

# Risk Management Programme

# Attachment Q

HAZARD ANALYSIS

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1. Purpose / Scope				
To identify the hazards that are reasonably likely to occur and ensure that appropriate controls are included in the RMP so that the products are fit for intended purpose.				
2. Identification of Hazards from Inputs				
Inputs	Description/specification <sup>1</sup>	Biological	Chemical	Physical
Birds	Apparently healthy Reared under a Whole Flock Health Scheme	Enteric pathogens (e.g. <i>Salmonella</i> spp.) <sup>2</sup>	None	None
Feed	Complies with the NZ Code of GMP for Compound Feeds, Premixes and Dietary Supplements	<i>Salmonella</i> <sup>3</sup>	None	None
Veterinary medicines (medication)	Registered by the NZFSA for intended use, or used off label under veterinary supervision	None	Chemical residues	None
Potable water	Potable water as defined in the Human Consumption Specifications	None	None	None
Egg contact packaging	New packaging – meets the requirements in the Human Consumption Specifications	None	None	None
	Re-used packaging - meets the requirements in Human Consumption Specifications	Enteric pathogens (e.g. <i>Salmonella</i> spp.)	None	None
Oil	Food grade	None	None	None
Chemicals, e.g. for washing	Meets Food Standards Code requirements.	None	None	None
<ol style="list-style-type: none"> <li>Agreed specifications and procedures for ensuring that all inputs consistently meet the specifications are documented in relevant attachments.</li> <li>Compliance to the whole flock health scheme will minimise the occurrence of <i>Salmonella</i> in live birds. However, sporadic cases may still occur.</li> <li>Specific treatments in the preparation of feed (e.g. pelleting, heating) are generally successful in eliminating <i>Salmonella</i>. However, the final feed may be contaminated because of an insufficient heating process or due to recontamination in the feed mill, during transport or during storage at the farm. A survey of NZ egg producers has found that <i>Salmonella</i> is occasionally found in feed. The operator should review the performance record of the supplier to determine whether this pathogen is reasonably likely to occur in incoming feed.</li> </ol>				
3. Identification of Critical Control Points				
There are no regulatory limits so there are no critical control points.				

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Process step	Inputs	Hazard reasonably likely to occur	Justification <sup>1</sup>	Control Measures	Supporting System	
1. Bird receipt	Birds	B – Enteric pathogens, e.g. <i>Salmonella</i> spp.	Sporadic incidence of <i>Salmonella</i> infection may occur.	<ul style="list-style-type: none"> <li>Visual inspection to ensure birds are apparently healthy.</li> <li>Each delivery to be accompanied by a supplier declaration indicating compliance to agreed specifications.</li> </ul>	Pg 5 & Attachment G	
2. Bird management	Birds	B - Enteric pathogens, e.g. <i>Salmonella</i> spp., in live birds	Carried over from previous step.	<ul style="list-style-type: none"> <li>Whole flock health scheme</li> </ul>	Pg 5 & Attachment G	
	Feed	B - <i>Salmonella</i> from incoming feed	A survey of NZ egg producers shows that <i>Salmonella</i> is occasionally found in feed.	<ul style="list-style-type: none"> <li>Supplier declaration indicating treatment for <i>Salmonella</i> has occurred.</li> </ul>	Pg 4 & Attachment F	
		B – <i>Salmonella</i> from contamination of the feed during storage and use	Feed can be contaminated with <i>Salmonella</i> by faecal material from bird and rodents. <sup>2</sup>	<ul style="list-style-type: none"> <li>Correct feeding schedule</li> <li>Regular cleaning of feeders</li> <li>Correct storage of feed</li> <li>Pest control</li> </ul>	Attachment F Attachment E Attachment G Attachment A	
	Potable drinking water	None in incoming water				Pg 8 & Record 1
		B – Enteric pathogens from contamination of drinking water	Water can be contaminated with enteric pathogens, e.g. <i>Salmonella</i> , by dust, litter, feed, bird and rodent faeces, and feathers. <sup>3</sup>	<ul style="list-style-type: none"> <li>Regular cleaning of water containers</li> <li>Regular water change</li> <li>Pest control</li> </ul>	Attachment E Attachment F Attachment A	
	Medication	C - Chemical residue	Unacceptable level of chemical residues can occur in birds when correct withholding period is not followed.	<ul style="list-style-type: none"> <li>Correct use of registered veterinary medicines</li> <li>Observance of correct withholding periods</li> </ul>	Attachment G	
Litter, nest box material	B – Enteric pathogens, e.g. <i>Salmonella</i> spp.	Litter and nest box material can be contaminated with pathogens by faecal material from birds and rodents	<ul style="list-style-type: none"> <li>Correct cleanout procedures</li> <li>Regular removal of spent litter, manure</li> <li>Pest control</li> <li>Waste management</li> </ul>	Attachment E Attachment E Attachment A Attachment E		
3. Egg collection	Eggs	B – Enteric pathogens, e.g. <i>Salmonella</i> spp.	Eggs can be externally contaminated with <i>Salmonella</i> from the bird and the laying environment.	<ul style="list-style-type: none"> <li>Collection schedule</li> <li>Separation of dirty, floor and cracked eggs</li> <li>Rejection of broken, leaking, very dirty eggs</li> </ul>	Pg 3 – 9	
	New egg collection trays	None			Attachment J	
	Re-used egg collection trays	B – Enteric pathogens, e.g. <i>Salmonella</i> spp.	Re-used trays can be contaminated with enteric pathogens.	<ul style="list-style-type: none"> <li>Cleaning and sanitation of re-used trays and crates will minimise contamination.</li> </ul>	Pg 3 - 9 & Attachment J	
	Labels	None				

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Process step	Inputs	Hazard reasonably likely to occur	Justification <sup>1</sup>	Control Measures	Supporting System
4. Storage and transfer to grading	Eggs	B – Enteric pathogens, e.g. <i>Salmonella</i> spp.	Eggs become increasingly susceptible to bacterial penetration and growth above 18 °C. <sup>4</sup>	<ul style="list-style-type: none"> <li>Time-temperature control during storage and transfer will prevent or minimise the growth of <i>Salmonella</i> in eggs.</li> <li>Cleaning of conveyors, trolleys, vehicles and other conveyance will minimise contamination.</li> </ul>	<p>Pg 3 - 9</p> <p>Attachment E</p>
5. Sorting	Eggs	B – Enteric pathogens, e.g. <i>Salmonella</i> spp.	Carried over from previous step.	<ul style="list-style-type: none"> <li>Removal of broken, leaking and very dirty eggs will reduce the number of potentially contaminated eggs.</li> </ul>	Pg 3 - 9
6. Washing	Dirty eggs	B – Enteric pathogens, e.g. <i>Salmonella</i> spp.	<p>Damage to the shell cuticle can result in micro penetration.</p> <p>Inadequate control of temperature, pH and insufficient changes of wash water can result in a build up of micro and cross contamination of eggs.</p>	<ul style="list-style-type: none"> <li>Proper egg washing procedures and parameters (e.g. temperature, pH) will reduce micro contamination on the outside of the shell, and prevent micro penetration.</li> </ul>	Pg 3 - 9
	Potable water	None			
	Chemicals, e.g.	C – Chemical residues	Incorrect use of chemicals can cause unacceptable levels of chemical residues in the egg.	<ul style="list-style-type: none"> <li>Use of approved chemicals only in accordance with manufacturer's instructions.</li> </ul>	Pg 3 – 9 & Attachment B
7. Drying	Washed eggs	B – Enteric pathogens, e.g. <i>Salmonella</i> spp.	<p>Inadequately dried eggs can allow micro growth and any remaining bacteria to be aspirated into the egg.</p> <p>Eggs can be contaminated during drying if air filters are dirty.</p>	<ul style="list-style-type: none"> <li>Correct drying procedures.</li> <li>Cleaning and maintenance of drying equipment.</li> </ul>	<p>Pg 3 - 9</p> <p>Attachment E</p>
8. Oiling	Washed and dried eggs	B – Enteric pathogens, e.g. <i>Salmonella</i> spp.	Carried over from previous step.	<ul style="list-style-type: none"> <li>No</li> </ul>	
	Food grade oil	None			Attachment I
9. Candling	Clean eggs	B – Enteric pathogens, e.g. <i>Salmonella</i> spp.	Cleaned eggs can be re-contaminated by dirty conveyors and equipment.	<ul style="list-style-type: none"> <li>Detection and removal of minor cracks and pinholes will reduce the number of potentially contaminated eggs.</li> <li>Cleaning and sanitation of conveyors and equipment.</li> </ul>	Pg 3- 9
10. Grading/ weighing	Clean eggs	B – Enteric pathogens, e.g. <i>Salmonella</i> spp.	Carried over from previous step.	<ul style="list-style-type: none"> <li>No</li> </ul>	Pg 3- 9
11. Packing	Clean eggs	B – Enteric pathogens, e.g. <i>Salmonella</i> spp.	Carried over from previous step.	<ul style="list-style-type: none"> <li>No</li> </ul>	Pg 3- 9

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Process step	Inputs	Hazard reasonably likely to occur	Justification <sup>1</sup>	Control Measures	Supporting System
	New cartons, trays, plastic wrap	None			Attachment J
	Reused cartons, trays	B – Enteric pathogens, e.g. <i>Salmonella</i> spp.	Re-used trays can be contaminated with enteric pathogens.	<ul style="list-style-type: none"> <li>Cleaning and sanitation of re-used trays will minimise contamination.</li> </ul>	Pg 3- 9 & Attachments J
	Labels	None			
12. Storage / Loadout	Packed eggs	B – Enteric pathogens, e.g. <i>Salmonella</i> spp.	Eggs become increasingly susceptible to bacterial penetration and growth above 18 °C. <sup>4</sup>	<ul style="list-style-type: none"> <li>Correct time, temperature and humidity control will minimise micro growth. <sup>4</sup></li> </ul>	Pg 3- 9
			Eggs become increasingly susceptible to bacterial penetration and growth above 18 °C. <sup>4</sup>	<ul style="list-style-type: none"> <li>Correct time and temperature control will minimise micro growth.</li> <li>Cleaning of vehicles and transport only with compatible food products will prevent contamination of the eggs.</li> </ul>	Pg 3- 9
13. Collection of eggs from various steps for further processing	Cracked or broken eggs	B – Enteric pathogens, e.g. <i>Salmonella</i> spp. <sup>5</sup>	Bacterial penetration is easier where shells are not intact.	<ul style="list-style-type: none"> <li>Correct time, temperature and humidity control will minimise micro growth. <sup>4</sup></li> <li>Labelling that they are not pasteurised.</li> </ul>	Pg 3- 9 Attachment K

- The justifications given are supported by scientific information provided in the Technical Annex of the Egg Producer's code of practice.
- This is likely to be relevant to free range and barn birds as most caged systems are designed to keep bird faeces away from feed troughs/trays.
- Water can be contaminated with pathogens such as *Salmonella* when it is dispensed in open troughs that can be contaminated by dust, litter, feed, feathers and faeces.
- Degradation of the egg's antimicrobial barriers is accelerated above 18 °C. As the effectiveness of these barriers declines, the egg becomes increasingly susceptible to bacterial penetration and growth. Older eggs are likely to be more contaminated with bacteria.  
The Egg Producer's Federation recommends that eggs are stored at or below 15 °C to minimise the growth of any *Salmonella* in eggs over a shelf life of 35 days from date of lay. Eggs suitable only for further processing (e.g. cracked eggs) should be stored at ≤ 4°C and processed (e.g. pasteurisation) within 3 days. Relative humidity should be between 70 and 85%. Below 70%, rapid weight loss through evaporation occurs. Above 85%, microbial penetration is enhanced and moulds may grow.
- At present, there is no evidence to indicate that *Salmonella* Enteritidis is present in New Zealand's poultry food chain, including eggs, although it has been recovered from other animal species (e.g. cattle, sheep, humans) in New Zealand. However, industry testing for feed and swab samples from the laying shed have occasionally tested positive for *Salmonella*. Sporadic cases of *Salmonella* contamination may occur in eggs produced in New Zealand.