogenes*. For further information see Appendix 1.

³The Food Authority may accept an alternative testing arrangement as complying with the requirements of this Manual, as follows:

Every batch of pasteurised liquid milk products is tested for coliforms with a limit of not exceeding 10/mL. If this limit is exceeded then the batch must be tested for *E. coli* with the limit as not exceeding 1/mL

Product to be tested	Test to be conducted	Limit	Frequency
Cheese with post pasteurisation ingredients	<i>E. coli</i>	Not exceeding 10 /g	Every 20 batches
	<i>L. monocytogenes</i> – products that will support the growth of the organism (see Appendix 1)	Not detected in 25g	Every 10 batches
	<i>L. monocytogenes</i> – products that will not support the growth of the organism (see Appendix 1)	Not exceeding 100 cfu/g	Every 10 batches
	<i>Salmonella</i>	Not detected in 25g	Every 10 batches
Soft and semi-soft cheese (moisture content greater than 39% and pH greater than 5.0)	<i>E. coli</i>	Not exceeding 10 /g	Every 10 batches
	<i>L. monocytogenes</i> – products that will support the growth of the organism (see Appendix 1)	Not detected in 25g	Every 10 batches
	<i>L. monocytogenes</i> – products that will not support the growth of the organism (see Appendix 1)	Not exceeding 100 cfu/g	Every 10 batches
	<i>Salmonella</i>	Not detected in 25g	Every 10 batches
Dried milk powder	<i>Salmonella</i>	Not detected in 25g	Every 10 batches
Butter (salted or unsalted butter)	<i>E. coli</i>	Not exceeding 10 /g	Every 20 batches
Butter with post pasteurisation ingredients	<i>E. coli</i>	Not exceeding 10 /g	Every 20 batches
	<i>Salmonella</i>	Not detected in 25g	Every 20 batches

Product to be tested	Test to be conducted	Limit	Frequency
Dairy-based desserts and dips with a pH exceeding 4.5 (e.g. custard, chocolate mousse, kashta)	<i>Coagulase positive staphylococci (CPS)</i>	Not exceeding 100 /g	Every 10 batches
	<i>E. coli</i>	Not exceeding 10 /g	Every 10 batches
	<i>L. monocytogenes</i> – products that will support the growth of the organism (see Appendix 1)	Not detected in 25g	Every 10 batches
	<i>L. monocytogenes</i> – product that will not support the growth of the organism (see Appendix 1)	Not exceeding 100 cfu/g	Every 10 batches
Dairy-based desserts and dips with a pH exceeding 4.5 with post pasteurisation ingredients (e.g. custard, chocolate mousse, kashta)	<i>Coagulase positive staphylococci (CPS)</i>	Not exceeding 100 /g	Every 10 batches
	<i>E. coli</i>	Not exceeding 10 /g	Every 10 batches
	<i>L. monocytogenes</i> – product that will support the growth of the organism (see Appendix 1)	Not detected in 25g	Every 10 batches
	<i>L. monocytogenes</i> – product that will not support the growth of the organism (see Appendix 1)	Not exceeding 100 cfu/g	Every 10 batches
	<i>Salmonella</i>	Not detected in 25g	Every 10 batches
Frozen ice cream and edible ices (e.g. gelato)	<i>E. coli</i>	Not exceeding 10 /g	Every 20 batches
	<i>L. monocytogenes</i>	Not exceeding 100 cfu/g	Every 20 batches
Frozen ice cream and edible ices (e.g. gelato) with post pasteurisation ingredients	<i>E. coli</i>	Not exceeding 10 /g	Every 20 batches
	<i>L. monocytogenes</i>	Not exceeding 100 cfu/g	Every 20 batches
	<i>Salmonella</i>	Not detected in 25g	Every 10 batches

Product to be tested	Test to be conducted	Limit	Frequency
Refrigerated ice cream mixes (e.g. soft serve mix)	<i>E. coli</i>	Not exceeding 10 /g	Every 10 batches
	<i>L. monocytogenes</i> ¹	Not detected in 25g	Every 10 batches
Non-reticulated water used in connection with the production and processing of dairy products	<i>E. coli</i>	Not detected in 100mL	Not treated – Every month
			Treated – Every 6 months

¹ The Food Authority has assumed these products will support the growth of *L. monocytogenes*. For further information see Appendix 1.

Chapter 2 – Meat food safety scheme

Sampling and analyses

Licensed meat businesses must comply with the sampling and analyses provisions of the *Meat food safety scheme* of the Food Regulation 2015. These requirements are outlined in Table 2.

Table 2: Analyses of certain meats, meat products, animal by-products and water

Meat business	Product to be tested	Test to be conducted	Limit	Frequency
Abattoirs	Non-reticulated water used in connection with the slaughtering of abattoir animals	<i>E. coli</i>	Not detected in 100mL	Not treated –Every month
				Treated – Every 6 months
Meat processing plants producing ready to eat (RTE) meat and poultry products	Ready to eat (RTE) meat and poultry, excluding UCFM	<i>E. coli</i>	Not exceeding 3/g	Every 10 batches
		<i>L. monocytogenes</i> – product that will support the growth of the organism (see Appendix 1)	Not detected in 25g	Every 10 batches
		<i>L. monocytogenes</i> – product that will not support the growth of the organism (see Appendix 1)	Not exceeding 100 cfu/g	Every 10 batches
		<i>Salmonella</i>	Not detected in 25g	Every 10 batches
	Sliced or whole packaged RTE meat products, excluding UCFM (vacuum packed or MAP [modified atmosphere packaged] product)	<i>E. coli</i>	Not exceeding 3 /g	Every 10 batches
		<i>L. monocytogenes</i> – product that will support the growth of the organism (see Appendix 1)	Not detected in 25g	Every 10 batches
		<i>L. monocytogenes</i> – product that will not support the growth of the organism (see Appendix 1)	Not exceeding 100 cfu/g	Every 10 batches

Meat business	Product to be tested	Test to be conducted	Limit	Frequency
Meat processing plants producing ready to eat (RTE) meat and poultry products	Sliced or whole packaged RTE meat products, excluding UCFM (vacuum packed or MAP [modified atmosphere packaged] product)	<i>Salmonella</i>	Not detected in 25g	Every 10 batches
		Environmental and work surface testing for <i>Listeria spp</i> ¹ .	No positive detection	Every month (5 samples collected pre and post operations)
	Whole packaged RTE meat product that receives a post pack pasteurisation step	<i>E. coli</i>	Not exceeding 3/g	Every 10 batches
		<i>L. monocytogenes</i> – product that will support the growth of the organism (see Appendix 1)	Not detected in 25g	Every 10 batches
		<i>L. monocytogenes</i> – product that will not support the growth of the organism (see Appendix 1)	Not exceeding 100 cfu/g	Every 10 batches
	<i>Salmonella</i>	Not detected in 25g	Every 10 batches	
Meat processing plant producing uncooked comminuted fermented meat (UCFM)	Uncooked comminuted fermented meat (UCFM) – Finished product (product which is the subject of a pro-forma)	<i>E. coli</i>	Not exceeding 3.6 /g	Every batch
Meat retail premises	Sliced or whole packaged RTE meat products, excluding UCFM (vacuum packed or MAP [modified atmosphere packaged] product)	<i>L. monocytogenes</i> – product that will support the growth of the organism (see Appendix 1)	Not detected in 25g	Every 10 batches

¹ Testing can be undertaken in-house using approved methods, but not necessarily in a NATA-accredited laboratory. For further information refer to the Food Authority's Listeria Management Program document



Meat business	Product to be tested	Test to be conducted	Limit	Frequency
Meat retail premises	Sliced or whole packaged RTE meat products, excluding UCFM (vacuum packed or MAP [modified atmosphere packaged] product)	<i>L. monocytogenes</i> – product that will not support the growth of the organism (see Appendix 1)	Not exceeding 100 cfu/g	Every 10 batches
		Environmental and work surface testing for <i>Listeria spp.</i> ¹	No positive detection	Every month (5 samples collected pre and post operations. See the Listeria management program for more information)
	Whole packaged RTE meat product that receives a post pack pasteurisation step, excluding UCFM	<i>L. monocytogenes</i> – product that will support the growth of the organism (see Appendix 1)	Not detected in 25g	Every 10 batches
		<i>L. monocytogenes</i> – product that will not support the growth of the organism (see Appendix 1)	Not exceeding 100 cfu/g	Every 10 batches
	Uncooked comminuted fermented meat (UCFM) – Finished product (product which is the subject of a pro-forma)	<i>E. coli</i>	Not exceeding 3.6 /g	Every batch
Rendering plants	Rendered animal by-product	<i>Salmonella</i>	Not detected in 25g	Every week (from composite sub samples totalling 250g)
		<i>Clostridium perfringens</i>	Not exceeding 10 /g	Every 12 months (Samples taken over 10 consecutive days after rendering as specified in AS 5008-2007 ²)

1 Testing can be undertaken in-house using approved methods, but not necessarily in a NATA-accredited laboratory. For further information refer to the Food Authority's Listeria Management Program document.

2 AS 5008-2007: Hygienic rendering of animal products

Chapter 3 – Plant products food safety scheme

Sampling and analyses

Licensed plant product businesses must comply with the sampling and analyses provisions of the *Plant products food safety scheme* of the Food Regulation 2015. These requirements are outlined in Table 3.

Table 3: Analyses of seed sprouts, vegetables packed in oil, fresh cut fruit, fresh cut vegetables, unpasteurised juice and water

Product to be tested	Test to be conducted	Limit	Frequency
Seed used for sprouting (pre-screening test)	<i>Salmonella</i> Method: 1L sample of spent irrigation water from a test bath of seeds made up of 3kg taken evenly across the batch	Not detected in 100 mL	Every delivery batch of seeds
Spent irrigation water used for seed sprouting	<i>Salmonella</i> Method: 1L composite sample taken evenly across each sprouting container from each production batch. Irrigation water should be sampled just before harvest or at least 48 hrs after lay.	Not detected in 100 mL	Every 10 batches
Seed sprouts (finished product)	<i>E. coli</i> Method: 1 x 100g sample of any finished single sprout-type from each process line	Not exceeding 100 /g	Every 10 batches
Fresh cut fruit	<i>L. monocytogenes</i> 1	Not detected in 25g	Every 10 batches
	<i>Salmonella</i>	Not detected in 25g	Every 10 batches
Fresh cut vegetables	<i>L. monocytogenes</i> 1	Not detected in 25g	Every 10 batches
	<i>Salmonella</i>	Not detected in 25g	Every 10 batches

1 The Food Authority has assumed these products will support the growth of *L. monocytogenes*. For further information see Appendix 1.

Product to be tested	Test to be conducted	Limit	Frequency
Unpasteurised juice	<i>Salmonella</i>	Not detected in 25g	Every 10 batches
Non-reticulated water used in connection with the production and processing of plant products	<i>E. coli</i>	Not detected in 100mL	Not treated – Every month
			Treated – Every 6 months



Chapter 4 – Seafood safety scheme

Sampling and analyses

Licensed seafood businesses must comply with the sampling and analyses provisions of the *Seafood safety scheme* of the Food Regulation 2015. These requirements are outlined in

Table 4.

Table 4: Analyses of ready to eat seafood products and water

Seafood business	Product to be tested	Test to be conducted	Limit	Frequency
Seafood processor producing RTE seafood	Opened oysters	<i>E. coli</i>	Not exceeding 2.3 /g	Every 20 batches
	Packaged oysters	<i>E. coli</i>	Not exceeding 2.3 /g	Every 20 batches
	Cooked/smoked seafood	<i>L. monocytogenes</i> – product that will support the growth of the organism (see Appendix 1)	Not detected in 25g	Every 10 batches
		<i>L. monocytogenes</i> – product that will not support the growth of the organism (see Appendix 1)	Not exceeding 100 cfu/g	Every 10 batches
All seafood processors	Non-reticulated water used in connection with the production and processing of seafood	<i>E. coli</i>	Not detected in 100mL	Not treated – Every month
				Treated – Every 6 months



Chapter 5 – Vulnerable persons food safety scheme

Sampling and analyses

Licensed vulnerable persons businesses must comply with the sampling and analyses provisions of the *Vulnerable persons food safety scheme* of the Food Regulation 2015.

No routine analysis of food or water is currently required by the Food Authority for licensed vulnerable persons businesses.



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Chapter 6 - Egg food safety scheme

Sampling and analyses

Licensed egg businesses must comply with the sampling and analyses provisions of the *Egg food safety scheme* of the Food Regulation 2015. These requirements are outlined in Table 5.

Table 5: Analyses of eggs, egg products, blended egg product mixtures, and water

What to test	Test to be conducted	Limit	Frequency
Pasteurised egg products	<i>Salmonella</i>	Not detected in 25g	Every 10 batches
Dried egg products	<i>Salmonella</i>	Not detected in 25g	Every 20 batches
Pasteurised blended egg product mixture	<i>Salmonella</i>	Not detected in 25g	Every 10 batches
Non-reticulated water used in the production of eggs, processing of eggs, eggs products, or blended egg product mixtures	<i>E. coli</i>	Not detected in 100mL	Not treated – Every month
			Treated – Every 6 months

Methods of pasteurisation of egg products

Licensed egg businesses that pasteurise egg product and blended egg product mixture must comply with the pasteurisation provisions of the *Egg food safety scheme* of the Food Regulation 2015. These requirements are outlined in Table 6.

Table 6: Pasteurisation equipment requirements – continuous flow pasteurisers

Method of pasteurisation	Pasteurisation equipment requirements	Verification and validation
Continuous flow	The equipment must include an indicating thermometer for product temperature at the end of the holding tube and for the cold product temperature.	Holding tube time must be (externally) validated every 5 years.
		The indicating thermometer must be compared with the continuous monitoring system each time the pasteuriser is operated (corrective action is required if the difference is more than 0.5°C).
		The indicating thermometers must be calibrated every 6 months (corrective action is required if the difference is more than 0.5°C).
	The equipment must include a continuous recording device for the	The following data must be continuously recorded each time the pasteuriser is operated: pasteurising temperature,

Method of pasteurisation	Pasteurisation equipment requirements	Verification and validation
Continuous flow	pasteurisation temperature, sterilisation temperature, cold product temperature, mode of diversion and cleaning time and temperatures.	sterilising temperature, cold product temperature, mode of diversion device, and cleaning time and temperatures.
		The recording thermometers must be calibrated every 6 months (corrective action is required if the difference is more than 0.5°C).
	Raw, partially treated product and cleaning systems must not contaminate the pasteurised product.	Pasteurisers must be pressure tested annually.
		The diversion temperature must be challenged during start-up and recorded each time the pasteuriser is operated.
		The pasteuriser must be sterilised for a minimum of 80°C for 10 minutes during start-up (on the cold side) and recorded each time the pasteuriser is operated.
Pressure differentials must be checked and recorded each time the pasteuriser is operated (either by manually recording the psi on the pressure gauges or the computer system maintaining the pressure differentials).		
Batch	The equipment must include a hinged lid or removable cover and an agitator.	Vessel must be enclosed during pasteurisation.
	The equipment must include a head space thermometer, an indicating thermometer for product temperature, and a continuous monitoring system for time and temperature (e.g. data logger).	The following data must be recorded each time the pasteuriser is operated: continuous pasteurising temperature, headspace temperature at the beginning and the end of the critical temperature cycle, indicating thermometer compared with the continuous monitoring system (corrective action is required if the difference is more than 0.5°C), and pasteurised product cooling time and temperatures (in accordance with clause 7 of Standard 3.2.2 of the Food Standards Code).
		The indicating and recording thermometers must be calibrated every 6 months (corrective action is required if the difference is more than 0.5°C).
Raw, partially treated product and cleaning systems must not contaminate the pasteurised product.	Effective seals on valves and outlets.	

Appendix 1: *Listeria monocytogenes* limits in RTE food

In July 2014, revised microbiological limits for *Listeria monocytogenes* were introduced into the Australian New Zealand Food Standards Code (the Food Standards Code) Standard 1.6.1 - 'Microbiological Limits in Foods'. The limits were revised to acknowledge that RTE food which supports the growth of *L. monocytogenes* increases the risk that the food will contribute to listeriosis, and as such a stricter limit now applies. The revised limits are:

- For RTE foods that support the growth of *L. monocytogenes*, the previous limit 'not detected in 25 gram' will still apply.
- Where RTE foods do not support the growth of *L. monocytogenes*, a new limit 'not exceeding 100cfu/g' can be used.

Applying the new limits

The Food Authority will apply the revised limits as follows:

- Where a business can demonstrate that the RTE product will not support the growth of *L. monocytogenes*, the 'not exceeding 100 cfu/g' applies
- Where a business can not demonstrate that the RTE product will not support the growth of *L. monocytogenes*, the 'not detected in 25g' applies
- Where a RTE food will support the growth of *L. monocytogenes*, the 'not detected in 25g' applies

What are RTE foods?

The Food Standards Code, Standard 1.6.1 defines RTE food as a food that:

- is ordinarily consumed in the same state as that in which it is sold; and
- will not be subject to a listericidal process before consumption; and
- is not one of the following –
 - shelf stable foods
 - whole raw fruits
 - whole raw vegetables
 - nuts in the shell
 - live bivalve molluscs

In terms of the Food Safety Schemes, any food that requires no further processing before consumption would be regarded as RTE.

Demonstrating *L. monocytogenes* growth will not occur

Information on the food characteristics, shelf life and growth rate can be used to determine whether a RTE food does not support the growth of *L. monocytogenes*. These criteria are included in the Food Standards Code, Standard 1.6.1 and are based on international guidelines and standards.



Food characteristics and shelf-life

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

- the food has a pH less than 4.4 regardless of water activity; or
- the food has a water activity less than 0.92 regardless of pH; or
- the food has a pH less than 5.0 in combination with a water activity of less than 0.94; or
- the food has a refrigerated shelf life no greater than 5 days; or
- the food is frozen (including foods consumed frozen and those intended to be thawed immediately before consumption).

While the Food Standards Code, 1.6.1 has defined criteria for pH and water activity, there are other recognised criteria for assessing the shelf stability of processed meats¹. *L. monocytogenes* is considered not to grow in cured and/or dried meat products with the following characteristics:

- pH \leq 5.2 and water activity \leq 0.95 or
- pH <5.0 or
- Water activity <0.90

Businesses will be required to provide evidence of any of the above to demonstrate that the RTE food does not support *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 steps 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.

Growth rate

If none of the above applies, the Food Standards Code, Standard 1.6.1 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 foods 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, business will be required to provide evidence that it 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.

¹ Leistner and Rodel; ICMSF, MLA Guidelines for the safe manufacture of smallgoods



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