FOOD SAFETY PROGRAM FOR SMALL DAIRY PROCESSORS

NSW GOVERNMENT Food Authority

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OCTOBER 2021

Contents

1. Introduction

This Food Safety Program has been prepared by NSW Biosecurity and Food Safety to help provide information and guidance to Small Dairy Processors on how to meet their regulatory requirements. The hazards and control measures identified in these HACCP plans are generic across the industry and are based on existing published research.

Businesses must not assume that this guidance document covers all food safety hazards within their business. Every business owner is to adapt and modify this document to fit their own business, products and market requirements, and to ensure that all potential food safety hazards are identified and controlled.

This Food Safety Program is not intended to be used for infant formula, export registered facilities, unpasteurised goat's milk, raw milk cheese production or any other business carrying out more complex processes.

In NSW, businesses wanting to produce a raw milk cheese must complete a production process pro forma that will be used to assess compliance with Standard 4.2.4. A pro forma is a written description of the steps used by a manufacturer to make a product. Critical information collected in this pro forma will be entered into the Raw Milk Cheese Decision Support Tool to determine if a raw milk cheese complies with Standard 4.2.4.

This Food Safety Program has been developed to identify and control risks in the pasteurisation of raw milk. This is reflected in the flow chart and HACCP tables in Section 2. Appendices 1, 2, 3 and 4 contain guidance information for yoghurt production, cheese production, ice cream/gelato production and cream, butter & sour cream production respectively.

2. Food Safety Management

2.1.Food Safety Statement

_____ is committed to maintaining this Food Safety Program so that:

Insert your name/business name here

- the end product is fit for human consumption, and
- the business complies with the requirements of the NSW Food Act 2003, NSW Food Regulations 2015 and the relevant FSANZ Food Safety Standards, and
- dairy products are produced that meet customer expectations for food suitability and safety.

2.2.Scope & Purpose

Scope

The scope of the food safety program covers purchase and receival of raw milk through to processing of products and on to distribution of finished products to retail outlets. The following table outlines the range of dairy products this manual covers.

A tick in the first column indicates which products are produced by this business.

	Category	Details
☐	Milk	
☐	Dairy-Based Desserts & Dips	
☐	Ice Cream & Edible Ices	
☐	Yoghurt	
☐	Sour Cream	
☐	Cheese	
☐	Cream	
☐	Butter	
☐	Dried Milk Powder	

Purpose

This Food Safety Program has been implemented to minimise the risk of hazards during the handling of food whilst in the businesses' control ensuring that products meet the regulatory requirements of the NSW Food Authority pertaining to the NSW Food Act 2003, NSW Food Regulation 2015 and the FSANZ Food Standards Code Chapters 3 & 4.

2.3.Food Safety Team

This team is responsible for maintaining the Food Safety Program, reviewing and improving procedures and implementing effective controls to manage safety risks.

The team includes:

Name	Position with Business	Date	Signature
E.g. John Smith	*Manager*	*12/4/2021*	*J Smith*

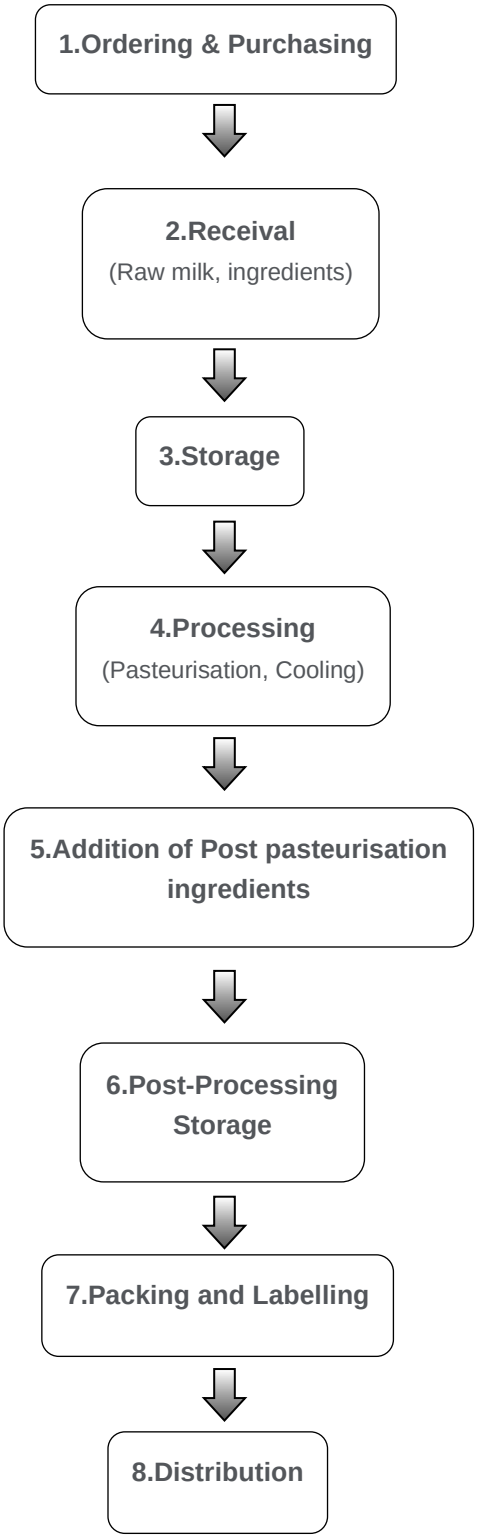
2.4.Product Description and Intended Use

Product Name	***E.g. Pasteurised Milk***
Ingredients used	*Milk from Dairy cow*
Form	*Liquid sold in 1L and 2L sealed bottles*
Packaging	*Food grade plastic bottles with tamper evident seal*
Shelf life	*14 days from date of manufacture*
Storage and transport	*Stored and transported at or below 5°C*
Intended Use	*Ready to consume, no further preparation required*
Consumer	*Intended to be consumed by the general population*
Allergens	*Contains Dairy milk and lactose*

Product Name	***E.g. Cheese***
Ingredients used	*Milk, cream, rennet, salt, starter culture*
Form	*250g, 500g and 1kg hard cheese*
Packaging	*Vacuum sealed food grade plastic*
Shelf life	*6 months from date of manufacture*
Storage and transport	*Stored and transported at or below 5°C*
Intended Use	*Ready to consume, no further preparation required*
Consumer	*Intended to be consumed by the general population*
Allergens	*Contains Dairy milk and lactose*

Product Name	
Ingredients used	
Form	
Packaging	
Shelf life	
Storage and transport	
Intended Use	
Consumer	
Allergens	

2.5.Milk Pasteurisation Flow Chart



2.6.Milk Pasteurisation Hazard Analysis Table

Process Step	Hazard	Control Measure	CCP/CP/SP
1.Ordering and Purchasing	Raw Milk not obtained from licensed supplier	Approved Supplier Program – all milk sourced from a licensed Dairy Farmer	SP
2.Receival	Microbiological (temperature abuse)	Temperature of chilled and frozen food	CCP 1
	Physical (intact and clean packaging)	Inspection at receival	SP
	Chemical (Antibiotic Residue above MRL)	Test every batch of raw milk for Antibiotic residue	CCP 2
3.Storage	Microbiological (temperature abuse)	Refrigerated and Frozen Temperature	CCP 3
	Chemical (Cross contamination of allergens)	Ensure allergens are stored away from other ingredients	SP
4.Processing (4A & 4B)	Physical & Microbiological (contamination from unclean equipment)	Hygiene and Sanitation Program	CP
	Chemical (Residual Chemicals on contact surfaces of pasteurisation equipment)	Adhere to correct cleaning concentrations and operation of CIP/ washing procedure programs in Hygiene and Sanitation Program.	SP
4A. Continuous Flow Pasteurisers	Microbiological (Pasteurisation not	Pasteuriser checks carried out for every	CP

Process Step	Hazard	Control Measure	CCP/CP/SP
	achieved due to faulty equipment)	batch (divert, continuous temperature monitoring, integrity of heat exchangers, accuracy of thermometers)	
	Microbiological (Continuous Flow Pasteurisation time and temperature not achieved)	Milk heated to 72°C for 15 seconds (or equivalent)	CCP 4A
	Chemical (Pasteurisation not sufficient to demonstrate inactivation of enzymes)	Phosphatase reading after pasteurisation for continuous flow pasteurisers	CCP 5
4.B Batch Pasteurisers	Microbiological (Batch Pasteurisation time and temperature not achieved	Milk heated to 72°C for 15 seconds (or equivalent)	CCP 4B
	Microbiological (Cooling time of pasteurised milk in batch pasteuriser may allow production of spores)	Cool pasteurised milk within required time period	CCP 6
5.Addition of post-pasteurisation ingredients	Physical & Microbiological (contamination from unclean equipment	Hygiene and Sanitation Program	SP
	Microbiological (contamination from ingredients)	Approved Supplier program	SP
	Chemical (Allergen contamination)	Allergen program	SP
6.Post-Processing Storage	Microbiological (temperature abuse)	Refrigerated and Frozen Temperature	CCP 3

Process Step	Hazard	Control Measure	CCP/CP/SP
7.Packing & Labelling	Physical (contamination from packaging) Chemical (Allergens)	Receival Inspection program Allergen Program	SP SP
8.Distribution	Microbiological (Temperature Abuse)	Refrigerated and Frozen Temperatures	CCP 7

2.7.Milk Pasteurisation Hazard Audit Table

Process Step	Hazard	Control Measure	Critical Limits	Monitoring Procedures	Corrective Action	Records
2.Raw Milk Receival CCP 1	Microbiological (temperature abuse)	Temperature of Raw milk at receival	< 5°C for raw milk	What: Measure temperature of raw milk How: Calibrated thermometer When: Every batch received Who:	Reject if temperature is above 5 °C.	Form 1 - Daily Production Monitoring
2.Raw Milk Receival CCP 2	Chemical	Antibiotic Test (Pass/Fail)	Antibiotic Residue not detected (Level must be within the maximum permitted level as per schedule 20 of the Food Standards Code)	What: Analyse milk on arrival at facility How: Broad Spectrum or Rapid antibiotic detection system When: Every batch of raw milk received	Reject milk if a positive detection for antibiotic residue occurs.	Form 1 - Daily Production Monitoring

Process Step	Hazard	Control Measure	Critical Limits	Monitoring Procedures	Corrective Action	Records
				Who:		
2.Receival CCP 1	Microbiological (temperature abuse)	Temperature of chilled products	< 5°C for chilled products	What: Measure product temperature How: Calibrated thermometer When: Every delivery Who:	Reject if temperature is above 5 °C.	Form 9 – Product Receival Record
3. Storage (Chilled) CCP 3	Microbiological (temperature abuse)	Temperature of Chilled products	Maximum storage temperature 5°C	What: Record temperatures of refrigerated storage locations How: Read Gauges When: Daily Who:	If storage temp is above 5°C for less than 2 hours, chill product to below 5°C. If product out of temp control for <2 hours, use immediately or discard.	Form 2 – Daily Temperature Monitoring
3. Storage (Frozen) CCP 3	Microbiological (temperature abuse)	Products in Frozen Storage remain Hard Frozen (HF)	Products are Hard Frozen Check label on packaging for required frozen temperature for storage.	What: Record frozen storage temperature How: Feel if products are Hard Frozen (HF) in frozen storage, or record temperature on	If products are not Hard Frozen use immediately or discard. If required frozen temperature has not been maintained,	Form 2 – Daily Temperature Monitoring

Process Step	Hazard	Control Measure	Critical Limits	Monitoring Procedures	Corrective Action	Records
				freezer gauge When: Daily Who:	discard products.	
4. Pasteurisation (Continuous-flow pasteurisers) CCP 4A	Microbiological (growth and contamination from insufficient pasteurisation)	Pasteurisation time and temperature	Heat to a minimum temp of 72°C for 15 seconds (or equivalent) and immediately shock cool.	What: Continuous temperature monitoring How: thermometer / datalogger When: Every batch Who: Pasteuriser Operator	If Pasteurisation is not achieved, re-pasteurise at correct temp and time or discard product.	Form 1 - Daily Production Monitoring
Pasteurisation (Continuous flow Pasteurisers) CCP 5	Microbiological (insufficient pasteurisation)	Phosphatase level pasteurisation	Not exceeding 10g/mL of p-nitrophenol	What: Test for phosphatase activity How: Chemical test When: Every batch Who:	If result shows that pasteurisation was not achieved, re-pasteurise at correct temp and time or discard product.	Form 1 - Daily Production Monitoring
Pasteurisation (Batch pasteurisers) CCP 4B	Microbiological (growth and contamination from insufficient pasteurisation)	Pasteurisation time and temperature	Heat to a minimum temperature of 72°C for a duration of 15 seconds (or equivalent)	What: Continuous temperature monitoring How: thermometer/ datalogger When: Every batch Who: Pasteuriser operator	If Pasteurisation is not achieved, re-pasteurise at correct temperature and time or discard product.	Form 1 - Daily Production Monitoring

Process Step	Hazard	Control Measure	Critical Limits	Monitoring Procedures	Corrective Action	Records
Pasteurisation (Headspace temperature on Batch pasteurisers) CCP 6	Microbiological (growth and contamination from insufficient pasteurisation)	Pasteurisation time and temperature	Heat to a minimum temperature of 72°C for a duration of 15 seconds (or equivalent)	What: Temperature monitoring How: Headspace thermometer When: Beginning and end of the critical temperature cycle Who: Pasteuriser Operator	If Pasteurisation is not achieved, re-pasteurise at correct temperature and time or discard product.	Form 1 - Daily Production Monitoring
7. Post-processing storage CCP3	Microbiological (Microbial growth due to incorrect storage temperature)	Temperature of Chilled and Frozen Products	Maximum storage temperature 5°C, Frozen products are hard frozen	What: Temperature monitoring How: thermometer / gauge When: Daily Who:	If temperature is < 5°C for less than 2 hours, chill product to < 5°C. If product has been out of temperature control for longer than 2 hours, use immediately or discard. If Frozen products have thawed, use immediately or discard.	Form 2 – Daily Temperature Monitoring
8. Distribution CCP 7	Microbiological (Microbial growth due to incorrect storage temperature)	Temperature of Chilled and Frozen Products	Chilled products are maintained below 5°C, Frozen products are hard frozen	What: Temperature monitoring How: thermometer / gauge When: Every delivery Who: Delivery Driver	If product temperature is above 5°C for less than 2 hours, chill product to below 5°C immediately. If frozen products have thawed, they cannot be re-frozen.	Form 10 – Delivery Monitoring

2.7.1. Justification Table

Hazard/Control Measure	Critical Limit	Reference/Justification
Antimicrobial Drug Residues	Level must be within the maximum permitted level as per schedule 20 of the Food Standards Code	Maximum Residue Levels for Agvet Chemicals in Food Standards Code - Schedule 20 Table 1.2 NSW Food Safety Schemes Manual
Pasteurisation of Raw Milk	Heating product to 72°C for a minimum of 15 seconds and immediately shock cooling to a temperature below 4.5°C	Australian Standard 3993 – 2003 Food Standards Code 4.2.4 Clause 15
Receival Temperature	<5°C or Hard Frozen	Food Standards Code 3.2.2 Clause 5 & 6
Storage Temperature	<5°C or Hard Frozen	Food Standards Code 3.2.2 Clause 5 & 6
Cooling Requirement	Cool from 60°C to 21°C within 2 hours, then cool from 21°C to 5°C within a further 4 hours.	Food Standards Code 3.2.2 Clause 7 (3)
Phosphatase Test	< 10g/mL of p-nitrophenol	AS 399-2003 Equipment for the pasteurisation of milk and other liquid dairy products – continuous flow systems. AS2300.1.10 Determination of phosphatase activity

2.7.2. Verification Table

CCP or Support Program	Verification Activity	Frequency	Person Responsible	Records
Continuous flow pasteurisation	See checks and tests outlined in Table 3.1	Daily		Form 1
		6 Monthly		Form 6
		Annually		Service reports
		5 Yearly		
Phosphatase	Verify that pasteurisation has occurred	Every batch		Form 1
Batch pasteurisation	See checks and tests outlined in Table 3.2	Daily		Form 1
		6 Monthly		Form 6
Phosphatase test	Verify that pasteurisation has occurred	6 Monthly		
Calibration– thermometers	Check thermometer is working with +/-0.5°C accuracy	6 Monthly		Form 6
Calibration - pH meters	Calibrated with buffer prior to use every day	Daily when in use		Form 1
Ice Cream/ Gelato Cooling	Record cooling profile to demonstrate compliance with requirement	6 Monthly	Operator	Form 5
Yoghurt pH	External pH	6 Monthly		Form 5
Product Testing	Test in accordance with the frequency required in the Food	1 in every 10 batches or 1 in every 20 batches		NATA certified test

CCP or Support Program	Verification Activity	Frequency	Person Responsible	Records
	Safety Schemes Manual (see section 4.7)	depending on product type		results
Maintenance	Maintenance Checklist	6 Monthly		Form 7
Internal Audit	Internal Audit Checklist	6 Monthly		Form 5

3. Dairy Processing

3.1.Raw Milk Receival

Raw milk must only be supplied by licensed dairy farmers and must be transported by a licensed transport vehicle.

Raw Milk Testing Requirements

Every load of milk that is received by the processing facility from a farm must be tested for antimicrobial drug residues. This test can be undertaken in-house using a validated method. The level of Antimicrobial drug residues must be within the maximum permitted level as per Schedule 20 of the Food Standards Code. This requirement is also stated in Table 1.2 Chemical testing for dairy processing businesses in the NSW Food Safety Schemes Manual. The result of the antibiotic detection test (Negative/Positive) must be recorded on Form 1 – Daily Production Monitoring Form.

Antibiotic Notification

A dairy processing business that detects antibiotics in raw milk must notify the Food Authority verbally within 24 hours and in writing within 7 days using the Notify a residue detection form on the Food Authority's website.

Pasteuriser Operators

Pasteuriser / heat treatment equipment operation is a critical process in the production of safe dairy products. It is essential that operators of this equipment are suitably trained to monitor, interpret records and take corrective and preventative actions when necessary.

Dairy factories should be able to demonstrate that operators of HTST (High Temperature Short Time) pasteurisers have certification from an external training provider. Training in heat treatment under VET Food Processing Certificate program is an option for demonstrating compliance with this requirement.

3.2.Pasteurisation

All cow's milk for human consumption must be pasteurised with the exception of milk used in raw-milk cheese which is not covered in this program. The processing of unpasteurised goat's milk is also not covered by this program. If you intend to process any raw milk dairy products, please contact the Department of Biosecurity and Food Safety directly on 1300 552 406 to discuss.

The minimum requirement for pasteurisation is to **heat to a temperature of no less than 72°C and retaining at such temperature for no less than 15 seconds and immediately shock cooling to a temperature of 4.5°C**; or heating using any other time and temperature combination of equal or greater lethal effect on bacteria. (Food Standards Code – Standard 1.6.2 clause 1) The table in Appendix 5, Heat Treatment Equivalent to Pasteurisation for Common types of Dairy Produce is extracted from the ANZDAC Guidelines for Food Safety Validation and Verification of Heat Treatment Equipment and Processes. This table shows alternative time and temperature combinations to achieve pasteurisation of milk.

All heat treatment equipment shall comply with Food Standards Code Chapter 3 Food Safety Standards 3.2.3, clause 12 and the *Guidelines for Food Safety: Validation and Verification of Heat Treatment Equipment and Processes* as developed by the Australia New Zealand Dairy Authorities. This is a requirement of the NSW Food Regulations clause 67. All dairy factories should provide documented evidence to verify that the heat treatment equipment complies with these standards.

There are two general categories of heat treatment equipment: continuous flow pasteurisers and batch pasteurisation. The requirements for each will be outlined in the next two sections. If a business is using a hybrid system, they will need to obtain schematics and a validation certificate from the manufacturer.

3.2.1. Continuous Flow Pasteurisers

Pasteurisation of Milk and Liquid Products

Continuous flow pasteurisers such as HTST (High Temperature Short Time), UHT (Ultra High Temperature) and vacreators must pasteurise milk by one of the following methods:

- Heating product to a minimum temperature of 72°C for a minimum of 15 seconds and immediately shock cooling it to below 4.5°C
- Heating the product and immediately shock cooling, using any other time and temperature combination of equal or greater lethal effect on bacteria (See Appendix 5)

Test for Pasteurisation of Milk

For cow's milk to be considered as being pasteurised it should not exhibit a phosphatase activity greater than 10g/mL of p-nitrophenol when tested in accordance with AS2300.1.10. This test can be carried out in house and result must be recorded on Form 1.

Equipment Design

HTST (High Temperature Short Time) pasteurisers used for the pasteurisation of milk and manufacture of dairy products should meet the AS 3993-2003, or meet the retro-fit standard described in Appendix C of the ANZDAC guidelines. Businesses must provide evidence of Certification of compliance of HTST pasteurisation equipment to AS3993-2003 conducted by competent technical personnel, such as a qualified engineer. All continuous flow heat treatment systems including UHT (Ultra High Temperature) and vacreators should ensure the following:

- The equipment should include:
    - An indicating thermometer, so temperature can be monitored during processing
    - A continuous recording device for time and temperature
- Equipment needs to ensure that raw or partially treated product cannot contaminate the pasteurised product
- Equipment needs to ensure that services, such as cleaning systems, cannot contaminate the product

Verification of Heat Treatment

Table 3.1 outlines the verification activities that must be carried out when using a continuous flow pasteuriser. Further details about these checks can be found in AS3993-2003. Evidence of these checks must be made available to view during an audit.

Table 3.1 Pasteuriser Checks and Testing Frequencies (AS 3993-2003)

Continuous flow Pasteuriser Checks	Daily	6 Monthly	Annually	5 Yearly
All continuous flow systems (HTST, UHT, Vacreator)				
Compare indicating and recording thermometer readings (within +/- 0.5°C)	✓			
Product temperature monitoring recorded continuously during heat treatment	✓			
Calibration of thermometers and recording devices including accuracy of time recording (within +/- 0.5°C)		✓		
HTST continuous flow systems				
Compare indicating and recording thermometer readings (within +/- 0.5°C)	✓			
Operation of diversion and alarms	✓			
Operation of recording systems	✓		✓	
Thermometer and pressure gauge calibration		✓		
Testing of heat transfer surfaces (e.g. plates) for failure such as pressure testing			✓	
Heat exchanger gaskets			✓	
Verification of holding time by direct measurement				✓
Diversion response time	✓		✓	
Secure Heat Exchanger (such as double skinned plates)				
Leak paths	✓			
Inspect the integrity of leak cavity visually				✓
Secure differential pressures				
Operation of pressure differential diversion	✓			
Pressure differential control systems			✓	
Calibrate Pressure gauges			✓	
Secure medium				
Check medium integrity (visual or conductivity)	✓			

3.2.2. Batch Pasteurising

Pasteurisation of Milk and Dairy Products

Milk must be pasteurised by –

- heating to a temperature of no less than 72°C and retaining at such temperature for no less than 15 seconds; or
- heating, using any other time and temperature combination of equivalent or greater lethal effect on any pathogenic microorganisms in the milk. (See Appendix 5 for equivalent heat treatment time and temperature combinations)
- then it must be cooled immediately in a way that ensures that the growth of microbiological hazards in the milk is prevented or reduced.

If using any other process that provides an equivalent or greater lethal effect on any pathogenic microorganisms, this will not be covered by this Food Safety Program and will need to be addressed in an independent Food Safety Program.

6 Monthly Verification Test for Pasteurisation of Milk

To verify that the batch pasteuriser program is adequately achieving pasteurisation, the pasteurised milk should be tested once every 6 months for phosphatase activity. This test can be performed in-house, and for milk to be considered as being pasteurised it should not exhibit a phosphatase activity greater than 10g/mL of p-nitrophenol when tested in accordance with AS2300.1.10. This result can be recorded on Form 5.

Equipment Design

The design of batch pasteurisers should take into consideration the following:

- Vessels should be enclosed during operation to ensure both product and headspace temperatures meet the required temperature for pasteurisation, and to protect from contamination with condensate or extraneous matter.
- Vat agitation should be sufficient to ensure that the temperature throughout the vat is constant and uniform.
- Outlets and fittings should be designed to ensure there are no dead spots where product may not be effectively heat treated.
- The equipment must include:
    - An indicating thermometer, so that temperature can be monitored during processing,
    - A continuous recording device for time and temperature (such as a data logger), and
    - A head space thermometer
- Equipment needs to ensure that raw or partially treated product cannot contaminate the pasteurised product
- Filters to control particle size, if required
- Equipment needs to ensure that services, such as cleaning systems, cannot contaminate the product

Verification of Heat Treatment

Table 3.2 outlines the verification checks that must be carried out when using a batch pasteuriser. The daily checks will be recorded on Form1.

Table 3.2 Verification Checks for Batch Pasteurisation

Batch Pasteurisation	Daily	6 Monthly
Product temperature monitoring recorded continuously during heat treatment	✓	
Headspace temperature monitoring recording to occur at the beginning and end of the critical temperature cycle	✓	
Compare indicating and recording thermometer readings (within +/- 0.5°C)	✓	
Calibration of thermometers and recording devices including accuracy of time recording (within +/- 0.5°C)		✓

Validation of Heat Treatment

Information should be available to describe how the heat treatment system has been designed to ensure that it is effective. Business must provide information on design of equipment, generally through a schematic diagram, but simple processes may be described. Fill in the details of the pasteurisation system being used in Table 3.3 as outlined in 4.2.1 of the ANZDAC Guidelines for Food Safety Validation and Verification of Heat Treatment Equipment and Processes.

Table 3.3 Details of Pasteuriser System

Pasteuriser System ***(e.g continuous flow, batch, hybrid)***	
Design of equipment *(e.g. schematic diagram or description of simple processes)*	
Describe heating process *(e.g. plate heat exchanger, steam jacketed vessel, stove top*) **Heat Exchanger type** *(duo plate, single plate, other)*	
Position of temperature probes	
Type of agitation	
Product flow and line connections identifying that raw and pasteurised product is separated	
Evidence of assessment of potential processing risks such as dead spots where heat treatment may not be effective	

Other supporting information:

4. Support Programs

4.1.Construction and Maintenance

A maintenance program is a system in place to ensure that there is a planned and documented approach to the ongoing maintenance of premises and equipment. This preventative approach reduces the likelihood of equipment failure during manufacturing operations and minimises contamination of product from faulty or deteriorating structures or equipment.

The maintenance program includes the following information:

• maintenance procedures for premises and equipment (e.g. pasteurisers)

• records to indicate that maintenance procedures have been followed

• corrective actions to be taken if maintenance procedures have not been followed

Outside of the scheduled maintenance program, maintenance issues may arise at any time and need to be dealt with. A record of any such maintenance is kept, identifying the following information:

• date maintenance issue was identified

• description of maintenance issue

• date maintenance issue was or will be rectified.

Dairy Processing is considered a high risk activity and therefore food safety risks must be suitably addressed, such as the likelihood of introducing bacteria into the dairy processing environment. The design of the premises must consider the flow of foot traffic into and out of the facility and must also ensure sufficient separation between raw milk (Low Risk) areas and pasteurised product (High Risk) areas.

For High Risk areas where there is exposed product, footwear, personal protective equipment (PPE) and handwashing facilities must all be considered and made available prior to entry into these areas.

For dairy processing areas with high humidity or temperatures maintained between 5°C and 60°C, condensation can be a potential source of contamination to exposed dairy products. These areas should be designed to minimise the likelihood of causing contamination.

For a comprehensive understanding of the requirements for Design and Construction of a food premises, see Part 3.2.3 of the Food Standards Code Standard - Food Premises and Equipment.

4.2.Approved Supplier Program

All raw ingredients, products and equipment used in the facility are purchased from reputable suppliers. All equipment and products used by the business are suitable for the operations being conducted and do not cause any contamination or spoilage of the food.

Raw milk can only be supplied by businesses licensed with the NSW Food Authority or another state Authority. Other products are obtained from businesses licensed with the NSW Food Authority or another state authority where possible. If this is not possible (e.g. business does not require a licence), a commitment is obtained from the business to supply products (ingredients and packaging) that will not contaminate food, or that comply with the Food Standards Code.

Once reputable suppliers have been sourced, they are always used to ensure products purchased are acceptable. Suppliers should provide documentation demonstrating their compliance with food safety requirements.

The approved suppliers for this business are listed on Form 8 – Approved Supplier List

4.3.Calibration Program

In order to ensure that equipment is working accurately, it must be calibrated regularly.

Pasteurisation Thermometers

Thermometers used to monitor temperatures in the pasteurisation of milk must be calibrated to within +/- 0.5°C of accuracy. Handheld thermometers should be calibrated monthly, and Pasteuriser thermometers should be calibrated every 6 months in accordance with the Pasteuriser checks identified in Table 3.1 and Table 3.2.

Other Thermometers and Gauges

For thermometers and gauges used for other activities in the facility to monitor temperatures, they must be calibrated to +/- 1°C of accuracy.

Gauges should be calibrated every 6 months

Handheld thermometers should be calibrated monthly.

pH meter

If the business is using a pH meter, this will usually need to be calibrated in buffer at pH4 and pH7 prior to every use. Ensure the instructions provided by the manufacturer are detailed in the food safety program.

4.4.Cleaning and Sanitation Program

Proper cleaning and sanitation will decrease the likelihood of food becoming contaminated and will discourage pests from the premises and vehicles.

The business must ensure the premises and equipment are effectively cleaned and sanitised at appropriate times and using the appropriate chemicals and cleaning equipment and at appropriate dosage levels.

Cleaning Removes waste, dirt and grease from equipment, premises and vehicles. Food handling areas are to be cleaned after every use.

Sanitation Reduces the number of microorganisms. Food contact surfaces, equipment and utensils are be sanitised.

The cleaning and sanitising program must be documented within the food safety program and should include the following information:

• the cleaning and sanitising procedures for the premises and equipment - including Cleaning in Place (CIP) Systems

• frequency of cleaning

• personnel responsible for each task

• cleaning equipment, chemicals (including concentrations, temperature and flow rates) and method to be used

• records to indicate that cleaning was carried out (for example daily check list)

• corrective actions to be taken and records of these actions when they occur.

Form 11 – Cleaning Schedule should be modified to reflect the cleaning that will be carried out at this facility.

If a CIP system is to be used at facility, obtain documentation from the manufacturer and chemical supplier to detail how the system is to be used. Business will need to retain a copy of the schematics and a validation report for the system.

4.5.Pest Control Program

The business must ensure that animals and pests including insects, rodents and birds are excluded from the premises.

If pest control is managed internally:

- Any evidence of pests observed in food processing areas is recorded on Form 3 – Daily Pre-Operational Hygiene Checklist
- A record of when bait stations are maintained and checked should be recorded on Form 7 - Six-Monthly Maintenance Checklist
- The location of all rodent and insect bait stations located within the premises is identified on a floor plan
- All chemicals used for pest control are suitable for use in a food premises and are stored away from food handling and food storage areas.

If facility is treated by a pest control company:

- Any evidence of pests observed in food processing areas is recorded on Form 3 – Daily Pre-Operational Hygiene Checklist
- The location of all rodent and insect bait stations located within the premises is identified on a floor plan
- All chemicals used for pest control are suitable for use in a food premises and are stored away from food handling and food storage areas.
- Ensure chemicals are not applied during food processing
- Obtain reports from the pest control company documenting what chemicals were used and noting any pest activity (these reports must be accessible by the business and be available to view during audits).

4.6.Product Traceability and Recall

Along with the approved supplier program to identify the immediate supplier of dairy products, ingredients, packaging, equipment and cleaning/sanitising chemicals, there is also a system to trace all items from inwards goods receival through processing and to distribution. Monitoring records are kept for receipt of delivery including, name of supplier, date, batch numbers and the recording of a temperature check if required. This information is recorded on Form 9.

When ingredients and packaging are used during production, batch numbers and amounts used are recorded on Form 1 – Daily Production Monitoring (Page 2).

The traceability system supports the recall program in the event a product is determined to be unsafe.

A product recall is when unsafe product that has been distributed to other businesses and/or the consumer, is immediately withdrawn from sale to protect the consumer.

Product may need to be recalled if it:

- is not from an approved source,
- is contaminated with harmful microorganisms,
- is contaminated with harmful chemicals,
- is contaminated with physical matter such as glass or wood, or
- has been tampered with.

A recall may be required based on a customer complaint. In this instance, a customer complaint form will be completed.

In the event of a product recall, the recall program is controlled by the manager or delegated employee of the business.

In the event of a product recall, the system as defined in the *Food recall protocol* prepared by Food Standards Australia New Zealand (FSANZ) will be used.

Recall Program

When product is required to be recalled:

1. The business may receive advice from the NSW Food Authority regarding a decision about whether a recall is necessary and if further tests should be performed.
2. Management collates and evaluates all information immediately available, and the nature and extent of the problem.
3. The recall classification is made based on these findings (class 1 or class 2; see below), and the quantity of affected stock is established as well as the location of that stock.
4. If the product is onsite or in company delivery vehicles, it is isolated immediately.
5. If the product has been despatched to customers, management will liaise with businesses regarding a recall from customers. Delivery records can be used for this and can be recorded on Form 10 - Product Delivery Record

Classes of recall

Class 1 Where there is a reasonable probability that the use of or exposure to the product will cause adverse health consequence. For example, presence of *E. coli*, or *Listeria Monocytogenes or Salmonella*, toxic chemical contaminants or harmful foreign bodies.

Class 2 Where use or exposure of the product is not likely to cause adverse health consequences. For example, incorrect labelling, physically undesirable product or product deterioration.

If a class 1 recall is necessary, NSW Food Authority officers are notified by the business immediately. If it is appropriate to the circumstances, information is also sent to the media.

Details notified include:

- classification of the hazard,
- description of the product (product type, batch number, ‘best before’ date),
- quantity of affected product,
- distribution and sales dates,
- method for consumer identification, and
- contact name and telephone number.

The necessity for storage, isolation and disposal of the product is determined by management.

A written record of events and actions is always kept.

Appendix 6 contains an example of the Food Recall Action Plan that is available on the NSW Food Authority Website.

4.7.Testing Requirements

Phosphatase measurement as a verification that pasteurisation has occurred – see Section 3.2
Sampling and analysis

Licensed dairy processing businesses must comply with the sampling and analysis provisions of the Dairy food safety scheme (clause 70) of the Food Regulation 2015.

The Food Safety Schemes Manual (August 2019) lists all mandatory testing for dairy processors including antibiotic residue, water and microbiological testing requirements. All microbiological tests must be carried out at a NATA (National Association of Testing Authorities) approved Laboratory. The testing frequency specified is based on the number of batches produced by the food business. A batch is defined as product made using the same process and/or packaged under the same conditions within a 24-hour period. The required tests are outlined in the following tables:

Table 4.7.1 Chemical testing for dairy processing businesses

Product to be tested	Test to be conducted	Limit	Frequency
UNPASTEURISED MILK			
Unpasteurised milk for further processing including the production of raw milk cheese (raw milk cheese not covered by this food safety program)	Antimicrobial drug residues[1]	Level must be within the maximum permitted level as per Schedule 20 of the Food Standards Code (the Code)	Every load of milk from farm on arrival at the processing facility

[1] Testing can be undertaken in-house using a validated method

Antibiotic notification

A dairy processing business that detects antibiotics in raw milk must notify the Food Authority verbally within 24 hours and in writing within 7 days using the Notify a residue detection form on the Food Authority's website.

Non-reticulated water

For dairy processing businesses using non-reticulated water in connection with the production and processing of dairy products, the water must be treated. Testing must be carried out every 6 months in accordance with Table 4.7.2

Table 4.7.2 Water testing[2] for dairy processing businesses

Product to be tested		Test to be conducted, the limit and frequency
		E. coli
		Not detected or less than 1 cfu in 100 mL
Non-reticulated water used in connection with the production and processing of dairy products (raw milk cheese not covered by this food safety program)	Treated	Every 6 months

[2] Export registered facilities may have different water testing requirements

Product Testing Requirements

Chemical

For dairy products with a pH less than 4.5, the final pH of the product must be recorded for every batch produced. External verification of products with a pH less than 4.5 should be carried out every six months.

Microbiological

For dairy products produced with a pH greater than 4.5, there are minimum testing frequencies that licensed businesses are required to carry out. A batch is defined as product made using the same process or packaged under the same conditions within a 24-hour period. All testing must be done in a NATA approved laboratory. The testing requirements for all dairy products as stated in the Food Safety Schemes Manual are detailed in the tables below. If any sample analysed fails to meet the required standard the Food Authority **must** be notified:

- verbally within 24 hours after the licence holder becomes aware of the results of the analysis (e.g. by phone)
- in writing within 7 days after becoming aware of the result of the analysis using the Notify a pathogen detection form on the Food Authority's website.

If pathogens (for example, *Salmonella spp.* or *L. monocytogenes* and other selected microorganisms such as *Listeria spp*.) are detected during routine testing of a batch of dairy product, this indicates a failure of food safety program and is a potential threat to public health. All product of the same batch/lot number and any product processed on the affected processing line should be considered to be potentially contaminated. Further production on the affected processing line should only commence following a detailed inspection and analysis of the cause, effective decontamination of the affected line, and the identification and implementation of corrective action. Once this is completed, a clearance program involving extensive sampling and product testing must commence on subsequent production runs. Further guidance for carrying out a clearance program can be found in Appendix 7 – Pathogen Clearance Program.

Table 4.7.3 Microbiological testing for dairy processing businesses

Product to be tested (in alphabetical order)		Test to be conducted, the limit and frequency						
		Coagulase positive staphylococci	*E. coli*		*L. monocytogenes*[3]		*Salmonella*	*Cronobacter*
		Not exceeding 100 cfu/g	Not exceeding 1 cfu/mL	Not exceeding 10 cfu/g	Not detected in 25 g or mL[4]	Not exceeding 100 cfu/g[5]	Not detected in 25 g	Not detected in 10 g
BUTTER	Butter & ghee (salted or unsalted)	-	-	Every 20 batches	-	-	-	-
	Butter & ghee with post pasteurisation ingredients added	-	-	Every 20 batches	-	-	Every 20 batches	-
	Cheese	-	-	Every 20 batches	-	-	-	-
CHEESE	Cheese with post pasteurisation ingredients added	-	-	Every 20 batches	Every 10 batches	Every 10 batches	Every 10 batches	-
	Soft and semi-soft cheese (moisture content greater than 39% **and** pH greater than 5.0)	-	-	Every 10 batches	Every 10 batches	Every 10 batches	Every 10 batches	-
CREAM	Pasteurised cream products[6]	-	Every 20 Batches	-	Every 20 batches	-	-	-

[3] See Appendix 9 for characteristics of food and its ability to support the growth of *L. monocytogenes*.
[4] For products that can support the growth of *L. monocytogenes*.
[5] For products that cannot support the growth of *L. monocytogenes*.

[6] The Food Authority has assumed these products will support the growth of *L. monocytogenes* (see Appendix 9).

Product to be tested (in alphabetical order)		Test to be conducted, the limit and frequency						
		Coagulase positive staphylococci	*E. coli*		*L. monocytogenes*[7]		*Salmonella*	*Cronobacter*
		Not exceeding 100 cfu/g	Not exceeding 1 cfu/mL	Not exceeding 10 cfu/g	Not detected in 25 g or mL[8]	Not exceeding 100 cfu/g[9]	Not detected in 25 g	Not detected in 10 g
DAIRY-BASED DESSERTS & DIPS	Dairy-based desserts & dips with pH exceeding 4.5 (e.g. custard, mousse, kashta)	Every 10 batches	-	Every 10 batches	Every 10 batches	Every 10 batches	-	-
	Dairy-based desserts & dips with post pasteurisation ingredients added and pH exceeding 4.5	Every 10 batches	-	Every 10 batches	Every 10 batches	Every 10 batches	Every 10 batches	-
DRIED MILK POWDER	Dried Milk Powder	-	-	-	-	-	Every 10 batches	-
MILK	Pasteurised liquid milk products – plain, flavoured, modified[10]	-	Every 10 batches[11]	-	Every 10 batches	-	-	-

[7] See Appendix 9 for characteristics of food and its ability to support the growth of *L. monocytogenes*.
[8] For products that can support the growth of *L. monocytogenes*.
[9] For products that cannot support the growth of *L. monocytogenes*.
[10] The Food Authority has assumed these products will support the growth of *L. monocytogenes* (see Appendix 9)
[11] The Food Authority may accept an alternative testing arrangement as follows: every batch of pasteurised liquid milk product is tested for coliforms and it should not exceed 10 cfu/mL. If this limit is exceeded, then the batch must be tested for *E. coli* and it should not exceed 1 cfu/mL.

Product to be tested (in alphabetical order)		Test to be conducted, the limit and frequency						
		Coagulase positive staphylococci	*E. coli*		*L. monocytogenes*[12]		*Salmonella*	*Cronobacter*
		Not exceeding 100 cfu/g	Not exceeding 1 cfu/mL	Not exceeding 10 cfu/g	Not detected in 25 g or mL[13]	Not exceeding 100 cfu/g[14]	Not detected in 25 g	Not detected in 10 g
ICE CREAM & EDIBLE ICES	Frozen ice cream & edible ices (e.g. soft serve, gelato)	-	-	Every 20 batches	-	Every 20 batches	-	-
	Frozen ice cream & edible ices with post pasteurisation ingredients	-	-	Every 20 batches	-	Every 20 batches	Every 10 batches	-
	Refrigerated ice cream mixes[13] (e.g. soft serve mix)	-	-	Every 10 batches	Every 10 batches	-	-	-

[12]See Appendix 9 for characteristics of food and its ability to support the growth of *L. monocytogenes*.
[13] For products that can support the growth of *L. monocytogenes*.
[14] For products that cannot support the growth of *L. monocytogenes*.

4.8.Corrective Action

The identification, documentation and close out of corrective actions is a vital component of the Food Safety Program to ensure that when deficiencies in the system are identified, they are corrected, and where possible prevented from re-occurring.

Some corrective action requirements are already documented in this Food Safety Program. These have been identified in the hazard audit table under the corrective actions column and specify standard corrective actions to be taken for each step of the flow chart. Other corrective actions need to be addressed on a more ad hoc basis as problems arise.

When something needs amending or fixing (i.e. a corrective action is required), the following process should be followed:

1. Identification: **what** needs to be fixed? i.e. what needs a corrective action?
2. Keep records: logging that something needs to be fixed
3. Take action: determine **who** can fix a problem and **how** the problem can be fixed, **level of urgency** and a **time frame for completion** of the required correction.
4. Close out: Log the **corrective actions** taken and the date of completion.

Corrective actions can be recorded on appropriate monitoring forms or on the Form 12 – Corrective Action Log. Records of corrective actions are to be kept on site for review during audit.

4.9.Internal Audit Program

Business is required to carry out a review of the food safety program annually. This means reviewing Hazards and ensuring they are adequately addressed. Form 5 – Internal Audit Checklist identifies a number of items that should be included in the annual audit.

4.10. Labelling Requirements

The Food Standards Code states that all food labels must contain specific information. Part 1.2 of the standards sets out this requirement.

All food labels must contain the following information:

- a **name for the food** which is prescribed by the Code, or a name/description that describes the true nature of the food
- the **production 'lot'** of the food prepared under the same conditions and during a particular span of time (date coding can in some circumstances satisfy the requirement for a lot number)
- the **name and street address** in Australia or New Zealand of the supplier of the food (e.g. the manufacturer, marketer or importer)
- a **list of the ingredients**
- a **statement of the shelf life** of the product, as either a 'use-by' or a 'best before' date (see related factsheet Labelling – Date marking, storage conditions and directions for use for further details)
- **directions for use and storage** where these are needed for reasons of health and safety or to ensure shelf life is achieved
- the **nutrition information panel (NIP)**, which shows the quantity of the basic nutrients contained in the food, per serving and per 100g of that food. Certain packaged foods are exempt from the requirement to carry a NIP, e.g. alcoholic beverages, water, herbs and spices, and prepared sandwiches
- the **country of origin** of the product and its ingredients (contact Australian Competition and Consumer Commission)
- **warning and advisory statements** and declaration of the presence of substances which may adversely affect the health of people with allergies and food

Labelling of foods/ingredients in storage:

To ensure good manufacturing practice (GMP) it is important to be able to identify all ingredients in storage and in use.

Storage containers must be labelled with contents/ingredient names, batch numbers, use by/best before dates, allergen declarations to ensure traceability, stock rotation (use older stock before newer stock and ensure use by dates are adhered to), and safe food handling practice.

4.11. Allergen Program

Any business adding ingredients to food, such as addition of nuts, egg, gluten etc must be able to identify potential allergens in the finished product and prevent contamination of other foods. Allergens must also be declared on product labels.

Allergens that must be identified and controlled under the Food Standards Code are listed as follows:

Crustaceans and crustacean products
Egg and egg products
Fish and fish products
Milk and milk products
Peanuts and peanut products
Soybeans and soybean products
Cereals containing gluten and their products (e.g. wheat, rye, barley, oats and spelt)
Sesame seeds and sesame products
Tree nuts and tree nut products other than coconut from the fruit of the palm Cocos nucifera
Lupin and lupin products
Added sulphites in concentrations of 10mg/kg or more

Where there is the addition of other ingredients containing any of the allergens, staff must ensure there is not cross contamination of any products which do not contain the allergen(s).

The following should be considered when there are allergens added to products made at the facility:

- **Construction & maintenance** – where possible, can be constructed so there are clear dividing boundaries within processing areas to prevent cross contamination.
- **Equipment & Utensils** – where possible, separate equipment and utensils can be used to handle, prepare, process, store and package products containing allergens.
- **Hygiene** – where it is not possible to construct clear dividing boundaries at a facility, a hygiene and sanitation program can help manage risks associated with allergen cross contamination. All rooms, equipment, utensils, clothing etc should be thoroughly cleaned and sanitised before and after use to minimise the risk of cross contamination.
- **GMP** - Changing clothing, boots/installation of boot wash, changing PPE and adhering to hand washing procedures to prevent cross contamination.
- **Storage** – ensuring products containing allergens are stored in a way which prevents cross contamination. This involves separate designated storage areas for product containing allergens (including raw materials and end product).
- **Labelling** – ensuring all raw materials and end products containing allergens are labelled clearly during storage.

- Where possible, preventing allergens being brought on site – adopting a policy whereby no personal food/drink of staff are to be brought into processing areas with all personal food and drink consumed in designated areas.

4.12. Staff Training Program

A food business should ensure that persons undertaking or supervising food handling operations have:

(a) skills in food safety and hygiene matters; and

(b) knowledge of food safety and food hygiene matters, commensurate with their work activities

(Food Standards Code 3.2.2 clause 30)

All staff are trained to enable them to perform their job safely and competently. Training is conducted internally or by an external organisation**.**

All staff are trained in:

- personal hygiene,
- food handling procedures, and
- cleaning and sanitation (for applicable staff).

Staff training is recorded on Form 4 - Training Register.

Special training may also be carried out with staff responsible for food safety monitoring (including operation of pasteuriser, CCP recording, internal auditing, testing and sampling etc.). This training is also recorded on the training register.

Personal hygiene practices

All staff members are given information on good personal hygiene practice and how to wash their hands properly.

Food handling procedures

All staff members are given training and shown good food handling practices relevant to their job.

New staff members are shown how to perform their duties to ensure good food handling procedures are followed.

Cleaning and sanitation procedures

All staff members are given training on how to clean and sanitise the equipment they use. This includes:

- correct storage and handling of chemicals,
- correct make up of the chemicals, and
- procedures for cleaning.

Pasteuriser operator

As stated in Section 3.1, pasteuriser / heat treatment equipment operation is a critical process in the production of safe dairy products. It is essential that operators of this equipment are suitably trained to monitor, interpret records and take corrective and preventative actions when necessary.

Dairy factories should be able to demonstrate that operators of HTST pasteurisers have completed suitable training and been assessed as competent. Training in heat treatment under VET Food Processing Certificate Program is an option for demonstrating compliance with this requirement.

4.13. Personal Hygiene Program

All food handlers must comply with the health and hygiene standards of the Food Standards Code, Standard 3.2.2, Division 4.

Clean clothing must be worn by anyone entering the food handling area. Coverings such as aprons or coveralls must not be worn outside the food handling area. Disposable coverings must be changed and disposed of regularly, especially when changing work duties, taking breaks and when going to the toilet.

Hair must not be able to contaminate food. To achieve this, hair must be secured or enclosed in a hair net, clean hat or beard snood.

All people must wash their hands on each occasion when they enter the processing area or whenever the hands become soiled or contaminated. Where gloves are used, they must be kept clean and intact.

Fingernails must be kept short and clean with no nail polish or false nails.

Only plain wedding bands can be worn in the food processing area.

People with sores, boils, cuts or abrasions must not handle food unless: the affected area is covered with a waterproof adhesive dressing, and the food cannot be contaminated.

All persons must ensure they do not:

- eat over food or food handling surfaces,
- smoke in food handling areas, or
- sneeze, blow or cough over uncovered food or food contact surfaces.

All personnel handling food shall be knowingly free from infectious diseases or skin conditions, which may be transmitted through the handling of food products.

Any personnel suffering from a transmittable condition or symptoms of foodborne disease (such as diarrhoea or vomiting) shall not engage in food handling if there is any possibility of them contaminating the products being processed or delivered.

Footwear

Footwear is a potential source of contamination for dairy processors. If footwear is worn outside processing areas staff are able to walk potentially hazardous pathogens into the processing environment. To help minimise this risk, separate footwear should be worn inside high risk processing areas, e.g. gumboots or boot/shoe covers.

Alternatively, footbath stations can be installed on entry into high risk processing areas to de-contaminate footwear. If this option is preferred, only shoes made from materials which can be effectively cleaned and sanitised should be worn through the footbath. An appropriate food grade disinfectant should be used in the foot bath to the manufacturer's instructions.

Forms

Form 1 – Daily Production Monitoring

Form 2 – Daily Storage Temperature Monitoring

Form 3 - Daily Pre-Operational and Hygiene Inspection Checklist

Form 4 – Training Register

Form 5 – Internal Audit Checklist

Form 6 – Calibration Record

Form 7 – Six Monthly Maintenance Checklist

Form 8 – Approved Supplier Register

Form 9 – Product Receival Record

Form 10 – Product Delivery Record

Form 11 – Cleaning Schedule

Form 12 – Corrective Action Log

Form 1 – Daily Production Monitoring (Page 1)

Product:	**Date:**
	Batch Number:

Raw Milk test results

Receival Temp	
Milk Volume	

Antibiotic residue results

P- Positive
N-Negative

Pasteurisation

Batch Pasteurisation

	Y/N
Recording System Check Continuous temperature monitorng of product	
Difference in headspace thermometer reading and product thermometer reading not greater than 0.5°C	

Pasteurisation Target *E.g. 72°C for 15 sec or equivalent*

Temp
Time

Pasteurisation	Start	Finish
Temp		
Time		
Headspace Thermometer		

Continuous Flow Pastuerisers

	Y/N
Recording System Check Continuous temperature monitorng of product	
Difference in product temp thermometer and recording thermometer reading not greater than 0.5°C	
Diversion check	

Pasteurisation Target *E.g. 72 °C for 15 sec or equivalent*

Temp
Time

	Initial	Final
Phosphatase Reading		

Ensure recording charts are made available to view during audits

Pasteurisation Carried out by
Signature

Processing

Heating Parameters

(Time/Temp)

Heating	Start	Finish
Time		
Temp		

Cooling Parameters

E.g. Cooling from 60°C to 21°C within 2 hours and cooling from 21°C to 5°C within a further 4 hours.

(Time/Temp)

Cooling	Time	Temp
Start		

Form 1 – Daily Production Monitoring (Page 2)

Product:	**Date:** **Batch:**

Ingredients	**Batch Codes**
Starter culture	

Finished Product Details

Amount Produced	
Package Size	
Use By Code	

	pH4	pH 7
pH Calibration		
Final pH		

Additional Notes / Corrective Actions

Form 1 – Example: Continuous Flow Pasteurisation

Product *Full Cream Milk*	**Date:** *1st August 2021*
	Batch Number: *150821*

Raw Milk test results

Receival Temp	*2.3°C*
Milk Volume	*600 L*

Antibiotic residue results

P- Positive
N-Negative

N

Pasteurisation

Batch Pasteurisation

	Y/N
Recording System Check Continuous temperature monitorng of product	
Difference in headspace thermometer reading and product thermometer reading not greater than 0.5 °C	

N/A

Pasteurisation Target *for 15 sec or equivalent*

T

sation	Start	Finish
Temp		
Time		
Headspace Thermometer		

Continuous Flow Pastuerisers

	Y/N
Recording System Check Continuous temperature monitorng of product	*Y*
Difference in product temp thermometer and recording thermometer reading not greater than 0.5 °C	*Y*
Diversion check	*Y*

Pasteurisation Target *E.g. 72 °C for 15 sec or equivalent*

Temp	*73.5°C*
Time	*15 Seconds*

	Initial	Final
Phosphatase Reading	*2500munits/L of ALP*	*12munits/L of ALP*

Ensure recording charts are made available to view during audits

Pasteurisation Carried out by:
Signature *J Smith*

Processing

Heating Parameters
(Time/Temp)

N/A

Heating		Finish
Time		
Temp		

Cooling Parameters E.g. Cooling from 60-21° C within 2 hours and cooling from 21-5° C within a further 4 hours.
(Time/Temp) *Shock cooling to below 4.5°C*

N/A

Cooling	Ti	Temp
Start		

Form 1 – Example: Batch Pasteurisation

Product	*Yoghurt*	**Date:**	*7/01/2021*
		Batch Number:	*701*

Raw Milk test results

Receival Temp	*3.6°C*
Milk Volume	*1000 L*

Antibiotic residue results

P- Positive N-Negative	*N*

Pasteurisation

Batch Pasteurisation

	Y/N
Recording System Check Continuous temperature monitorng of product	*Y*
Difference in headspace thermometer reading and product thermometer reading not greater than 0.5° C	*Y*

Pasteurisation Target	*E.g. 72° C for 15 sec or equivalent*
Temp	*80°C*
Time	*15 minutes*

Pasteurisation	Start	Finish
Temp	*80.1°C*	*80.7°C*
Time	*9:06am*	*9:21am*
Headspace Thermometer	*80.0°C*	*80.5°C*

Continuous Flow Pastuerisers

	Y
Recording System Check Continuous temperature monitorng of product	
Difference in product temp thermometer and recording thermometer reading not gre than 0.5° C	
Diversion check	

Pasteurisation Target	C for 15 sec or equivalent
Temp	
Time	

	Initial	Final
Ph		

E cording charts are made available to view during audits

N/A

Pasteurisation Carried out by:

Signature *J. Smith*

Processing

Heating Parameters (Time/Temp)	

Heating	t	Finish
Time		
Temp		

Cooling Parameters (Time/Temp)	E.g. Cooling from 60-21°C within 2 hours and cooling from 21-5° C within a further 4 hours. *Cool to incubation temp 40°C within 30 minutes*

Cooling	Time	Temp
Start	*9:21am*	*80.7°C*
Incubation Temp	*9:50am*	*40.1°C*

N/A

Form 2 – Daily Storage Temperature Monitoring

Location	Temperature (°C)							Date Corrective Action / Notes	Initials
	M	T	W	T	F	S	S		
Coolroom (<5°C)									
Freezer (Hard Frozen)									

Location	Temperature (°C)							Date Corrective Action / Notes	Initials
	M	T	W	T	F	S	S		
Coolroom (<5°C)									
Freezer (Hard Frozen)									

Location	Temperature (°C)							Date Corrective Action / Notes	Initials
	M	T	W	T	F	S	S		
Coolroom (<5°C)									
Freezer (Hard Frozen)									

Form 3 – Daily Pre-Operational & Hygiene Checklist

Daily Pre-Operational & Hygiene Checklist			Date:					
Item (Page 1)	**M**	**T**	**W**	**T**	**F**	**S**	**S**	**Corrective Action & Comments**
Footbaths clean and free from dirt & debris with suitable disinfectant made up to manufacturer's instructions								
Adequate PPE available including hair nets, beard nets, overalls, foot covering/boots								
Hand washing basins clean and accessible with warm running water, soap & paper towel								
Premises including storage areas, display cases, shelving/benches/food preparation areas are clean								
Thermometers operational and clean								
Cool rooms/freezer rooms/refrigerators/freezers and all associated fittings, fixtures & components are clean								
Equipment & utensils and associated fittings, fixtures & components are clean								
Floors, walls, ceilings are clean								
Fans are clean and free from dust & debris								
Light fittings and fixtures are clean								
Drains working and clean								
Amenities, storage & loading areas clean								
Raw materials & food ingredients labelled & stored to prevent cross contamination								

Daily Pre-Operational & Hygiene Checklist			Date:					
Item (Page 2)	**M**	**T**	**W**	**T**	**F**	**S**	**S**	**Corrective Action & Comments**
Packaging stored to prevent cross contamination								
Food transport vehicles – food storage areas clean								
No pest activity sighted								
Equipment, walls, ceilings & other surfaces inspected and free from condensation and risk of cross contamination of food								
Food grade cleaning chemicals available, in date and stored to prevent cross contamination with food								
Cleaning equipment including mops, squeegees, brooms etc clean and stored to prevent cross contamination								
CIP system (if used) operational and ensuring effective cleaning/rinse cycles								
CIP cleaning chemicals available, in date & stored to prevent cross contamination with food								
Pasteurisation equipment is clean and product contact surfaces are free from residue								
Inspection carried out by (initials):								

Comments / Further corrective action:

Form 4 - Training Register

Name **(Of person being trained)**	Position **(E.g. Manager, Pasteuriser operator, cleaner)**	Type of Training **(E.g. FSP, TAFE course, HACCP, on-the-job)**	Evidence of Training **(E.g. Certificate, Diploma, tested by trainer)**	Signature **(Of person being trained)**	Employment Start Date **(dd/mm/yyyy)**	Trained By **(Insert name of Trainer or Institution)**	Signature **(Of Trainer)**	Date of Training **(dd/mm/yyyy)**

Form 5 – Internal Audit Checklist

Audit check list completed by:		**Date:**
Internal Audit Checklist (Page 1)	**Response: Yes/No**	**Corrective action & Comments**
1. Management responsibility Licence current on display at facility? Are the members of the HACCP team still current?		
2. HACCP plan Have new products been introduced? Has FSP been updated to include new products? Are the flow diagrams correct and present for each product? Is the hazard analysis still valid? Have the CCPs for each significant hazard been identified? Are corrective actions being completed & documented?		
3. Verification Continuous Flow Pasteurisers: Have checks been carried out in accordance with Table 3.1 Verification Checks for Continuous Flow Pasteurisation? (Is documentation available?) Batch Pasteurisers**:** Has pasteurised milk been tested for phosphatase activity every 6 months? Have checks been carried out in accordance with Table 3.2 Verification Checks for Batch Pasteurisation?		
4. Construction & Maintenance Has the Six-monthly maintenance checklist been completed? Have refrigeration services been completed?		
5. Approved Supplier Program Have all approved suppliers been identified with approved supplier register up to date?		
6. Cleaning & Sanitation Are all cleaning & sanitation chemicals in date, stored appropriately and adequate? Is the cleaning schedule adequate?		
7. Calibration Have all thermometers been calibrated to within +/- 0.5°C (pasteurisation) or 1°C (other thermometers) ? Has the calibration of the cool rooms, freezers and vehicles been completed?		

Audit check list completed by:		Date:
Internal Audit Checklist (Page 2)	**Response: Yes/No**	**Corrective action & Comments**
8. Pest control Is the pest control program adequate? Is the bait station map up to date? Are records of pest control activities available?		
9. Product traceability & recall Are all ingredients & packaging traceable from receival to despatch? Are recall contacts still current? Has a recall been carried out since last audit? Are recall records available?		
10. Testing Requirements For raw milk receivals: have all receivals been tested for antibiotic residue with records kept? Has there been any positive antibiotic tests in the last 6 months? Was the NSW Food Authority notified within 24 hours? Has testing been completed to the requirements of the Food Safety Schemes Manual? Are all test results available? Has there been any microbiological test results out of critical limits in the last 6 months? Was the NSW Food Authority notified within 24 hours? Has the pathogen clearance program been followed, if required?		
11. Labelling Are all ingredients identifiable & labelled? Are all finished products labelled to the requirements of the Food Standards Code?		
12. Allergen program Is allergen management program adequate? Are allergen management procedures being followed?		
13. Personal hygiene program Have all personal hygiene procedures been adhered to?		
14. Internal Audit Has internal audit been completed every 6 months?		
15. Training Are all staff members adequately trained? Are training records up to date for all staff?		

Audit check list completed by:		Date:
Internal Audit Checklist (Page 3)	**Response: Yes/No**	**Corrective action & Comments**
6. Monitoring records Are the following monitoring records being completed to the frequency required by the FSP? • Product receival records • Pre-operational hygiene checklists • Production Monitoring records • Temperature monitoring records • Product delivery records		

Comments/Further corrective action:

Form 6 – Calibration Record

Date	Equipment Calibrated	Equipment ID	Calibration Results			Initials	Comments
			Reference Equipment Reading	Equipment Reading	Variance		

Form 7 – Six- Monthly Maintenance Checklist

Audit check list competed by:		Date:
Maintenance Checklist (Page 1)	**Response: Yes/No**	**Corrective action & Comments**
Ceiling and walls (including in cool rooms/freezer rooms) maintained smooth, impervious, effectively sealed and free of damage e.g. flaking paint, holes, cracked tiles.		
Floors and coving (including in cool rooms/freezer rooms) maintained free of cracks and damage and unable to absorb grease, food particles or water and free from water pooling.		
Designated hand wash basins are operating and accessible, have warm water, soap and paper towels available		
Fixtures & fittings maintained free from rust & damage		
All wood is smooth & waterproof sealed		
Benches free from damage and deterioration e.g. rust		
Racks, rails and shelves free from rust, corrosion and flaking paint		
Shatter proof covers on lights and free of damage		
Fly screens intact and undamaged		
Equipment free from rust, corrosion and flaking paint		
Sinks, taps and plugs free from damage		
Doors, handles and seals in good condition with no gaps allowing entry of pests (including cool rooms/freezer rooms)		
Cooling unit free from rust, corrosion, and peeling paint, and drainage contained		
Premises construction and stored materials not providing harbourage or entry of pests/vermin		
Storage areas - Chemicals, cleaning equipment, dry ingredients and packaging all stored to prevent cross contamination		
External doors/openings prevent entry of pests, windows have flyscreens attached		

Audit check list competed by:		Date:
Maintenance Checklist (Page 2)	**Response: Yes/No**	**Corrective action & Comments**
Pest control - Rodent and insect bait stations are maintained, correctly situated and not causing contamination		
Vehicles used to transport food maintained free from damage & able to be effectively cleaned		
Vehicle refrigeration units serviced		
Pasteurisers maintained free from cracks, damage, rust and flaking paint		
Seals on pasteurisers are in good condition		

Comments/Further corrective action:

Form 8 – Approved Supplier Register

Supplier	Goods supplied	Contact details	Other details (e.g. NSWFA licence #)

Form 9 – Product Receival Record

Date	Product	Supplier	Temp (°C)	Accept/ Reject	Corrective Action/ Notes	Initials

Form 10 – Product Delivery Record

Date	Product	Batch Number	Temp (°C)	Customer	Corrective Action/ Notes	Initials

Form 11 – Cleaning Schedule (Page 1)

Daily Cleaning				
Task	**Task Completed (Yes / No)**	**Date Completed**	**Sign Off**	**Corrective Action**
Example: CIP Pasteuriser	*Yes*	*10/8/21*	*Fred Flack*	*NA*
Example: floor of processing area	*No*	*NA*	*Rosie Edwards*	*Burst pipe, water had to be turned off before end of shift. Emergency plumber called and fixed pipe 10/8/21 PM. Floor cleaned next day prior to production start.*

Corrective Actions:

Form 11 – Cleaning Schedule (Page 2)

Weekly Cleaning			Week Commencing Date:	
Task	**Task Completed (Yes / No)**	**Date Completed**	**Sign Off**	**Corrective Actions**
Example: Waste bins and bin storage area	*Yes*	*10/8/21*	*Jason Anderson*	*NA*
Example: Clean cool room floor	*Yes*	*13/8/21*	*Fred Flack*	*NA*

Corrective Actions:

Form 11 – Cleaning Schedule (Page 3)

Monthly Cleaning												
Task	**Monthly Task Completed Yes/ No (& Initials)**											
	Jan	**Feb**	**Mar**	**Apr**	**May**	**Jun**	**July**	**Aug**	**Sep**	**Oct**	**Nov**	**Dec**
Example: Clean Coolroom fans	*Yes R.E.*	*Yes R.E.*	*Yes R.E*	*Yes F.F.*	*Yes F.F.*	*Yes F.F.*	*Yes J.A.*	*Yes F.F.*	*Yes F.F.*			
Example: Clean light covers	*Yes J.A*	*Yes F.F.*	*Yes R.E.*	*Yes F.F.*	*Yes F.F.*	*Yes F.F.*	*Yes J.A.*	*Yes F.F.*	*Yes F.F.*			

Corrective Actions:

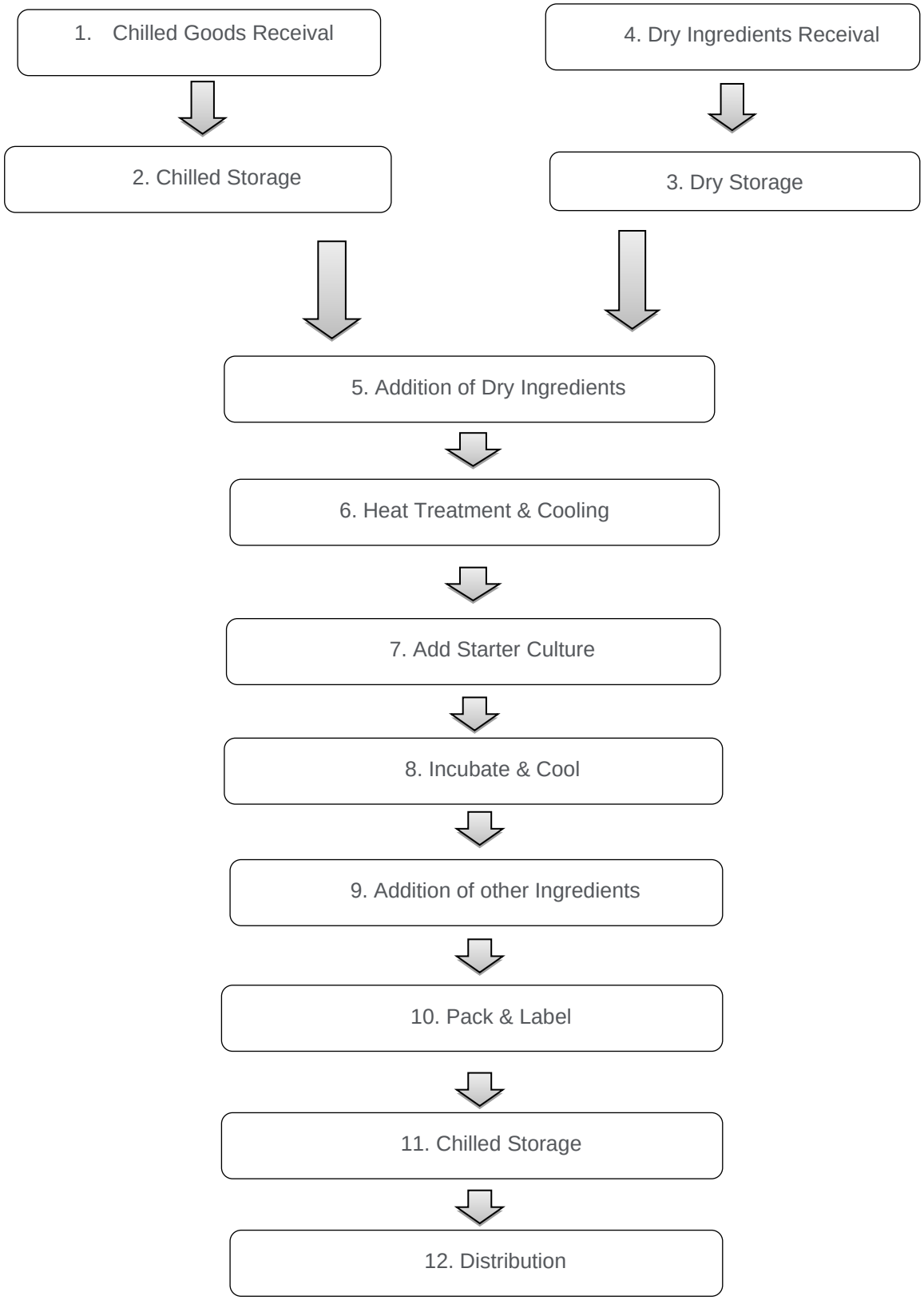
Form 12 – Corrective Action Log

CA#	Date	Issue	Action Required	Person Responsible	Proposed Completion Date	Close Out Date
001	*15/04/21*	*E.g. Handwash basin leaking*	*Replace drainage pipe, upgrade seals*	*H. Simpson*	*28/4/2021*	*27/4/2021*

Appendices

Appendix 1 – Yoghurt Production

Yoghurt Production Flowchart



Hazard Analysis Production for Yoghurt

Step	Hazard	Control Measure	Rationale	CCP / CP/ SP
1. Chilled Goods Receival	Physical (foreign objects entering open packaging)	Inspect ingredients on arrival. Reject ingredients if packaging damaged.	Open packages allow entry of foreign objects	SP
	Microbial (chilled ingredients received at temperature>5°C	Check temperature of ingredients at delivery. If >5°C reject product.	Microbial growth will rapidly occur between the temperatures of 5°C - 60°C	CP
2. Chilled Goods Storage	Microbial (High temperature)	Check temperature of coolroom. Regularly calibrate coolroom thermometer and preventative maintenance of refrigeration system	Microbial growth will rapidly occur between the temperatures of 5°C - 60°C	CP
	Microbial (dirty room)	Adhere to cleaning program	Contamination from mould growth and foreign matter if cool room is not clean	SP
	Physical (Food left uncovered in coolroom)	Cover all food in cool room	Prevention of cross contamination, foreign objects and condensation	SP
	Chemical (residual chemicals from cleaning)	Adhere to correct cleaning concentrations in cleaning program	It is unlikely with correct measurements that residues will remain	SP
3. Receival of dry ingredients & packaging material	Physical (Foreign objects entering open packages)	Inspect ingredients upon arrival. Reject Ingredients where the packaging is badly damaged.	Open packages allow entry of foreign objects.	SP
	Microbial (Dry ingredients packages split at receival allowing entry for pathogens.	Inspect ingredients upon arrival. Reject ingredients where the packaging is badly	Open packages allow entry of foreign objects as well as create an environment suitable for microbial growth.	SP

Step	Hazard	Control Measure	Rationale	CCP / CP/ SP
		damaged.		
4. Storage of dry ingredients	Physical & Microbial (Vermin & insects invading the storage area. Chemical (Dry Ingredients stored too close to cleaning chemicals)	Bait stations placed around facility and in storage areas to control vermin and insects (Pest Control Program) Keep cleaning chemicals stored away from dry ingredients	Having a pest control program in place prevents infestation of pests Having a separate storage area for chemicals and raw materials reduces the risk of chemical contamination.	SP SP
5.Addition of dry ingredients	Microbial (dirty utensils and work area used for adding ingredients)	Visually inspect equipment prior to use in production	Cleaning programs ensure that equipment is clean. If the equipment is not visually clean, manual cleaning will resolve the problem.	SP
	Microbial (Ingredients that are being added are contaminated with bacteria)	Use of Approved Suppliers/ Certificates of Analysis, Certificates if Conformance	Contaminated ingredients will cause the final product to be contaminated	SP
	Physical (Addition of foreign objects from packaging)	Production staff shall demonstrate good manufacturing practices.	Packaging has been inspected at delivery and staff shall visually check the adding of ingredients	SP
	Chemical (Allergens)	Ensure that bulk ingredients that are free of allergens are not cross contaminated with allergens.	Storage and use of allergens must be carefully considered so that final product labels accurately reflect products containing allergens.	SP
6.Heat Treatment and Cooling	Chemical (residual cleaning chemicals remain in mixing	Adhere to correct cleaning concentrations in cleaning program	It is unlikely with correct measurement that residues will remain.	SP

Step	Hazard	Control Measure	Rationale	CCP / CP/ SP
	equipment) Physical & Microbial (Residual product from previous manufacturing Microbial (Heat treatment temperatures are not high enough to kill pathogenic bacteria	Visual inspection of equipment prior to use. If equipment dirty, reclean manually where necessary. Continuous monitoring of time and temperature throughout heat treatment process.	Cleaning programs ensure equipment is clean. If not clean, manually reclean. Correct time and temperature combinations will destroy pathogenic bacteria	SP CCP 1
7.Add Starter Culture	Microbial (contaminated starter added to heated milk)	Obtain only starter from reputable supplier that provides Certificate of Analysis (CofA)	Starter already examined on receipt of chilled goods.	SP
8.Incubate and Cool	Microbial (incubation conducted at incorrect temperature) Microbial (yoghurt taken out of incubation before reaching correct pH)	Incubation of yoghurt is controlled and monitored through use of calibrated thermometer. pH of yoghurt is checked and is not removed from incubation until a pH of <4.5	Incorrect incubation temperatures could promote growth of unbeneficial bacteria. Incorrect Incubation temperatures could promote growth of unbeneficial bacteria	CCP 2 CCP 3
9. Mix and Add other ingredients (fruit & nuts)	Microbial (dirty utensils and work area used for adding ingredients Microbial (Micro contamination from other ingredients	Visually inspect equipment prior to use Approved Supplier Program. Certificate of Analysis, Certificate of Conformance pH of yoghurt	Cleaning programs ensure that equipment is clean. If the equipment is not visually clean, manual cleaning will resolve the problem. Approved supplier programs ensure ingredients are only accepted if they meet the required specifications.	SP SP

Step	Hazard	Control Measure	Rationale	CCP / CP/ SP
10. Pack and Label	Microbial & Physical (dirty utensils and work area used for packing ingredients)	Visually inspect equipment prior to use in production	Cleaning programs ensure that equipment is clean. If the equipment is not visually clean, manual cleaning will resolve the problem.	SP
	Physical (incorrect use by code applied by operator)	Product Traceability and Recall Procedure	Incorrect labelling of use by date of product alters the correct date which the product will perish and may be harmful to consumers.	CP
	Physical & chemical (packaging contains foreign bodies or chemicals	Ensure all packaging is from approved suppliers and is food grade	Certificate of analysis from supplier ensures the packaging is food grade	SP
11.Cold Storage of Yoghurt	Microbial (Coolroom operating at a high temperature	Check temperature of coolroom. Preventative maintenance of refrigeration unit.	Yoghurt must be stored at <5°C to prevent spoilage bacteria from growing pH inhibits pathogenic bacteria.	CCP 4
	Microbial (dirty coolroom)	pH of yoghurt Adhere to cleaning program	Contamination from mould growth and foreign matter if cool room is not clean.	SP
	Physical (food left uncovered in coolroom)	Cover all food in coolroom	Prevention of cross contamination, foreign objects and condensation falling into the product.	SP
	Chemical (Residual chemicals from cleaning)	Adhere to correct cleaning concentrations in cleaning program	It is unlikely with correct measurement that residues will remain.	SP
12.Distribuion of Yoghurt	Microbial (Yoghurt delivered at too	Temperature of delivery van	Yoghurt kept at temperatures >5°C for	CCP 5

Step	Hazard	Control Measure	Rationale	CCP / CP/ SP
	high a temperature)	pH of yoghurt	extended periods of time will promote growth of spoilage bacteria. pH inhibits pathogenic bacteria	
	Microbial (Dirty delivery container or delivery van	Adhere to cleaning program	Product is sealed and it is unlikely that it will come into contact with the surface of the delivery receptacle.	SP
	Chemical (Residual chemicals from cleaning)	Adhere to correct cleaning concentrations in cleaning program	It is unlikely with correct measurement that residues will remain.	SP

Hazard Audit Table – Yoghurt Production

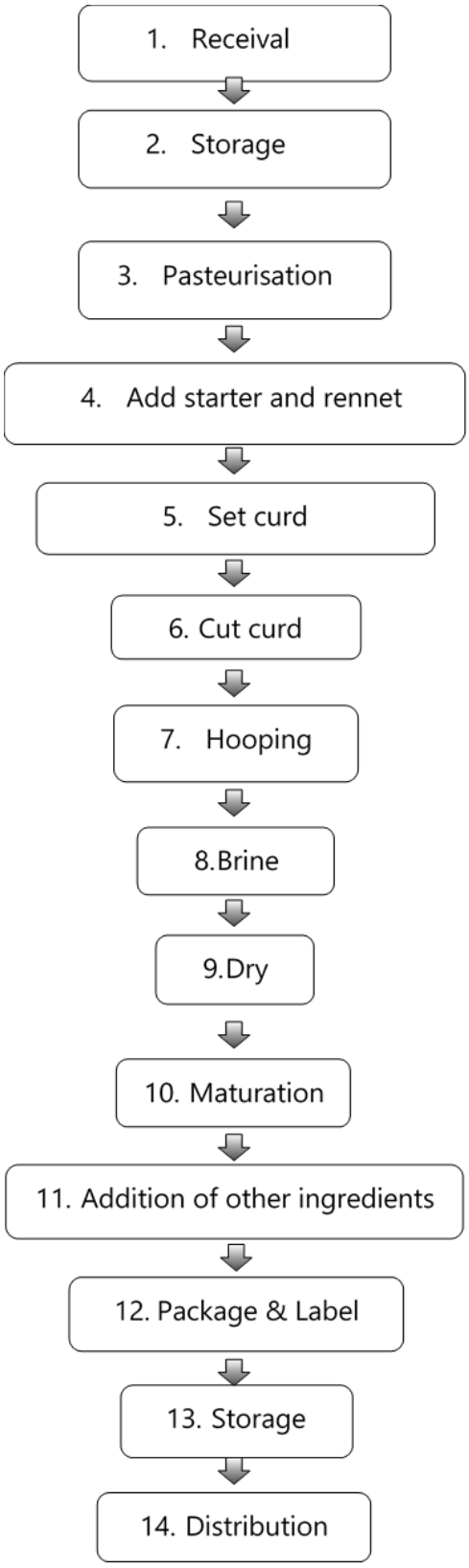
Process Step	Hazard	Control Measure	Critical Limits	Monitoring Procedures	Corrective Action	Records
6.	Microbial growth and contamination from insufficient heat treatment	Time and Temperature	Minimum temperature of 72°C for 15 seconds, or equivalent time and temperature combination to achieve an equal or greater lethal affect on bacteria.	What: Record temperature of product How: data logger/ thermometer When: Each batch Who:	Re heat treat at correct temperature and time.	Form 1 – Daily Production Monitoring
8.	Microbial (growth of pathogenic or competitive organisms)	Temperature of incubation	_____	What: Record incubation temperature How: data logger / thermometer When: each batch Who:	Increase/ decrease temp to correct level	Form 2 – Daily Temperature Monitoring
8.	Microbial (growth of pathogenic or competitive bacteria due to pH >4.5)	Time of incubation	pH <4.5	What: Check yoghurt pH How: Calibrated pH meter When: Every batch Who:	Incubate Yoghurt until pH 4.5 is achieved.	Form 1 – Daily Production Monitoring

Note: In order to effectively denature proteins and maximise product quality, a minimum temperature/time combination of 80° C for 15 minutes is suggested for the production of yoghurt

11.	Microbial (growth of pathogenic or spoilage organisms)	Temperature	<5°C	What: Temperature monitoring of coolroom How: Calibrated temperature gauge When: Daily Who:	If temperature is < 5°C for less than 2 hours, chill product to < 5°C. If product has been out of temperature control for longer than 2 hours, use immediately or discard	Form 2 – Daily Temperature Monitoring
12.	Microbial (growth of pathogenic or spoilage organisms)	Temperature	<5°C	What: Temperature monitoring of transport vehicle How: Calibrated temperature gauge When: Daily Who:	If temperature is < 5°C for less than 2 hours, chill product to < 5°C. If product has been out of temperature control for longer than 2 hours, use immediately or discard	Form 10 – Product Delivery Record

Appendix 2 – Cheese Production

Cheese Production Flowchart



Hazard Analysis for Cheese Production

Step	Hazard	Control Measure	Rationale	CCP / CP/ SP
1. Receival of chilled & frozen goods	Physical (foreign objects entering open packaging) Microbial (chilled ingredients received at temperature>5°C	Inspect ingredients on arrival. Reject ingredients if packaging damaged. Check temperature of ingredients at delivery. If >5°C reject product.	Open Packages allow entry of foreign objects Microbial growth will rapidly occur between the temperatures of 5°C - 60°C	SP CP
1. Receival of dry goods	Physical (Foreign objects entering open packages) Microbial (Dry ingredients packages split at receival allowing entry for pathogens.	Inspect ingredients upon arrival. Reject Ingredients or packaging where the package is badly damaged. Inspect ingredients upon arrival. Reject ingredients where the packaging is badly damaged.	Open packages allow entry of foreign objects. Open packages allow entry of foreign objects as well as create an environment suitable for microbial growth.	SP SP
2. Chilled & Frozen Goods Storage	Microbial (High temperature) Microbial (dirty room)	Check temperature of coolroom & Freezer. Regularly calibrate coolroom & freezer thermometer and preventative maintenance of refrigeration system Adhere to cleaning program	Microbial growth will rapidly occur between the temperatures of 5°C - 60°C. Frozen goods must be stored under recommended conditions Contamination from mould growth and foreign matter if cool room is not clean	CP SP

Step	Hazard	Control Measure	Rationale	CCP / CP/ SP
	Physical (Food left uncovered in coolroom) Chemical (residual chemicals from cleaning)	Cover all food in cool room Adhere to correct cleaning concentrations in cleaning program	Prevention of cross contamination, foreign objects and condensation It is unlikely with correct measurements that residues will remain	SP SP
2. Storage of dry goods	Physical & Microbial (Vermin & insects invading the storage area. Chemical (Dry Ingredients stored too close to cleaning chemicals)	Bait stations placed around facility and in storage areas to control vermin and insects (Pest Control Program) Keep cleaning chemicals stored away from dry ingredients and packaging materials	Having a pest control program in place prevents infestation of pests Having a separate storage area for chemicals and raw materials reduces the risk of chemical contamination.	SP SP
3.Pasteurisation	Chemical (residual cleaning chemicals remain in mixing equipment) Physical & Microbial (Residual product from previous manufacturing Microbial (Heat treatment temperatures are not high enough to kill pathogenic bacteria	Adhere to correct cleaning concentrations in cleaning program Visual inspection of equipment prior to use. If equipment dirty, reclean manually where necessary. Continuous monitoring of time and temperature throughout heat treatment process.	It is unlikely with correct measurement that residues will remain. Cleaning programs ensure equipment is clean. If not clean, manually reclean. Correct time and temperature combinations will destroy pathogenic bacteria	SP CP CCP 1

Step	Hazard	Control Measure	Rationale	CCP / CP/ SP
4. Add Starter & Rennet	Chemical (pH of starter too high)	Add starter in accordance with manufacturer's instructions. Check pH prior to use.	pH of starter precludes pathogen growth	CP
5.Set Curd	Microbial (incorrect temperature inhibits acid development)	Set cheese at correct temperature	Correct temperature gives maximum starter growth and acid development	CP
6.Cut Curd	Physical & Microbial contamination (unclean equipment and hands)	Visually inspect equipment prior to use in production. If equipment dirty, reclean manually where necessary. Hygiene & Sanitation program ensures that hands are clean and sanitised prior to handling cutters	Cleaning programs ensure that equipment and hands are clean.	SP
7.Hooping	Physical & Microbial contamination (unclean molds)	Visually inspect equipment prior to use in production. If equipment dirty, reclean manually where necessary.	Cleaning programs ensure that equipment is clean. If the equipment is not visually clean, manual cleaning will resolve the problem.	CP
8.Brining	Microbial (low salt concentration, non-potable water)	Brine is prepared in a hygienic manner using filtered water – high salt level is maintained.	High salt concentration inhibits pathogenic bacterial growth.	CP

Step	Hazard	Control Measure	Rationale	CCP / CP/ SP
9.Drying	NIL			
10.Maturation	Microbial (contamination of exposed product to condensation)	Pre-operational inspection and maintenance programs identify potential condensation issues	Daily checks should identify condensation issues as they arise.	SP
11.Addition of other ingredients	Microbial (dirty utensils and work area used for adding ingredients)	Visually inspect equipment prior to use in production	Cleaning programs ensure that equipment is clean. If the equipment is not visually clean, manual cleaning will resolve the problem.	SP
	Microbial (Ingredients that are being added are contaminated with bacteria)	Use of Approved Suppliers/ Certificates of Analysis, Certificates if Conformance	Contaminated ingredients will cause the final product to be contaminated	SP
	Physical (Addition of foreign objects from packaging)	Production staff shall demonstrate good manufacturing practices.	Packaging has been inspected at delivery and staff shall visually check the adding of ingredients	SP
	Chemical (Allergens)	Ensure that bulk ingredients that are free of allergens are not cross contaminated with allergens.	Storage and use of allergens must be carefully considered so that final product labels accurately reflect products containing allergens.	SP

Step	Hazard	Control Measure	Rationale	CCP / CP/ SP
12. Package and Label	Microbial & Physical (dirty utensils and work area used for packing ingredients)	Visually inspect equipment prior to use in production	Cleaning programs ensure that equipment is clean. If the equipment is not visually clean, manual cleaning will resolve the problem.	SP
	Physical (incorrect use by code applied by operator)	Product Traceability and Recall Procedure	Incorrect labelling of use by date of product alters the correct date which the product will perish and may be harmful to consumers.	SP
	Physical & chemical (packaging contains foreign bodies or chemicals	Ensure all packaging is from approved suppliers and is food grade	Certificate of analysis from supplier ensures the packaging is food grade	SP
13.Storage	Microbial (Coolroom operating at a high temperature	Check temperature of coolroom. Preventative maintenance of refrigeration unit.	Cheese must be stored at <5°C to prevent spoilage bacteria from growing	CCP 2
	Microbial (dirty coolroom)	Adhere to cleaning program	Contamination from mould growth and foreign matter if cool room is not clean.	SP
	Physical (food left uncovered in coolroom)	Cover all food in coolroom	Prevention of cross contamination, foreign objects and condensation falling into the product.	SP
	Chemical (Residual chemicals from cleaning)	Adhere to correct cleaning concentrations in cleaning program	It is unlikely with correct measurement that residues will remain.	SP

Step	Hazard	Control Measure	Rationale	CCP / CP/ SP
14.Distribuion	Microbial (cheese delivered at too high a temperature)	Temperature of delivery van	Cheese kept at temperatures >5°C for extended periods of time will promote growth of spoilage bacteria.	CCP 3
	Microbial (Dirty delivery container or delivery van	Adhere to cleaning program	Product is sealed and it is unlikely that it will come into contact with the surface of the delivery receptacle.	SP
	Chemical (Residual chemicals from cleaning)	Adhere to correct cleaning concentrations in cleaning program	It is unlikely with correct measurement that residues will remain.	SP

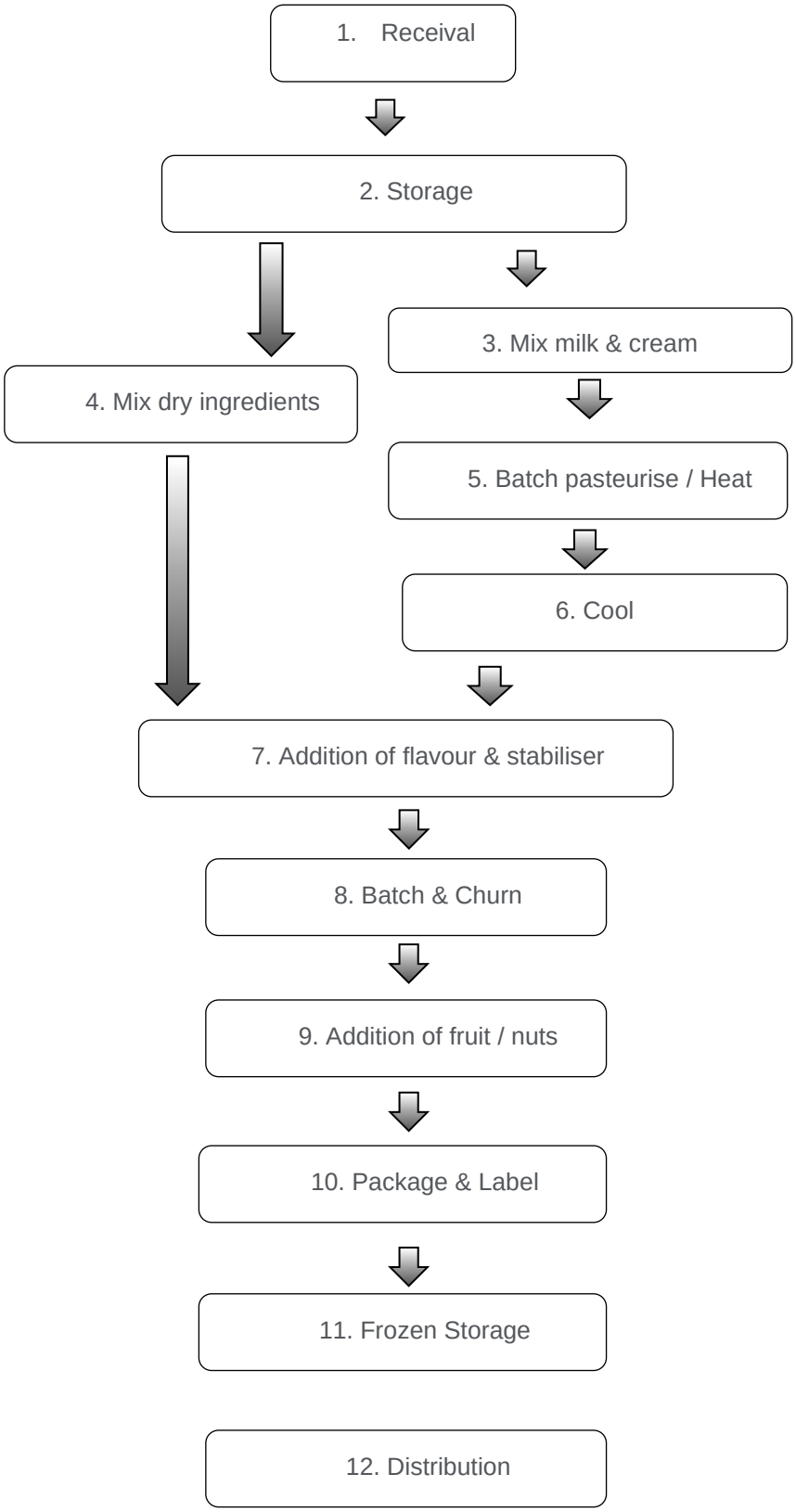
Hazard Audit Table for Cheese Production

Process Step	Hazard	Control Measure	Critical Limits	Monitoring Procedures	Corrective Action	Records
3.	Microbial growth and contamination from insufficient heat treatment	Time and Temperature	Minimum temperature of 63°C for the duration of 30 minutes, or an equivalent time and temperature combination to achieve an equal or greater lethal affect on bacteria.	What: Record temperature of product How: data logger/ thermometer When: Each batch Who:	Re-heat treat at correct temperature and time.	Form 1 – Daily Production Monitoring
11.	Microbial (growth of pathogenic or spoilage organisms)	Temperature	<5°C	What: Temperature monitoring of coolroom How: Calibrated temperature gauge When: Daily Who:	If temperature is < 5°C for less than 2 hours, chill product to < 5°C. If product has been out of temperature control for longer than 2 hours, use immediately or discard	Form 2 – Daily Temperature Monitoring
12.	Microbial (growth of pathogenic or spoilage organisms)	Temperature	<5°C	What: Temperature monitoring of delivery van How: Calibrated pH meter	If temperature is < 5°C for less than 2 hours, chill product to < 5°C. If	Form 10 – Delivery Monitoring

				When: Every batch Who:	product has been out of temperature control for longer than 2 hours, use immediately or discard	

Appendix 3 – Ice Cream / Gelato Production

Ice Cream / Gelato Production Flowchart



Hazard Analysis for Ice Cream / Gelato Production

Step	Hazard	Control Measure	Rationale	CCP / CP/ SP
1. Chilled Goods Receival	Physical (foreign objects entering open packaging)	Inspect ingredients on arrival. Reject ingredients if packaging damaged.	Open Packages allow entry of foreign objects	SP
	Microbial (chilled ingredients received at temperature>5°C	Check temperature of ingredients at delivery. If >5°C reject product.	Microbial growth will rapidly occur between the temperatures of 5°C - 60°C	CP
1. Receival of dry ingredients & packaging material	Physical (Foreign objects entering open packages)	Inspect ingredients upon arrival. Reject Ingredients where the packaging is badly damaged.	Open packages allow entry of foreign objects.	SP
	Microbial (Dry ingredients packages split at receival allowing entry for pathogens.	Inspect ingredients upon arrival. Reject ingredients where the packaging is badly damaged.	Open packages allow entry of foreign objects as well as create an environment suitable for microbial growth.	SP
2. Chilled Goods Storage	Microbial (High temperature)	Check temperature of coolroom. Regularly calibrate coolroom thermometer and preventative maintenance of refrigeration system	Microbial growth will rapidly occur between the temperatures of 5°C - 60°C	CP
	Microbial (dirty room)	Adhere to cleaning program	Contamination from mould growth and foreign matter if cool room is not clean	SP
	Physical (Ingredients left uncovered in coolroom)	Cover all ingredients in cool room	Prevention of cross contamination, foreign objects and condensation	SP
		Adhere to correct cleaning concentrations in		

Step	Hazard	Control Measure	Rationale	CCP / CP/ SP
	Chemical (residual chemicals from cleaning)	cleaning program	It is unlikely with correct measurements that residues will remain	SP
2. Storage of dry ingredients	Physical & Microbial (Vermin & insects invading the storage area. Chemical (Dry Ingredients stored too close to cleaning chemicals)	Bait stations placed around facility and in storage areas to control vermin and insects (Pest Control Program) Keep cleaning chemicals stored away from dry ingredients	Having a pest control program in place prevents infestation of pests Having a separate storage area for chemicals and raw materials reduces the risk of chemical contamination.	SP SP
3.Mix Milk & Cream	Physical & Microbial (unclean equipment) Chemical (residual cleaning chemicals remain in mixing equipment)	Visual inspection of equipment prior to use. If equipment dirty, re-clean manually where necessary. Adhere to correct cleaning concentrations in cleaning program	Cleaning programs ensure that equipment is clean. If the equipment is not visually clean, manual cleaning will resolve the problem. It is unlikely with correct measurement that residues will remain.	SP SP
4.Mix Dry Ingredients	Physical & Microbial (unclean equipment) Chemical (residual cleaning	Visual inspection of equipment prior to use. If equipment dirty, re-clean manually where necessary. Adhere to correct cleaning concentrations in	Cleaning programs ensure that equipment is clean. If the equipment is not visually clean, manual cleaning will resolve the problem. It is unlikely with correct measurement	SP SP

Step	Hazard	Control Measure	Rationale	CCP / CP/ SP
	chemicals remain in mixing equipment)	cleaning program	that residues will remain.	
5.Batch Pasteurise	Chemical (residual cleaning chemicals remain in mixing equipment) Physical & Microbial (Residual product from previous manufacturing Microbial (Pasteuriser time and temperature requirements were not met)	Adhere to correct cleaning concentrations in cleaning program Visual inspection of equipment prior to use. If equipment dirty, reclean manually where necessary. Continuous monitoring of time and temperature throughout heat treatment process.	It is unlikely with correct measurement that residues will remain. Cleaning programs ensure equipment is clean. If not clean, manually reclean. Pasteurisation is required to kill pathogens and those microorganisms responsible for spoilage.	SP SP CCP 1
6.Cool	Microbial (product cooled to <4°C within 2 hours)	Check times and temperatures of pasteuriser cooling cycle. Preventative maintenance of pasteuriser.	Microbial growth will rapidly occur between the temperatures of 5°C – 60°C.	CP
7.Addition of Flavour and Stabiliser	Microbial & Physical (contamination from other ingredients)	Approved Supplier Program. Certificate of Analysis, Certificate of Conformance	Approved supplier programs ensure ingredients are only accepted if they meet the required specifications.	SP
8.Batch & Churn	NIL			

Step	Hazard	Control Measure	Rationale	CCP / CP/ SP
9. Addition of Fruit / nuts	Microbial & Physical (poor quality of ingredients)	Approved Supplier Program. Certificate of Analysis, Certificate of Conformance	Approved supplier programs ensure ingredients are only accepted if they meet the required specifications.	SP
10. Pack and Label	Microbial & Physical (dirty utensils and work area used for packing ingredients)	Visually inspect equipment prior to use in production	Cleaning programs ensure that equipment is clean. If the equipment is not visually clean, manual cleaning will resolve the problem.	SP
	Physical (incorrect use by code applied by operator)	Product Traceability and Recall Procedure	Incorrect labelling of use by date of product alters the correct date which the product will perish and may be harmful to consumers.	CP
	Physical & chemical (packaging contains foreign bodies or chemicals	Ensure all packaging is from approved suppliers and is food grade	Certificate of analysis from supplier ensures the packaging is food grade	SP
11.Frozen Storage	Microbial (Freezer operating at a high temperature)	Check temperature of freezer. Preventative maintenance of freezer unit.	Ice cream must be stored at temperatures sufficient to maintain the ice cream as hard frozen.	CCP 2
	Microbial (dirty freezer)	Adhere to cleaning program	Risk from foreign matter in product and on packaging	SP
	Chemical (Residual chemicals from cleaning)	Adhere to correct cleaning concentrations in cleaning program	It is unlikely with correct measurement that residues will remain.	SP

Step	Hazard	Control Measure	Rationale	CCP / CP/ SP
	Physical (ice cream uncovered in coolroom)	Cover all ice cream in freezer	Prevention of cross contamination, foreign objects and condensation falling into the product. It is unlikely with correct measurement that residues will remain.	SP
12.Distribuion	Microbial (Ice cream delivered at too high a temperature)	Temperature of delivery van (Frozen)	Ice cream must be transported at temperatures sufficient to maintain the ice cream as hard frozen.	CCP 3
	Microbial (Dirty delivery container or delivery van	Adhere to cleaning program	Product is sealed and it is unlikely that it will come into contact with the surface of the delivery receptacle.	SP
	Chemical (Residual chemicals from cleaning)	Adhere to correct cleaning concentrations in cleaning program	It is unlikely with correct measurement that residues will remain.	SP

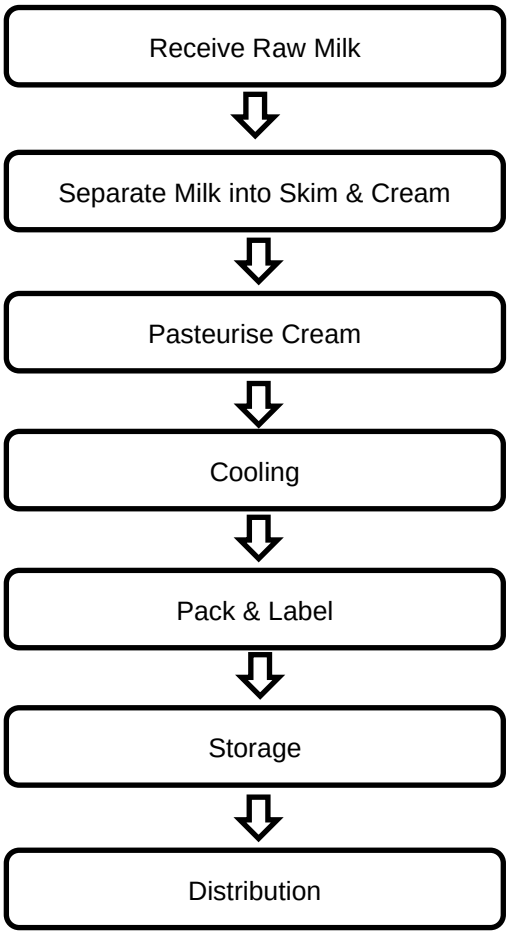
Hazard Audit Table for Ice Cream / Gelato Production

Process Step	Hazard	Control Measure	Critical Limits	Monitoring Procedures	Corrective Action	Records
5.	Microbial growth and contamination from insufficient heat	Time and Temperature	Minimum temperature of 63°C for 30 minutes, or equivalent time and temperature	What: Record temperature of product How: data logger/	Re-process product if it does not meet the correct temp/ time combination.	Form 1 – Production Monitoring

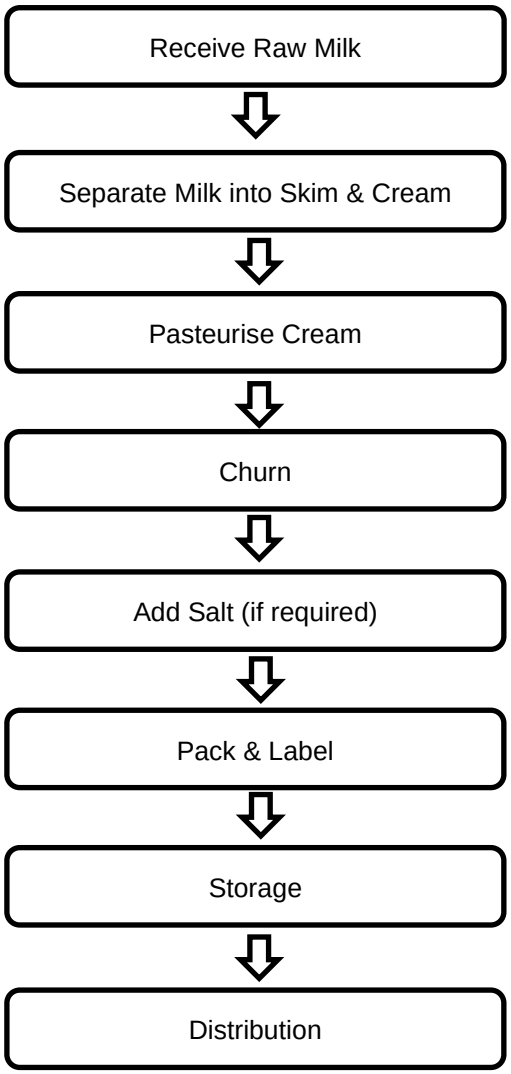
	treatment		combination to achieve an equal or greater lethal affect on bacteria.	thermometer When: Each batch Who:		
11.	Microbial (growth of pathogenic or spoilage organisms)	Temperature	Frozen Storage (Product is Hard Frozen)	What: Temperature monitoring of Freezer How: Calibrated temperature gauge When: Daily Who:	If temperature is < 5°C for less than 2 hours, chill product to < 5°C. If product has been out of temperature control for longer than 2 hours, use immediately or discard. If Frozen products have thawed, use immediately or discard.	Form 2 – Temperature Monitoring
12.	Microbial (growth of pathogenic or spoilage organisms)	Temperature	Frozen (Product is Hard Frozen)	What: Temperature monitoring of delivery van How: Calibrated pH meter When: Every batch Who:	If temperature is < 5°C for less than 2 hours, chill product to < 5°C. If product has been out of temperature control for longer than 2 hours, use immediately or discard. If Frozen products have thawed, use immediately or discard.	Form 10 – Delivery Monitoring

Appendix 4 – Cream, Butter and Sour Cream Flow Charts

Cream Production Flowchart



Butter Production Flowchart



Appendix 5 – ANZDAC Table for Heat Treatment

HEAT TREATMENT EQUIVALENT TO PASTEURISATION FOR COMMON TYPES OF DAIRY PRODUCE

	All dairy produce (excluding ice cream) with						Ice Cream mixes with particles <1000 µm
	Milks with <10% fat and no added sweeteners and particles			Dairy produce with ≥ 10% fat and/or added sweeteners and concentrated dairy produce with > 15% total solids and particles			
Particle Diameter	<200 µm Ø	200 to <500 µm Ø	500 to <1000 µm Ø	<200 µm Ø	200 to <500 µm Ø	500 to <1000 µm Ø	
Minimum holding time (seconds)	Minimum Temperature (°C)						
1.0	81.6	-	-	84.4	-	-	-
2.0	79.0	81.6	-	81.8	84.4	-	-
3.0	77.6	79.0	-	80.4	81.8	-	-
4.0	76.5	77.6	81.6	79.3	80.4	84.4	-
5.0	75.7	76.5	79.0	78.5	79.3	81.8	-
6.0	75.1	75.7	77.6	77.9	78.5	80.4	-
7.0	74.6	75.1	76.5	77.4	77.9	79.3	-
8.0	74.1	74.6	75.7	76.9	77.4	78.5	-
9.0	73.7	74.1	75.1	76.5	76.9	77.9	-
10.0	73.3	73.7	74.6	76.1	76.5	77.4	85.5
11.0	73.0	73.3	74.1	75.8	76.1	76.9	-
12.0	72.7	73.0	73.7	75.5	75.8	76.5	-
13.0	72.4	72.7	73.3	75.2	75.5	76.1	-
14.0	72.1	72.4	73.0	74.9	75.2	75.8	-
15.0	72.0	72.1	72.7	74.8	74.9	75.5	79.5
30.0	70.7	70.8	70.9	73.5	73.6	73.7	-
60.0	69.4	69.4	69.5	72.2	72.2	72.3	-
Minimum holding time (minutes)	Minimum Temperature (°C)						
1	69.4	69.4	69.5	72.2	72.2	72.3	-
2	68.1	68.1	68.1	70.9	70.9	70.9	-
5	66.4	66.4	66.4	69.2	69.2	69.2	-
10	65.1	65.1	65.1	67.9	67.9	67.9	74.0
15	64.3	64.3	64.3	67.1	67.1	67.1	-
20	63.8	64.8	64.8	66.6	66.6	66.6	69.0
25	63.3	63.3	63.3	66.1	66.1	66.1	-
30	63.0	63.0	63.0	65.8	65.8	65.8	-

Notes:

1. Ø signifies particle diameter
2. Minimum holding time
   The minimum holding time is set at 1 second to give an adequate safety margin. Shorter holding times will require validation to demonstrate the effectiveness of the time temperature combination in controlling the hazard(s).
3. Lowest allowable temperature
   The pasteurising temperature given for a 30 minute holding time is the lowest allowable temperature for pasteurising the specified product types.

The information contained within this table is taken from the NZFSA, D121.1. Dairy Treatments Standard 2003. This document references original data sources.

Appendix 6 – Food Recall Action Plan

Business name will use this recall plan to remove unsafe product from the market.

Recalls will be coordinated by First name Last name, Job description

Step 1 – Decide whether a recall is required because there is a risk to public health and safety			
	What:	First name Last name will decide whether the product is a risk to public health and safety.	
	How:	– Identify the defect in the product – Identify the lot codes of the defective product	– Find out whether the product poses a risk to public health or safety – Decide whether a recall is required.
	Notes:	If the product **does not** pose a risk to public health or safety or the food safety risk has not yet been confirmed a recall **is not** required. First name Last name will decide whether to withdraw the product as a precaution. If the product **does** pose a risk to public health or safety **a recall is required**.	
Step 2 – Decide what type of recall is required			
	What:	First name Last name will decide whether to conduct a withdrawal, a trade level recall or a consumer level recall. Where necessary, First name Last name will contact the NSW Food Authority or FSANZ for assistance.	
	How:	First name Last name may withdraw the product as a precaution if there is no food safety risk or the food safety risk has not yet been confirmed.	First name Last name will conduct a **trade level recall** if the product has not been available directly to the public, such as food sold to wholesalers and caterers only.	First name Last name will conduct a **consumer level recall** if the product has been available for retail sale.
	Notes:	First name Last name will discuss the type of recall required with FSANZ or the NSW Food Authority.	
Step 3 – Create a distribution list			
	What:	First name Last name will identify who the product was distributed to.	
	How:	First name Last name will write or print off a list of customers using records such as customer orders, delivery dockets and invoices.	
	Notes:	Keep the list simple. The name of the customer, their address, their contact number and details of how much of the affected product has been sold to them is what is needed.	

Step 4 – Conduct the recall	
What:	First name Last name will conduct the recall.
How:	First name Last name will contact all customers who may have received the unsafe product and tell them to: – remove the product from sale immediately, and – either destroy or return the unsafe product. First name Last name will contact FSANZ and provide details of the recall. If a consumer level recall is to be conducted, First name Last name provide details of: – where consumers can return the product, and – how the recall will be advertised.
Notes:	FSANZ can help advertise the recall.
Step 5 – Assess and report	
What:	First name Last name will identify possible causes of the risk (what caused the problem) and implement changes to address the risk.
How:	First name Last name will make a list of possible causes and look at what can be done to prevent the problem re-occurring. First name Last name will contact FSANZ to file a post recall report.
Notes:	Information about recall reporting is available at http://www.foodstandards.gov.au/industry/foodrecalls/conduct/Pages/default.aspx

Contact numbers and information

NSW Food Authority:	Phone – 1300 552 406
Food Standards Australia New Zealand (FSANZ):	Phone – 02 6271 2610
FSANZ recall information:	http://www.foodstandards.gov.au/industry/foodrecalls/conduct/pages/default.aspx
NSW Food Authority recall information:	http://www.foodauthority.nsw.gov.au/industry/recalls

Appendix 7 – Pathogen Clearance Program

Below is an extract from Section 4 of the Dairy Pathogen Manual published by Dairy Safe Victoria in 2016; Undertaking a clearance program.

The detection of pathogens (for example, *Salmonella spp*. or *L. monocytogenes* and other selected microorganisms such as *Listeria spp*.) during routine testing of a batch of dairy product indicates a failure of a manufacturer's food safety program and a potential threat to public health. All product of the same batch/lot number and any product processed on the affected processing line should be considered to be potentially contaminated. Further production on the affected processing line should only commence following a detailed inspection and analysis of the cause, effective decontamination of the affected line, and the identification and implementation of corrective action.

Once this is completed, a clearance program involving extensive sampling and product testing must commence on subsequent production runs. The clearance program protocol is based on sampling procedures suggested by the International Commission on Microbiological Specifications for Foods (ICMSF, 2002). The ICMSF recommend that where the hazard is severe and there is likely to be no change before consumption, a sampling plan for lot acceptance requires 30 samples to be tested. Testing must be performed by a NATA laboratory. The minimum clearance program arrangements are as follows:

30 samples are to be taken per batch from the affected production line at listed intervals.

Day	Samples
Day 1	30 samples (immediately following comprehensive clean*)
Day 3	30 samples
Day 5	30 samples
Day 12	30 samples

*First batch after restart, not first batch after contamination event

The 30 samples representing the batch will need to be of sufficient size for the laboratory to take 25 grams (or 25 millilitres) from each. Each sample may be tested individually or composited, for example, six lots of five samples. For small scale manufacturers the requirement to take 30 samples for testing may be excessive when a small number of units are produced. In these circumstances, the regulator may consider alternative sampling protocols.

A clearance program needs to be completed in full and is only considered to be complete when the results of all tests meet regulatory requirements. If results from any of the four batches fails to comply with the pathogen levels in the Code or indicate unacceptable levels of microorganisms, then the NSW Food Authority will require the program be recommenced and appropriate product control and incident investigation must be undertaken. It is recommended that products manufactured on day 1 are held and released when they test negative. Similarly, product made on days 2 and 3, days 4 and 5, and days 6–12 are retained until the results from days 3, 5 and 12 have tested negative, respectively. This may not be practical with short shelf-life products which cannot be held pending release to the market.

Any product from the implicated processing line that was produced prior to the original contamination (day 0) and is still available should also be tested at 30 samples per batch and withheld until cleared. This may include product within the warehouse or retained samples. This will be particularly important where testing is done on a periodic basis rather

than on every batch of product. Product should be tested back to the last compliant test result. It is strongly recommended that all products from other production lines in the same processing area be tested for the contaminant detected on the day of, the day before and the day after the original contamination. The NSW Food Authority will provide advice on interpreting the above requirements if necessary.

For more extensive details and guidance on how to respond when pathogens are detected in dairy products or the dairy processing environment, please refer to the *Dairy Pathogen Manual 2016*, produced by Dairy Food Safety Victoria.

Appendix 8 – References for 4.7 Testing Requirements

The following information is taken from the *Food Safety Schemes Manual Appendix 2: Listeria Monocytogenes Limits in Ready to Eat Food.*

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 limits were revised to acknowledge that ready-to-eat (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 of 'not detected in 25 grams' will still apply.
- where RTE foods do not support the growth of *L. monocytogenes*, a new limit of '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 cannot 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?

Standard 1.6.1 of the Code defines RTE foods 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 does not require 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 can or cannot support the growth of *L. monocytogenes.* These criteria are included in the Standard 1.6.1 of the Code and are based on international guidelines and standards.

Food characteristics and shelf-life

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

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

- pH ≤5.2 and water activity ≤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 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.

Growth rate

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 (www.foodstandards.gov.au).

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

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